CA SiteMinder® Federation Security Services

Federation Security Services Guide

r12 SP1

Second Edition

CA Product References

This document references the following CA products:

- CA SiteMinder®
- CA SiteMinder® SAML Affiliate Agent
- CA SiteMinder® Web Agent Option Pack
- CA SiteMinder® Secure Proxy Server

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Contents

Chapter 1: Federation Security Services Overview

This section contains the following topics:

Introduction to SiteMinder Federation Security Services

The growth of business networks provides opportunities for businesses to form partnerships to offer enhanced services to employees, customers, and suppliers. However, these new business opportunities present the following challenges:

- Exchanging user information between partners in a secure fashion
- Establishing a link between a user identity at a partner and a user identity in your company
- Enabling single sign-on across partner Web sites in multiple domains
- Handling different user session models between partner sites, such as single logout across all partner Web sites or separate sessions for each partner Web site
- Controlling access to resources based on user information received from a partner
- Interoperability across heterogeneous environments, such as Windows, UNIX operating systems and various Web servers, such as IIS, Sun Java System (formerly iPlanet/Sun ONE), and Apache

SiteMinder Federation Security Services provides a solution to all these challenges.

Note: Federation Security Services is separately-licensed from SiteMinder.

Federation Use Cases

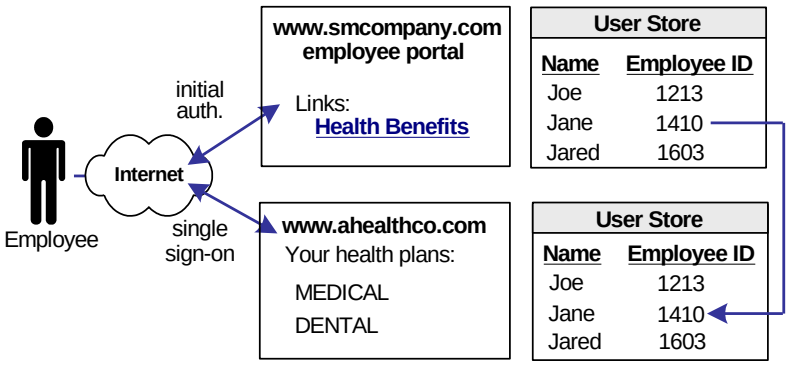
There are probably as many use cases for federated networks as there are business arrangements between partners. This section presents use cases that demonstrate different ways of handling user identities to provide single sign-on and single logout between partners.

Use Case 1: Single Sign-on Based on Account Linking

In Use Case 1, smcompany.com contracts with a partner company, ahealthco.com to manage employee health benefits.

An employee of smcompany.com authenticates at an employee portal at his company's site, www.smcompany.com and clicks a link to view her health benefits at ahealthco.com. The employee is taken to ahealthco.com's web site and is presented with her health benefit information without having to sign on to ahealthco.com's Web site.

The following illustration shows this use case.

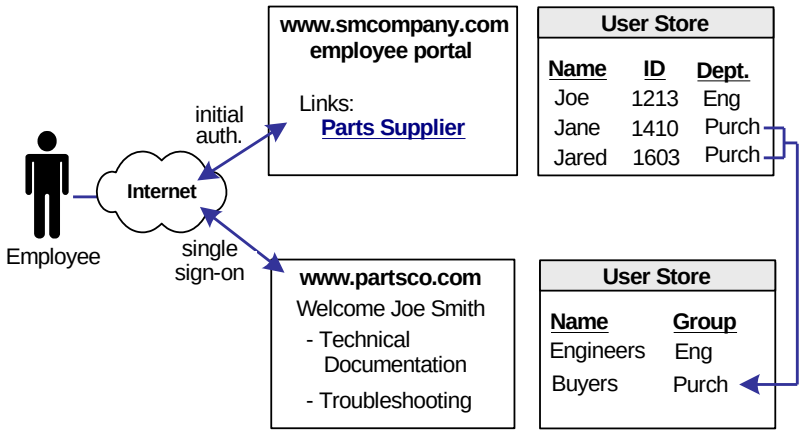


The company, ahealthco.com, maintains all health-related information for employees at smcompany.com. To do this, ahealthco.com maintains user identities for every employee of smcompany.com. When an employee of smcompany.com accesses ahealthco.com, an identifier for the employee is passed from smcompany.com to ahealthco.com in a secure manner. This identifier allows ahealthco.com to determine who the user is and the level of access to allow for that user.

Use Case 2: Single Sign-on Based on User Attribute Profiles

In Use Case 2, smcompany.com buys parts from a partner named partsco.com.

An engineer authenticates at his employee portal, smcompany.com and clicks a link to access information at partsco.com. Because the user is an engineer at smcompany.com, he is taken directly to the Specifications and Parts List portion of partsco.com's web site without having to sign in.



When a buyer for smcompany.com authenticates at smcompany.com and clicks a link to access information at partsco.com, she is taken directly to the ordering area of partsco.com's web site without having to sign on.

Additional attributes, such as user name are passed from smcompany.com to partsco.com to personalize the interface for the individual user.

Partsco.com does not want to maintain user identities for all employees at smcompany.com, but access to sensitive portions of the Partsco.com Web site must be controlled. To do this, partsco.com maintains a limited number of profile identities for users at smcompany.com. One profile identity is maintained for engineers and one profile identity is maintained for buyers.

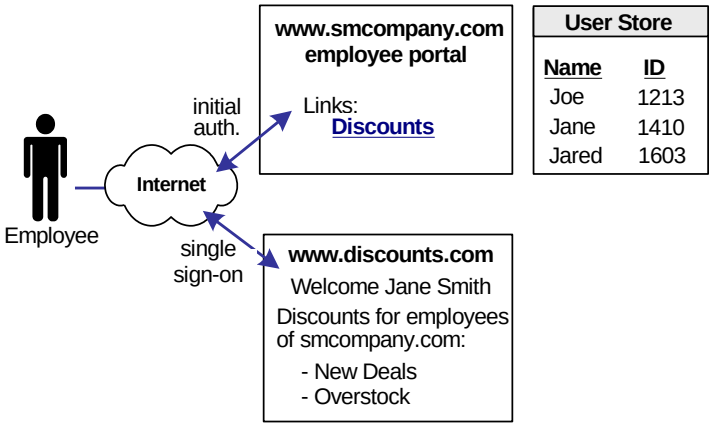
When an employee of smcompany.com accesses partsco.com, user attributes are sent in a secure manner from smcompany.com to partsco.com, which uses them to determine what profile identity should be used to control access.

Use Case 3: Single Sign-on with No Local User Account

In Use Case 3, smcompany.com offers employee discounts by establishing a partnership with discounts.com.

An employee of smcompany.com authenticates at an employee portal at www.smcompany.com and clicks a link to access discounts at discounts.com. The employee is taken to discounts.com's web site and presented with the discounts available for smcompany.com employees, without having to sign on to discounts.com's Web site.

The following illustration shows this use case.

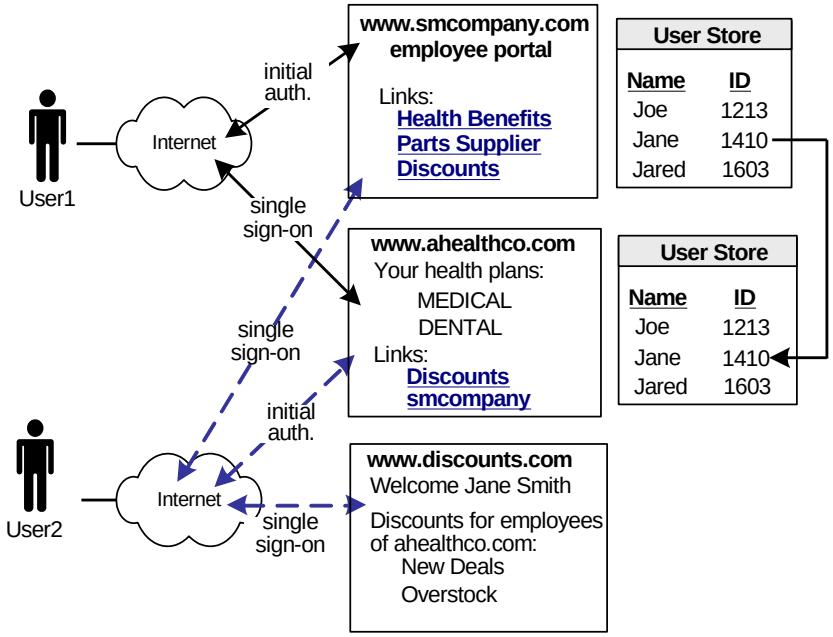


Discounts.com does not maintain any identities for employees of smcompany.com—the company allows all employees of smcompany.com to access discounts.com as long as they have been authenticated at smcompany.com. When an employee of smcompany.com accesses discounts.com, authentication information is sent in a secure manner from smcompany.com to discounts.com. This information is used to allow access to discounts.com.

Additional attributes, such as user name are passed from smcompany.com to discounts.com to personalize the interface for the individual user.

Use Case 4: Extended Networks

In Use Case 4, smcompany.com, ahealthco.com, and discounts.com all participate in an extended federated network. This case is an extension of the use cases presented previously.



In this network, not all of ahealthco.com's customers work at smcompany.com, so ahealthco.com provides discounts to its customers by establishing a relationship between themselves and discounts.com. Since ahealthco.com maintains user identities for every customer, it is possible for ahealthco.com to manage local credentials, such as a password for each user. By managing local credentials, ahealthco.com can authenticate users and provide single sign-on access to its partners.

In this extended network, the users access each Web site differently:

- User1 accesses health benefit information at ahealthco.com's web site. User 1 may also choose to access partsco.com's Web site by clicking on the PartsSupplier link at smcompany.com, her employee portal. She can also click a link at her employee portal to access discounts at discounts.com.

- User2 authenticates at ahealthco.com's web site and clicks a link to access discounts at discounts.com, without having to sign on to discounts.com's web site. The discounts presented to User2 reflect the business arrangement between ahealthco.com and discounts.com. Because User2 is an employee of smcompany.com, he can also click a link at ahealthco.com and access the employee portal at smcompany.com without having to sign on to smcompany.com's web site.
- User3 (not shown in example), is a customer of ahealthco.com, but is not an employee of smcompany.com. User3 authenticates at ahealthco.com's web site and clicks a link to access discounts at discounts.com without having to sign on to discounts.com's web site. The discounts presented to User3 reflect the business arrangement between ahealthco.com and discounts.com. Since User3 is not an employee of smcompany.com, User3 cannot access smcompany.com's web site.

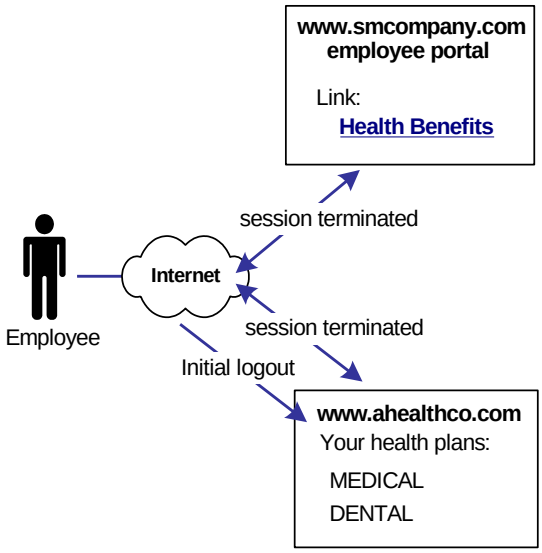
Use Case 5: Single Logout

In Use Case 5, an employee of smcompany.com authenticates at an employee portal, www.smcompany.com, and selects a link to view her health benefits at www.ahealthco.com. The employee is taken to ahealthco.com's Web site and presented with her health benefit information without having to sign on to ahealthco.com's Web site.

After the employee has finished looking at her health benefits, ahealthco.com wants to ensure that when the employee logs out from ahealthco.com, the user's session at ahealthco.com and the session at smcompany.com is terminated. Terminating both sessions ensures that an unauthorized employee cannot use the existing sessions to access resources at smcompany.com or to view benefits of the authorized employee.

Note: The initial logout could occur at smcompany.com and result in both sessions being terminated.

The following illustration shows the use case.



Use Case 6: WS-Federation Signout

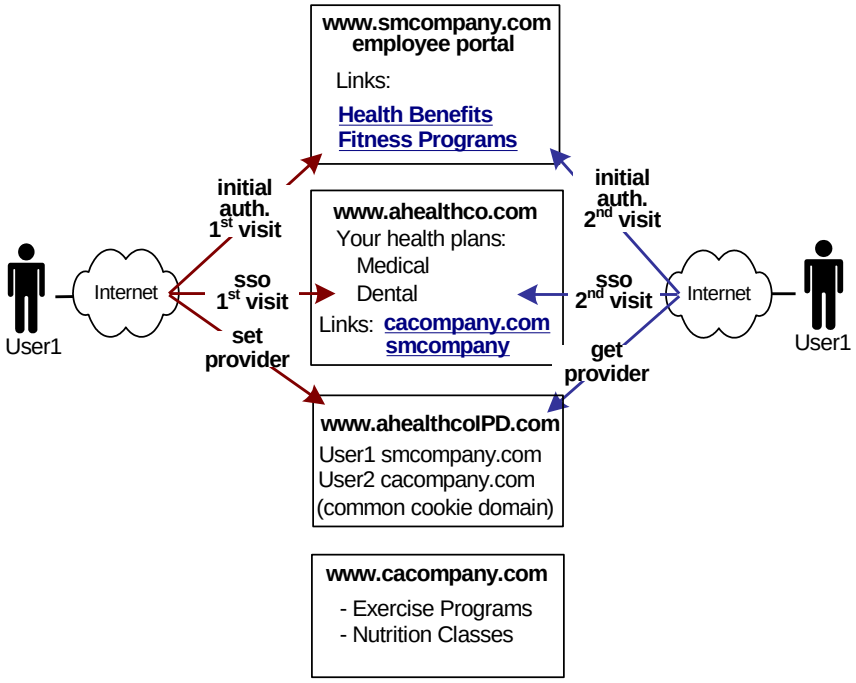
In Use Case 6, an employee of smcompany.com authenticates at an employee portal, www.smcompany.com, and selects a link to view her health benefits at www.ahealthco.com. The employee is taken to ahealthco.com's Web site and presented with her health benefit information without having to sign on to ahealthco.com's Web site.

After the employee has finished looking at her health benefits, ahealthco.com wants to ensure that when the employee logs out from ahealthco.com, the user's session at ahealthco.com and the session at smcompany.com is terminated. Terminating both sessions ensures that an unauthorized employee cannot use the existing sessions to access resources at smcompany.com or to view benefits of the authorized employee.

Use Case 7: Identity Provider Discovery Profile

In Use Case 7, several companies, such as smcompany.com contract health benefits from ahealthco.com. Ahealthco.com wants to determine which company users are coming from so it can send the user back to the correct company to log on.

The following illustration shows a network where Identity Provider Discovery Profile is used.



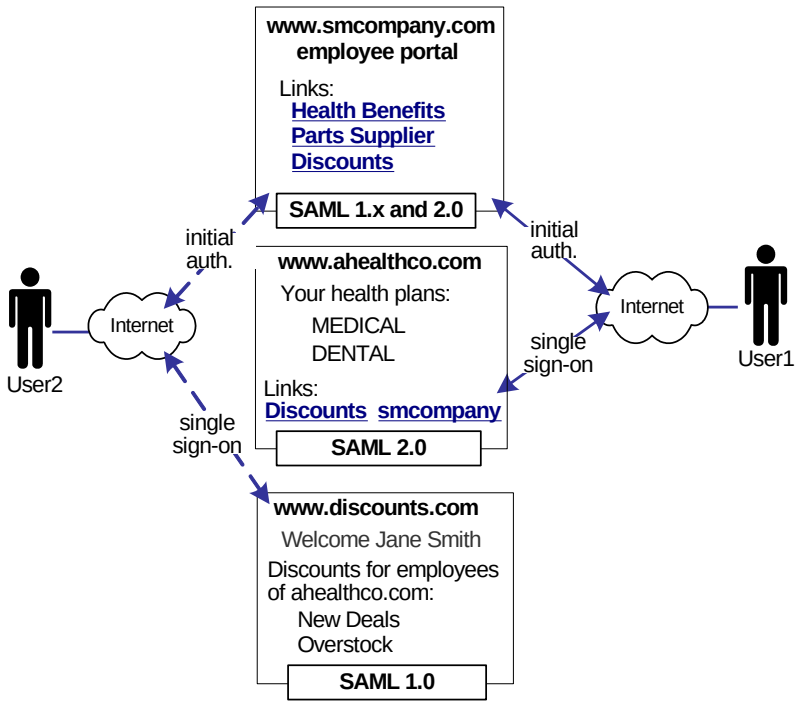
When a user arrives at ahealthco.com, this health provider wants to determine which site to send the user so the user can log on. For User1, smcompany.com is the company where this user logs on, smcompany.com is set in the common domain cookie. For another user, cacompany.com is another Identity Provider at which a user can authenticate and then cacompany.com will be set in the common domain cookie at ahealthco.com.

A prior business agreement between the sites in this network a has been established so that all sites in the network interact with the Identity Provider Discovery service.

Use Case 8: Multi-protocol Support

In Use Case 8, smcompany.com issues assertions for ahealthco.com and discounts.com. Ahealthco.com uses SAML 2.0 for User1 to communicate between smcompany.com and ahealthco.com. Discounts.com uses SAML 1.0 for User2 to communicate between smcompany.com and discounts.com. The assertions must be suitable for the particular protocol used by the SP consuming the assertion.

The following illustration shows the multiprotocol use case.

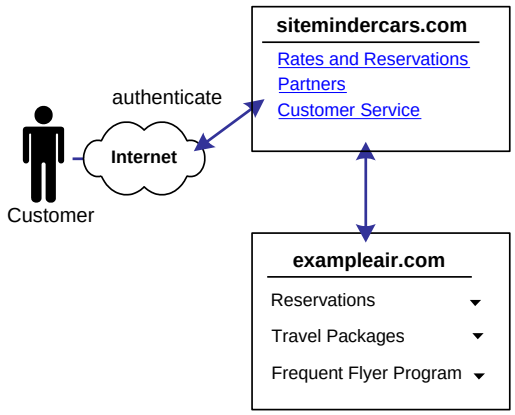


Use Case 9: SAML 2.0 User Authorization Based on a User Attribute

In Use Case 9, sitemindercars.com is a car rental service.

A customer of sitemindercars.com logs in and authenticates at www.sitemindercars.com, then clicks a link to get a quote for a car rental. The customer has a customer profile at this site that includes the customer's frequent flyer number with exampleair.com. The customer's frequent flyer miles determine a certain status level at sitemindercars.com, which offers the customer discounts on car rentals.

The following illustration shows this use case.



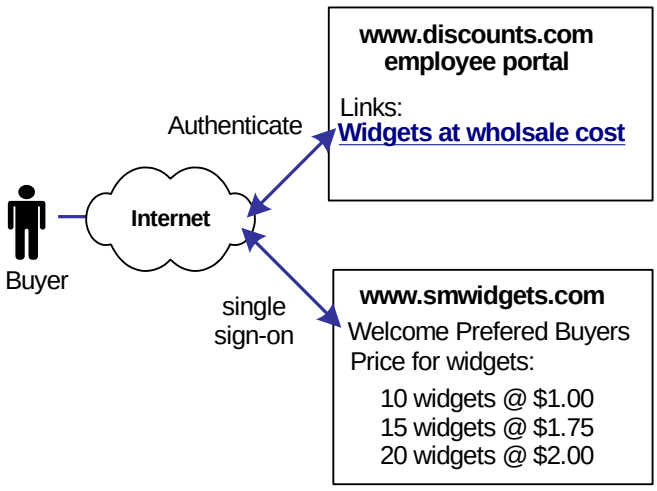
SiteMindercars.com wants to authorize its customers and present the appropriate discount information based on the customer's frequent flyer number instead of requiring the customer to sign-on and authenticate at exampleair.com.

Use Case 10: SAML 2.0 Single Sign-on with No Name ID at the IdP

In Use Case 10, discounts.com purchases widgets from smwidgets.com.

A buyer for discounts.com clicks on a link to access the latest price list on widgets at smwidgets.com. The buyer is taken to smwidgets.com's Web site and presented with the price list without having to sign on to discounts.com's Web site.

The following illustration shows this use case.



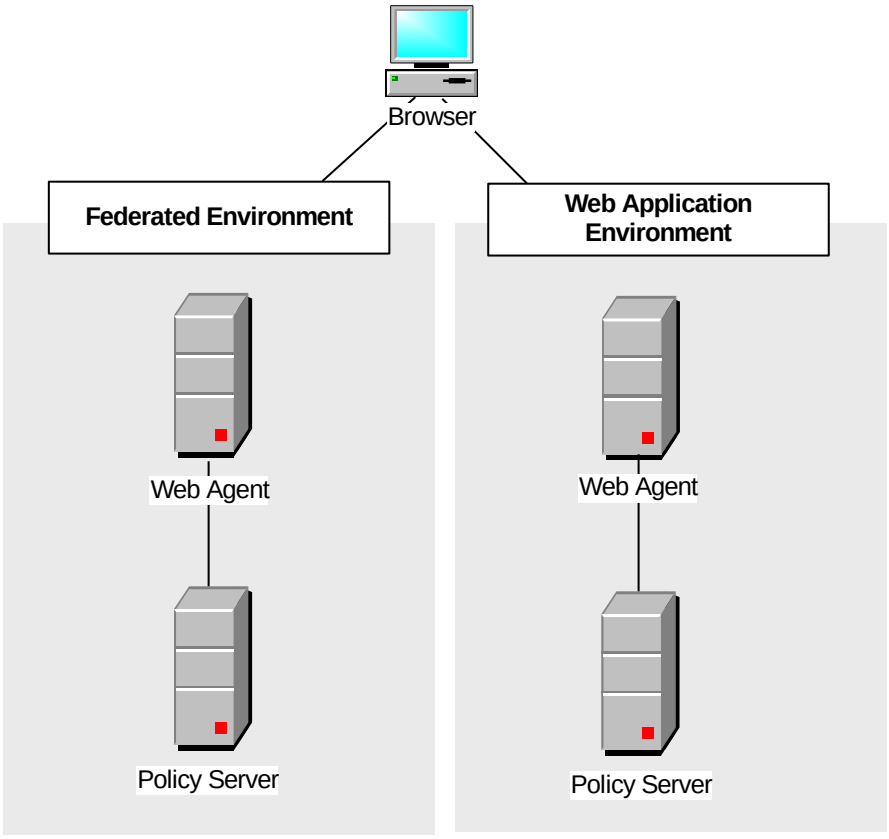
Discounts.com requests access to a price list at smwidgets.com. There is no federated user identity stored at discounts.com for its buyers or at smwidgets.com. When a request from discounts.com is sent to smwidgets.com, this entity creates an identity for the buyer that it sends back in a secure manner to discounts.com. Discounts.com uses this identity to authenticate the user and allow the buyer access to the requested resource.

Use Case 11: SAML Artifact SSO Using Security Zones

In use case 11, CompanyA, the producer site, wants to protect Web Agent applications and federated partner resources. The protocols that CompanyA uses for federated single sign-on are the SAML 2.0 artifact profile and SAML 2.0 single logoff.

For the federated resources, a persistent user session is required because the SAML artifact profile stores assertions in the session store at the producer-side Policy Server. Consequently, calls must be made to the session store to retrieve the assertion, impacting performance.

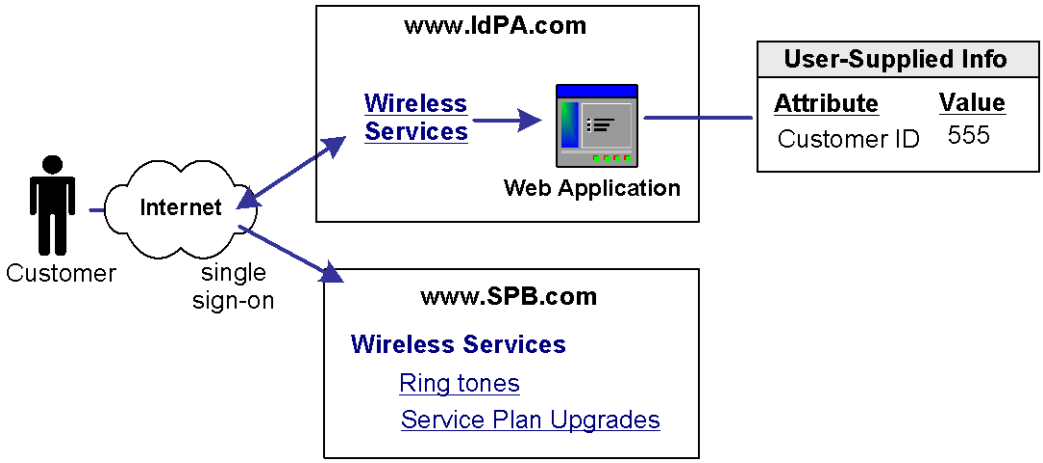
The following figure shows a producer site that combines a federated environment and a web application environment.



Use Case 12: SSO Using Attributes from a Web Application

In use case 12, an Identity Provider, IdPA.com, wants to include attributes in an assertion that are from a Web application. For this use case, single sign-on can be initiated at the Identity Provider or the Service Provider. The protocols IdPA.com uses is SAML 2.0 (POST and Artifact) and WS-Federation.

The following figure shows an example of attributes gathered from a Web application and used for single sign-on.



IdP-initiated Single Sign-on with Web Application Attributes

IdPA.com has created a Web application for access to protected resources at its business partner SPB.com. When the customer logs in at IdPA.com, they click on a link for the business partner and they are sent to the Web application, where they are prompted to enter a customer ID. This information needs to be sent to SPB.com so that the customer is permitted access to the appropriate services.

SP-initiated Single Sign-on with Web Application Attributes

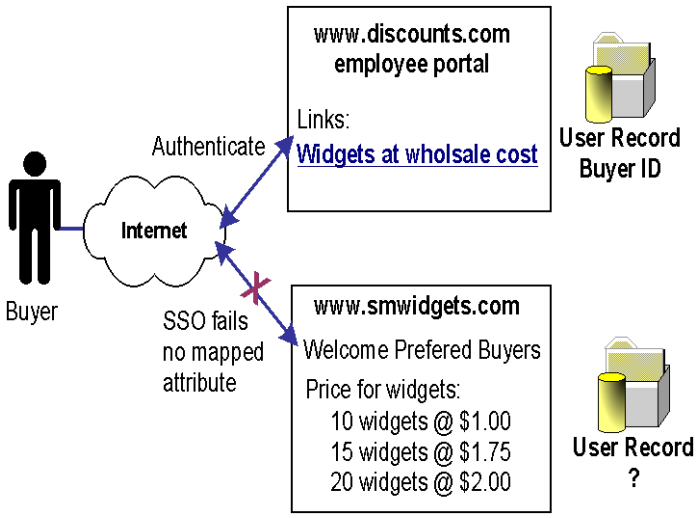
A customer has clicked on a link at SPB.com, the Service Provider. This link is for protected resources, so he is redirected to IdpA.com to be authenticated. After the user successfully authenticates at IdPA.com, he is redirected to the Web application where he provides specific user information. Upon submitting the information, the customer is sent back to SPB.com to complete single sign-on for the requested resource.

Use Case 13: SSO with Dynamic Account Linking at the SP

In Use Case 13, the IdP, discounts.com, includes an attribute called buyerID that identifies a particular user and is included in an assertion. When the assertion is sent to the Service Provider, smwidgets.com, the same attribute does not exist in the user's record at the Service Provider. The attribute needs to be created in the user's record so that the user can authenticate and gain access to the protected resource.

An employee of discounts.com clicks on a link to access the latest price list on widgets at smwidgets.com. The employee logs in with his name and buyer ID.

The following illustration shows this use case.



The identity based on the user's buyer ID is created at discounts.com and placed in the assertion. The buyer ID value is entered as the NameID in the assertion. However, there is no mapped identity at smwidgets.com for the buyer ID so a mapping has to be established using dynamic account linking so that smwidgets can authenticate the employee and allow access to the price list.

Federation Security Services Concepts

Before implementing SiteMinder Federation Security Services, you may find it helpful to have a understanding of some basic security concepts, such as different SAML protocol versions, WS-Federation, entities within a federated network, and user mapping.

Security Assertion Markup Language (SAML)

The Security Assertion Markup Language (SAML) is a standard developed by the Organization for the Advancement of Structured Information Standards (OASIS). It is an industry standard that defines an XML framework for exchanging authentication and authorization information.

SAML defines assertions as a means to pass security information about users between entities. SAML assertions are XML documents that contain information about a specific subject, such as a user. An assertion can contain several different internal statements about authentication, authorization, and attributes.

SAML defines two browser-based protocols that specify how SAML assertions are passed between partners to facilitate single sign-on.

The profiles are:

- Browser/artifact profile—defines a SAML artifact as a reference to a SAML assertion.
- Browser/POST profile—returns a response that contains an assertion

Note: For SAML 2.0, the artifact and POST profiles are referred to as HTTP bindings.

For SAML specifications and background documentation as well as information on SAML profiles, go to site for the Organization for the Advancement of Structured Information Standards (Oasis).

WS-Federation

Active Directory Federation Services (ADFS) is Micorsoft's Web Services-based solution for federation and single sign-on (SSO). ADFS runs on Windows Server 2003 R2 and accomplishes SSO by letting partners securely share a user's identity information and access rights across a secure network.

ADFS extends SSO functionality to Internet applications, letting users have a seamless Web SSO interaction when they access the organization’s Web-based applications.

ADFS uses the following specifications:

- Web Services Federation (WS-Federation)
- WS-Federation Passive Requestor Profile (WS-F PRP)
- WS-Federation Passive Requestor Interoperability Profile

For WS specifications and background documentation as well as information on ADFS profiles, go to the Microsoft web site.

Entities in a Federated Network

In a federated network, there is an entity that generates SAML assertions. Assertions contain information about a user whose identity is maintained locally at the site that generates them. There is another entity that uses the SAML assertions to authenticate a user and to establish a session for the user.

Depending on the protocol, these two entities are named differently, but the functions they serve are the same.

Protocol	Generates Assertions	Consumes Assertions
SAML 1.x	Producer	Consumer
SAML 2.0	Identity Provider (IdP)	Service Provider (SP)
WS-Federation	Account Partner (AP)	Resource Partner (RP)

A site may be both a producing authority (producer/IdP/AP) and a consuming authority (consumer/SP/RP).

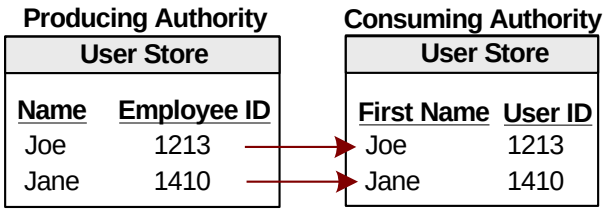
User Mapping

User mapping is the ability to establish a relationship between a user identity at one business and a user identity at another business. This relationship is established by mapping remote users at a producing authority to local users at a consuming authority.

There are two types of mapping:

- One-to-one mapping maps a unique remote user directory entry at the producing authority to a unique user entry at the consuming authority.

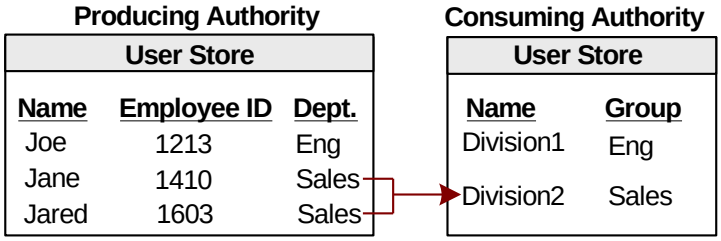
  One-to-one mapping is often referred to as account linking, as it links an account at a producing authority site to an account at a consuming authority, as shown in the following illustration:



- N-to-one mapping maps a group of remote user directory entries to a single local profile entry.

  N-to-one mapping allows several user records at a producing authority to be mapped to one user record or profile at a consuming authority. An administrator at the consuming authority can use this type of mapping to define access control for a group of remote users, without having to maintain a record for each remote user.

  The following illustration shows n-to-one mapping:



Federated Single Sign-on with Security Zones

A SiteMinder environment can be set up to include a Web application environment for web service protection and a federation environment for federated resource protection. This method can make a SiteMinder deployment more efficient.

Certain Federation Security Services features require a persistent user session because the SAML assertion must be stored in the session store at the Policy Server.

These features include:

- Artifact Single sign-on - For SAML 1.x and SAML 2.0, the SAML assertion is stored in a persistent session that is later retrieved by the consuming site.
- Federated Logout - For SAML 2.0 Single Logout and WS-Fed Signout at producer and consumer sites. Partner data is stored in a persistent user session to facilitate notification of partners during a federated logout.

Use of persistent user sessions can slow down performance because of the calls to the session store to retrieve assertions or handle log-off requests. However, security zones can eliminate the need for a persistent user session for requested producer-side applications protected by a Web Agent. A security zone is a segment of a single cookie domain, used as a method of partitioning applications to permit different security requirements for resource access. All applications in a single zone permit single sign-on to one another. If an application is in another zone, single sign-on is determined by the configured trust relationship.

Security zones are a part of SiteMinder's single sign-on feature and are implemented by SiteMinder Web Agents.

Note: In a federated environment, you can only configure Web Agents and SAML Affiliate Agents to use security zones. Secure Proxy Agents and Application Server Agents do not support this feature.

To configure security zones, you enter values for the following Web Agent parameters:

- SSOZoneName--identifies a single sign-on security zone. The zone name gets added to the cookie domain name so you know which are associated with which domains.
- SSOTrustedZone--ordered list of trusted security zone names. When you define zones and trusted zone lists, it determines the cookies that the Web Agent is able to read and/or write.

These parameters are part of an Agent Configuration Object or a local Agent configuration file.

To find more information about security zones, see the *SiteMinder Web Agent Configuration Guide*.

Benefits of SiteMinder Federation Security Services

SiteMinder Federation Security Services supports:

- Secure profile sharing—The ability to exchange user profile information with partners in a secure manner.
- Flexible attribute sharing--You control which user attributes to share with which partners.
- Flexible user mapping—The ability to establish a one-to-one or n-to-one relationship between remote producer/IdP and local consumer/SP user accounts.
- Cross-domain single sign-on—A user session can be established in a different domain from the domain where the user was initially authenticated without requiring the user to sign on multiple times. Additionally, for SAML 2.0, single sign-on can be supported in a multi-SAML protocol cross-domain environment.
- Enhanced Client or Proxy profile (ECP) for single sign-on (SAML 2.0)--The ECP profile determines how an enhanced client (browser or user agent) or HTTP proxy wireless access protocol (WAP) gateway can communicate with a Service Provider and an Identity Provider. An ECP knows how to contact the appropriate Identity Provider associated with a user, allowing a Service Provider to make an authentication request without knowledge of the Identity Provider.
- Cross-domain single logout/signout--A user session can be terminated across different domains, regardless of whether the logout was initiated at the producing authority or the consuming authority.
- Identity Provider Discovery Profile (SAML 2.0)--You control which Identity Provider a user relies on for obtaining an assertion by using the SiteMinder Identity Provider Discovery Service, which stores Identity Provider information in a common domain cookie.
- Policy-based access control--Once a user session is established based on user information received from a partner, all the power of SiteMinder is available to control access to resources through a centralized policy administration model.

- Rich session models (SAML Affiliate Agent only)--If the SAML Affiliate Agent is acting as the consumer, you can configure separate portal and affiliate sessions, a single session at the portal, or a shared session that provides single sign-on as well as single sign-off. The SAML Affiliate Agent only supports SAML 1.0.

  Note: These session models are not applicable if the SAML credential collector is the consumer.

- Notifications (SAML Affiliate Agent only)--If the SAML Affiliate Agent is acting as the consumer, it can notify the SAML producer when the user accesses specific resources at the affiliate site.

- Interoperability through the use of open standards--Standards facilitate interoperability across heterogeneous environments. SiteMinder Federation Security Services supports the following standards:

  - SAML, to provide the structure for sharing security data
    - HTTP, for communication between Web browsers and servers
    - SSL, for encrypting security data passed between partners
    - SOAP, to provide an envelope for the SAML messages exchanged between a producer and consumer
  - Policy-based model--All these benefits are provided using a policy-based model that does not require any code to be written.

SiteMinder Components for Federation Security Services

SiteMinder's Federation Security Services solution encompasses several components:

- SAML Assertion Generator--A Policy Server component that creates SAML assertions at a producer site.
- WS-Federation Assertion Generator--A Policy Server component that creates WS-Federation RequestSecurityTokenResponse messages containing SAML assertions.
- SAML and WS-Federation Authentication Schemes--A Policy Server component that validates SAML or WS-Federation assertions and maps assertion data to a local user at a site that consumes assertions. The supported authentication schemes are: SAML 1.x artifact, SAML 1.x POST, and SAML 2.0 (artifact and POST binding), and WS-Federation.

- Federation Web Services—A Web Agent component that supports assertion retrieval, session synchronization and notification alerts at a producing authority site, as well as collecting assertions at a consuming authority site.
- SAML Affiliate Agent—A stand-alone component that provides authentication and session management capabilities to a consumer site that does not use a SiteMinder Policy Server and Web Agent. This Agent only supports SAML 1.0.

  Note: When the SAML Affiliate Agent is the consumer, the Web Agent provides access to the SAML assertion generator.

SAML Assertion Generator

The SAML assertion generator creates an assertion for a user who has a session at a producer/IdP site. When a request for a SAML assertion is made, the Web Agent invokes the SAML assertion generator, which creates an assertion based on the user session and information configured in the policy store.

The assertion is then handled according to the authentication profile or binding configured, as follows:

- SAML artifact profile/binding--assertion is placed in the SiteMinder session server and a reference to the assertion is returned to the Web Agent in the form of a SAML artifact.
- SAML POST profile/binding--assertion is returned via the user's browser as a SAML response embedded in a HTTP form.

The Web Agent is responsible for sending the SAML artifact, SAML response, or WS-Federation security token response message to the site that will consume the assertion accordance with the SAML profile or binding. At the consumer/SP site, a client, such as the SAML Affiliate Agent, the SAML 1.x credential collector or the SAML 2.0 assertion consumer, must be available to process the SAML artifact or response message.

You can customize the content of the SAML assertion generated by the assertion generator by configuring the assertion generator plug-in. This plug-in lets you customize the content for your federated environment.

The assertion generator is installed by the Policy Server. After installing the Policy Server, the administrator can use the FSS Administrative UI to define and configure affiliates.

WS-Federation Assertion Generator

The WS-Federation assertion generator creates a SAML 1.1 assertion for a user who has a session at an Account Partner. When a user requests a resource, the Web Agent invokes the WS-Federation assertion generator at the Policy Server, which creates an assertion based on the user session and information configured in the policy store. The assertion generator then places the assertion in a WS-Federation RequestSecurityTokenResponse message.

The Web Agent is responsible for sending the WS-Federation security token response message, via a user's browser, to the site that consumes the assertion in accordance with the WS-Federation Passive Requestor profile. At the Resource Partner, a client, such as WS-Federation Assertion Consumer must be available to process the assertion.

You can customize the content of the SAML assertion generated by the assertion generator by configuring the assertion generator plug-in. This plug-in lets you customize the content for your federated environment.

The assertion generator is installed by the Policy Server. After installing the Policy Server, the Account Partner administrator can use the FSS Administrative UI to define and configure affiliates.

SAML and WS-Federation Authentication Schemes

SiteMinder supports the following authentication schemes:

- SAML 1.x artifact
- SAML 1.x POST
- SAML 2.0
- WS-Federation

Each authentication scheme enables a SiteMinder site to consume SAML assertions. Upon receiving an assertion, the authentication scheme validates the SAML assertion, maps assertion data to a local user, and establishes a SiteMinder session at the site consuming the assertion.

One of the critical features of the SAML authentication schemes is to map remote users at a producing authority to local users at the consuming authority. The mapping is defined as part of the authentication scheme configuration. User mapping information enables the authentication scheme to locate the correct user record for authentication.

The SAML and WS-Federation authentication schemes are installed by the Policy Server. After installation, the administrator can use the FSS Administrative UI to define and configure these schemes and use them to protect specific resources.

Customizing SAML 2.0 Assertion Responses

You can implement your own business logic in addition to the standard SAML authentication processing using the Message Consumer Plug-in. This plug-in lets you further manipulate a SAML 2.0 assertion response, which is part of the SAML 2.0 authentication processing.

The Message Consumer Plug-in is SiteMinder's Java program that implements the SAML 2.0 Message Consumer Extension API. The plug-in can be integrated using settings provided by the SAML 2.0 authentication scheme.

Federation Web Services

The Federation Web Services (FWS) application is installed with the Web Agent Option Pack on a server that has a connection to a SiteMinder Policy Server. The Federation Web Services and the SiteMinder Web Agent support the following protocols:

- SAML browser artifact protocol
- SAML POST profile protocol
- WS-Federation Passive Requestor profile protocol

SAML Browser Artifact Protocol

For the SAML browser artifact protocol, the Federation Web Services application includes the following services:

- Assertion Retrieval Service (SAML 1.x)--A producer site component. This service handles a SAML request for the assertion that corresponds to a SAML artifact by retrieving the assertion from the SiteMinder session server. The assertion retrieval request and response behavior is defined by the SAML specification.

  Note: The assertion retrieval service is used only by the SAML artifact profile, not by the SAML POST profile.

- Session Synchronization (SAML 1.x)--A producer site component that validates and terminates sessions for the SAML Affiliate Agent (A SiteMinder value-added service, supported by a standards-based SOAP RPC mechanism)

- Notification Alert (SAML 1.x)--A producer site component that logs resource access notification events for the SAML Affiliate Agent (A SiteMinder value-added service, supported by a standards-based SOAP RPC mechanism)
- SAML Credential Collector (SAML 1.x)--A consumer site component that receives a SAML artifact or an HTTP form with an embedded SAML response and obtains the corresponding SAML assertion. The credential collector issues SiteMinder cookies to a user's browser.
- Intersite Transfer Service (SAML 1.x)--For SAML POST profile, a producer site component that transfers a user from the producer site to a consumer site. For SAML artifact profile, the same function is performed by the Web Agent, which acts as the Intersite Transfer Service.

SAML POST Profile Protocol

For SAML POST Profile protocol, the Federation Web Services application includes the following services:

- Artifact Resolution Service (SAML 2.0)--An Identity Provider-side service that corresponds to the SAML 2.0 authentication using the HTTP-artifact binding. This service retrieves the assertion stored in the SiteMinder session server at the Identity Provider. This is a SiteMinder-specific service.

  Note: The artifact resolution service is used only by the HTTP-artifact binding.

- Assertion Consumer Service (SAML 2.0)--A Service Provider component that receives a SAML artifact or an HTTP form with an embedded SAML response and obtains the corresponding SAML assertion. The Assertion Consumer Service issues SiteMinder cookies to a user's browser.

  Note: The Assertion Consumer Service will accept an AuthnRequest with an AssertionConsumerServiceIndex value of 0. All other values for this setting will be denied.

- AuthnRequest Service (SAML 2.0)--This service, a SiteMinder-specific service, is a servlet deployed as part of the Federation Web Services application for SAML 2.0. It implements processing for a Service Provider to generate an <AuthnRequest> message to authenticate a user for cross-domain single sign-on. This message contains information that enables the Federation Web Services application to redirect the user's browser to the single sign-on service at the Identity Provider. The AuthnRequest service is used for single sign-on using the POST or artifact binding.

  Note: The format of the AuthnRequest message issued by this service is specified in the *Profiles for the OASIS Security Assertion Markup Language (SAML) V2.0*.

- Single Sign-on Service (SAML 2.0)--This service implements processing for an Identity Provider to process an AuthnRequest message and gather the necessary SP configuration information to authenticate the user, redirect the user to the Web Agent to authenticate, and invokes the assertion generator to obtain an assertion that is passed back to the Service Provider.
- Single Logout Service (SAML 2.0)--This service implements processing of single logout functionality, which can be initiated by an Identity Provider or a Service Provider.
- Identity Provider Discovery Service -- implements SAML 2.0 Identity Provider Discovery Profile and sets and retrieves the common domain cookie. An IdP requests to set the common domain cookie after authenticating a principal. An SP requests to obtain the common domain cookie to discover which Identity Provider a principal is using.

WS-Federation Passive Requestor Profile Protocol

For WS-Federation Passive Requestor profile protocol, the Federation Web Services application includes the following services:

- Security Token Consumer Service--a Resource Partner component that receives a security token and extracts the corresponding SAML assertion. The Security Token Consumer Service issues SiteMinder cookies to a user's browser.
- Single Sign-on Service--Enables processing for an Account Partner to process a wsignin WS-Federation message and gather the necessary Resource Partner configuration information to authenticate the user, redirect the user to the Web Agent to authenticate, and invokes the assertion generator to obtain an assertion that is passed back to the Resource Partner.
- Signout Service--Implements processing of single logout functionality by way of a signout servlet. Signout can be initiated by an Account Partner or a Resource Partner.

SAML Affiliate Agent

The SAML Affiliate Agent enables businesses using the SiteMinder Policy Server and Web Agent to act as a main portal and share security and customer profile information with affiliated partners. The affiliated partners use only the SAML Affiliate Agent.

Note: The SAML Affiliate Agent only supports SAML 1.0 and it is not FIPS-compatible.

The SAML Affiliate Agent is a stand-alone component that provides single sign-on and session management capabilities to a consumer site that does not use the SiteMinder Policy Server and Web Agent. The consumer site, or affiliate, does not maintain identities for users at the producer, or portal, site. The affiliate site can determine that the user has been registered at the portal site, and optionally, that the user has an active SiteMinder session at the portal site. Based on affiliate policies configured at the portal, information can be passed to the affiliate and set as cookies or header variables for the affiliate web server.

For complete information about the SAML Affiliate Agent, see the *SiteMinder SAML Affiliate Agent Guide*.

Secure Proxy Server Federation Gateway

The SiteMinder Secure Proxy Server (SPS) federation gateway offers a proxy-based solution to access control in a federated network. Unlike a traditional proxy, which typically serves a group of users requesting Internet resources, the SPS federation gateway is a reverse proxy, meaning it acts on behalf of users requesting resources from an enterprise.

The SPS federation gateway is a self-contained system; it has its own servlet engine and web server built in to the system and relies on its proxy engine to handle access requests from federated partners to protected resources. Enhancing SPS to work as a federation gateway allows quick deployments.

As a component of SiteMinder federation security services, the SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the services of the Federation Web Services application. A single SPS federation gateway can limit the amount of configuration required for access to resources by limiting the need for many Web Agents.

Note: The Secure Proxy Server is an separately-licensed product from SiteMinder.

More information:

Federation Web Services (see page 40)

Debugging Features

The Federation Security Services components log specific events to monitor and debug activity across the federated network.

- Web Agent log--Logs information about any request to generate a SAML assertion at a producer site
- Federation Web Services log--Logs information about requests to retrieve SAML assertions, consume SAML assertions, as well as session synchronization and notification events from the SAML Affiliate Agent
- Policy Server log--Logs the results of calls from the SAML assertion generator and SAML artifact authentication scheme. Also logs Policy Server trace messages that you configure using the Policy Server Management Profiler or using one of the provided profiler template files.
- Web Agent Option Pack logs--Logs FWS trace messages that you configure using the FWSTrace.conf file or using one of the provided trace template files.
- SAML Affiliate Agent logs--Logs information about activities at a consumer site protected by the SAML Affiliate Agent.

APIs for Federation Security Services

There are several APIs that provide support for Federation Security Services.

- Policy Management API
- Java Message Consumer Plugin API
- Java Assertion Generator Plugin API

Policy Management API

The C and Perl Policy Management APIs provide new language elements in support of Federation Security Services. These include:

- C structures and Perl packages for Federation Security Services objects such as Affiliates, Service Providers, Resource/Account Partners, and Affiliate Domains. These objects are required to generate SAML assertions.
- C functions and Perl methods for SAML 1.x, SAML 2.0, and WS-Federation configuration.
- SAML 2.0 metadata constants.
- WS-Federation metadata constants.

For more information about the Policy Management API, see *the SiteMinder Scripting Guide for Perl* or the *SiteMinder Programming Guide for C*.

Java Message Consumer Plugin API

The SiteMinder Java MessageConsumerPlugin API implements the SAML 1.x, SAML 2.0 and WS-Federation Message Consumer Extension interface. This API allows you to perform your own processing for user disambiguation and authentication. After you customize code for your own requirements, you can integrate the custom plug-in into SiteMinder to further process and manipulate the SAML 2.0 assertion response or the WS-Federation security token response.

For more information, see the *SiteMinder Programming Guide for Java*.

Java Assertion Generator Plugin API

The SiteMinder Java Assertion Generator Plugin API implements the Assertion Generator Framework. Using the plug-in, you can modify the assertion content for your business agreements between partners and vendors.

For more information, see the *SiteMinder Programming Guide for Java*.

Internationalization in Federation Security Services

Federation Security Services supports the following features for I18N internationalization:

- Federation Security Services configuration objects, Java and C++ code are encoded in UTF-8 format for the internationalization purposes.
- SiteMinder supports the creation and consumption of default and customized SAML 1.x, SAML 2.0, and WS-Federation assertions with multibyte user ids and attribute values.
- All target and redirect URLs are encoded per HTTP 1.1 RFC 2616 so multibyte path and file names are handled correctly.

If assertions will contain multibyte characters, you need to set your operating system's LANG setting to UTF-8 format, as follows:.

LANG=xx_xx.UTF-8

For example, for Japanese, the entry would be:

LANG=ja_JP.UTF-8

SAML Profiles Supported by SiteMinder

SiteMinder's Federation Security Services supports the following SAML standards and profiles:

- SAML 1.0 Artifact profile only
- SAML 1.1 Artifact and POST profile
- SAML 2.0 Artifact and POST profile

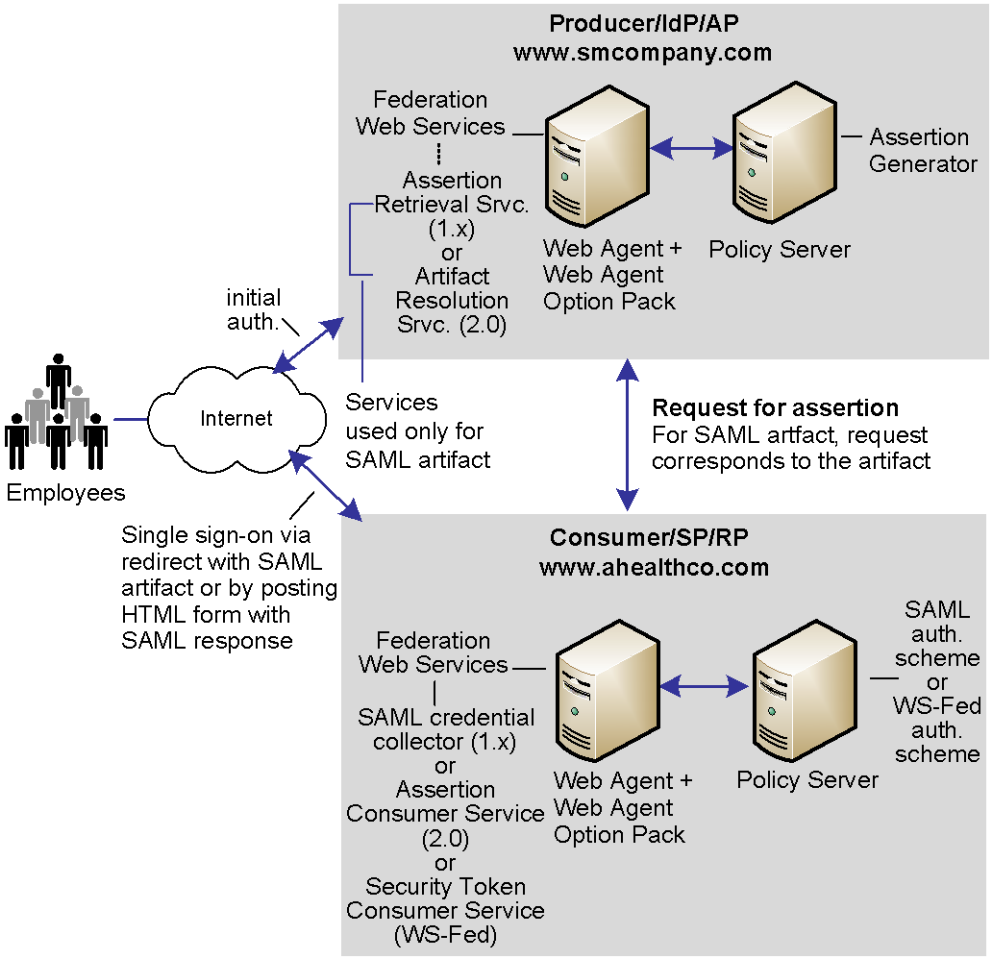
Solutions for Federation Use Cases

SiteMinder Federation Security Services components work together to take advantage of the growth of e-business networks and offer enhanced services to employees, customers and suppliers.

SiteMinder offers solutions on how these components solve the use cases in this guide.

Solution 1: Single Sign-on based on Account Linking

Solution 1 illustrates how Federation Security Services can be deployed at smcompany.com and ahealthco.com to solve Use Case 1: Single Sign-on Based on Account Linking (see page 20).



SiteMinder is deployed at both sites. The Web Agent with the Web Agent Option Pack are installed on a Web server machine and the Policy Server is installed on another machine. The installations are the same for both smcompany.com and ahealthco.com.

Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

Solution 1 Using SAML 1.x Artifact Authentication

In this example, smcompany.com is acting as the producer site. When an employee of smcompany.com accesses an employee portal at www.smcompany.com, the sequence of events is as follows:

1. The Web Agent provides the initial authentication.
2. When the employee clicks a link at smcompany.com to view her health benefits at ahealthco.com, the link makes a request to the Intersite Transfer Service at www.smcompany.com.
3. The Intersite Transfer Service calls the assertion generator, which creates a SAML assertion, inserts the assertion into the SiteMinder session server, and returns a SAML artifact.
4. The Web Agent redirects the user to www.ahealthco.com with the SAML artifact, in accordance with the SAML browser artifact protocol.

Ahealthco.com is acting as the consumer site. The redirect request with the SAML artifact is handled by the SAML credential collector service that is part of the Federation Web Services at ahealthco.com.

The sequence of events is as follows:

1. The SAML credential collector calls the SAML artifact authentication scheme to obtain the location of the assertion retrieval service at smcompany.com.
2. The SAML credential collector calls the assertion retrieval service at www.smcompany.com.
3. The assertion retrieval service at www.smcompany.com retrieves the assertion from the SiteMinder session server and returns it to the SAML credential collector at ahealthco.com.
4. The SAML credential collector then passes the assertion to the SAML artifact authentication scheme for validation and session creation and proceeds to issue a SiteMinder session cookie to the user's browser.
5. At this point the user is allowed access to resources at ahealthco.com based on policies defined at the Policy Server at ahealthco.com and enforced by the Web Agent at ahealthco.com.

In this example, the administrator at smcompany.com uses the Policy Server User Interface to configure an affiliate for ahealthco.com. The affiliate is configured with an attribute that is a unique ID for the user. This causes the assertion generator to include that attribute as part of the user profile in a SAML assertion created for ahealthco.com.

The administrator at ahealthco.com uses the FSS Administrative UI to configure a SAML artifact authentication scheme for smcompany.com. The authentication scheme specifies the location of the assertion retriever service at smcompany.com, how to extract the unique user ID from the SAML assertion, and how to search the user directory at ahealthco.com for the user record that matches the value extracted from the assertion.

Solution 1 Using SAML 1.x POST Profile

In this example, smcompany.com is acting as the producer site. When an employee of smcompany.com accesses an employee portal at www.smcompany.com, the sequence of events is as follows:

1. The Web Agent provides the initial authentication.
2. When the employee clicks a link at www.smcompany.com to view her health benefits at ahealthco.com, the link makes a request to the Intersite Transfer Service at www.smcompany.com.
3. The Intersite Transfer Service calls the assertion generator, which creates a SAML assertion and signs the SAML response.
4. The signed response is then placed in an auto-POST HTML form and sent to the user's browser.
5. The browser automatically POSTs a form to the Assertion Consumer URL (which is the SAML credential collector), at ahealthco.com. The form contains a SAML response as a form variable.

Ahealthco.com is acting as the consumer site. The redirect request with the SAML response is handled by the SAML credential collector service that is part of the Federation Web Services at ahealthco.com.

The sequence of events is as follows:

1. The SAML credential collector calls for the requested target resource at ahealthco.com, which is protected by the SAML POST profile authentication scheme.
2. Because the SAML POST profile scheme is protecting the resource, the SAML credential collector decodes the SAML response message.
3. Using the digitally signed SAML response message as credentials, the SAML credential collector calls the Policy Server at ahealthco.com.
4. The Policy Server verifies the signature and then authenticates the user using the SAML assertion embedded in the decoded SAML response message. Based on the assertion, the Policy Server lets the user log in.

5. After logging in, the SAML credential collector creates an SMSESSION cookie, places it in the user's browser, and redirects the user to the target resource at ahealthco.com.
6. At this point the user is allowed access to resources at ahealthco.com based on policies defined at the Policy Server and enforced by the Web Agent at ahealthco.com.

In this example, the administrator at smcompany.com uses the Policy Server User Interface to configure an affiliate object for ahealthco.com. The affiliate is configured with an attribute that is a unique ID for the user. This causes the assertion generator to include that attribute as part of the user profile in a SAML assertion created for ahealthco.com.

The administrator at ahealthco.com uses the FSS Administrative UI to configure a SAML POST profile authentication scheme for smcompany.com. The authentication scheme specifies how to extract the unique user ID from the SAML assertion, and how to search the user directory at ahealthco.com for the user record that matches the value extracted from the assertion.

Solution 1 Using SAML 2.0 Artifact Authentication

In this example, smcompany.com is acting as the Identity Provider. When an employee of smcompany.com accesses an employee portal at www.smcompany.com, the sequence of events is as follows:

1. The Web Agent provides the initial authentication. When the user clicks a link at the Identity Provider, this is referred to as an unsolicited response at the Identity Provider.
2. When the employee clicks a link at www.smcompany.com to view her health benefits at ahealthco.com, the link makes a request to the Single Sign-on Service at www.smcompany.com.
3. The single sign-on service calls the assertion generator, which creates a SAML assertion, inserts the assertion into the SiteMinder session server, and returns a SAML artifact.
4. The Web Agent redirects the user to ahealthco.com with the SAML artifact, in accordance with the SAML browser artifact protocol.

Ahealthco.com is acting as the Service Provider. The redirect request with the SAML artifact is handled by the Assertion Consumer Service that is part of the Federation Web Services at ahealthco.com.

The sequence of events is as follows:

1. The Assertion Consumer Service calls the SAML 2.0 authentication scheme with HTTP-artifact binding to obtain the location of the artifact resolution service at smcompany.com.
2. The Assertion Consumer Service calls the artifact resolution service at www.smcompany.com.
3. The artifact resolution service at www.smcompany.com retrieves the assertion from the SiteMinder session server at smcompany.com and returns it to the artifact resolution service at ahealthco.com.
4. The Assertion Consumer Service then passes the assertion to the SAML 2.0 authentication scheme for validation and session creation and proceeds to issue a SiteMinder session cookie to the user's browser.
5. At this point, the user is allowed access to resources at ahealthco.com based on policies defined at the Policy Server at ahealthco.com and enforced by the Web Agent at ahealthco.com.

In this example, the administrator at smcompany.com uses the Policy Server User Interface to configure a Service Provider object for ahealthco.com. The Service Provider is configured with an attribute that is a unique ID for the user. This causes the assertion generator to include that attribute as part of the user profile in a SAML assertion created for ahealthco.com.

The administrator at ahealthco.com uses the FSS Administrative UI to configure a SAML 2.0 authentication scheme that uses the artifact binding for smcompany.com. The authentication scheme specifies the location of the artifact resolution service at smcompany.com, how to extract the unique user ID from the SAML assertion, and how to search the user directory at ahealthco.com for the user record that matches the value extracted from the assertion.

Solution 1 Using SAML 2.0 POST Binding

In this example, smcompany.com is acting as the Identity Provider. When an employee of smcompany.com accesses an employee portal at www.smcompany.com, the sequence of events is as follows:

1. The Web Agent provides the initial authentication. When the user clicks a link at the Identity Provider, this is referred to as an unsolicited response at the Identity Provider.
2. When the employee clicks a link at www.smcompany.com to view her health benefits at ahealthco.com, the link makes a request to the Single Sign-on Service at www.smcompany.com.

3. The Single Sign-on Service passes calls the assertion generator, which creates a SAML assertion and signs the SAML response.
4. The signed response is then placed in an auto-POST HTML form and sent to the user's browser.
5. The browser automatically POSTs a form to the Assertion Consumer URL at ahealthco.com. The form contains a SAML response as a form variable.

Ahealthco.com is acting as the Service Provider. The redirect request with the SAML response is handled by the Assertion Consumer Service, which is part of the Federation Web Services at ahealthco.com.

The sequence of events is as follows:

1. The Assertion Consumer Service calls for the requested target resource at ahealthco.com. This resource is protected by the SAML 2.0 authentication scheme using the HTTP-POST binding.
2. Because the SAML 2.0 authentication scheme is protecting the resource, the Assertion Consumer Service passes the digitally signed SAML response message as credentials, to the Policy Server at ahealthco.com.
3. The Policy Server verifies the signature and then authenticates the user using the SAML assertion embedded in the decoded SAML response message. Based on the assertion, the Policy Server lets the user log in.
4. After logging in, the Assertion Consumer Service creates an SMSESSION cookie, places it in the user's browser, and redirects the user to the target resource at ahealthco.com.
5. At this point the user is allowed access to resources at ahealthco.com based on policies defined at the Policy Server and enforced by the Web Agent at ahealthco.com.

In this example, the administrator at smcompany.com uses the Policy Server User Interface to configure a Service Provider object for ahealthco.com. The Service Provider is configured with an attribute that is a unique ID for the user. This causes the assertion generator to include that attribute as part of the user profile in a SAML assertion created for ahealthco.com.

The administrator at ahealthco.com uses the FSS Administrative UI to configure a SAML 2.0 authentication scheme with the HTTP-POST binding for smcompany.com. The authentication scheme specifies how to extract the unique user ID from the SAML assertion, and how to search the user directory at ahealthco.com for the user record that matches the value extracted from the assertion.

Solution 1 Using WS-Federation Passive Requestor Profile

In this example, smcompany.com is acting as the Account Partner. When an employee of smcompany.com accesses an employee portal at www.smcompany.com, the sequence of events is as follows:

1. The user visits an unprotected site selection page at ahealthco.com.
2. This link points to the Single Sign-on Service at the Account Partner, www.smcompany.com. The Web Agent provides the initial authentication.
3. The Single Sign-on Service calls the WS-Federation Assertion Generator, which creates a SAML 1.1 assertion. It signs the assertion and wraps the assertion in a security token response message.
4. The response is then placed in an auto-POST HTML form as a form variable and sent to the user's browser.
5. The browser automatically POSTs a form to the Security Token Consumer Service URL at ahealthco.com.

Ahealthco.com is acting as the Resource Partner. The redirect request with the SAML response is handled by the Security Token Consumer Service, which is part of the Federation Web Services application.

The sequence of events is as follows:

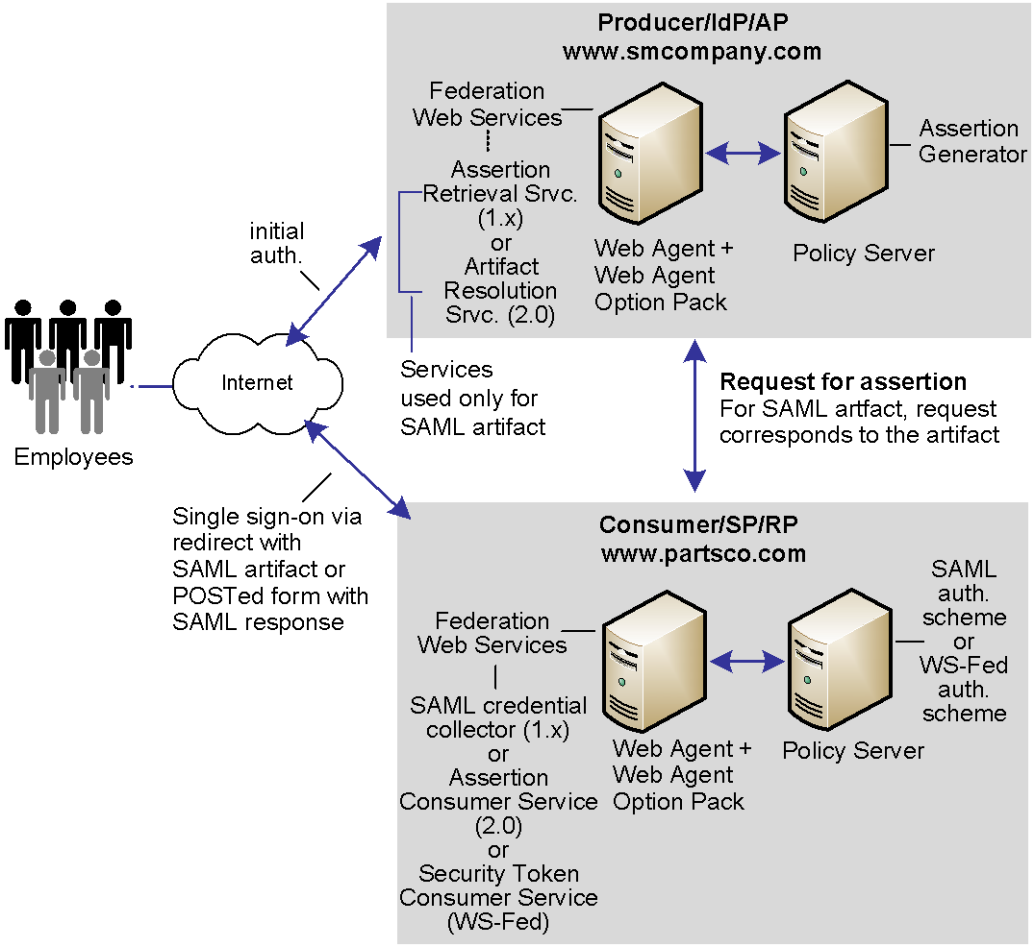
1. The Security Token Consumer Service calls for the requested target resource at ahealthco.com. This resource is protected by the WS-Federation authentication scheme.
2. Because the WS-Federation authentication scheme is protecting the resource, the Security Token Consumer Service passes the signed assertion in the SAML response message as credentials to the Policy Server at ahealthco.com.
3. The Policy Server verifies the signature and then authenticates the user using the SAML assertion embedded in the decoded SAML response message. Based on the assertion, the Policy Server lets the user log in.
4. After logging in, the Security Token Consumer Service creates an SMSESSION cookie, places it in the user's browser, and redirects the user to the target resource at ahealthco.com.
5. At this point the user is allowed access to resources at ahealthco.com based on policies defined at the Policy Server and enforced by the Web Agent at ahealthco.com.

In this example, the administrator at smcompany.com uses the Policy Server User Interface to configure a Resource Partner object for ahealthco.com. The Resource Partner is configured with an attribute that is a unique ID for the user. This causes the assertion generator to include that attribute as part of the user profile in a SAML assertion created for ahealthco.com.

The administrator at ahealthco.com uses the FSS Administrative UI to configure a WS-Federation authentication scheme for smcompany.com. The authentication scheme specifies how to extract the unique user ID from the SAML assertion, and how to search the user directory at ahealthco.com for the user record that matches the value extracted from the assertion.

Solution 2: Single Sign-on based on User Attribute Profiles

Solution 2 shows how SiteMinder Federation Security Services can be deployed at smcompany.com and partsco.com to solve Use Case 2: Single Sign-on Based on User Attribute Profiles (see page 21).



SiteMinder is deployed at both sites. The interactions between the user and each site is similar, where partsco.com is acting as the consuming authority.

The following illustration is similar for SAML 1.x, SAML 2.0, and WS-Federation; however, the Federation Web Services components are different as follows:

- For SAML 1.x, the Artifact Resolution Service (for artifact profile only) is at the IdP and the SAML credential collector is at the SP.
- For SAML 2.0, the Assertion Retrieval Service (for artifact binding only) is at the IdP and the Assertion Consumer Service at the SP.
- For WS-Federation, the Single Sign-on Service is at the IdP and the Security Token Consumer Service is at the SP.

  Note: WS-Federation only supports HTTP-POST binding.

Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The configuration is similar to Solution 1: Single Sign-on based on Account Linking, except for the following:

- The administrator at smcompany.com defines the consumer/SP for partsco.com with an attribute specifying the user's department at the company. The assertion generator will include this attribute as part of the user profile in the SAML assertion created for partsco.com.
- The administrator at partsco.com defines an authentication scheme (artifact, post, or WS-federation) for smcompany.com. The scheme extracts the department attribute from the SAML assertion and searches the user directory at partsco.com for the user record that matches the department value taken from the assertion. The administrator defines one user profile record for each department that is allowed to access partsco.com's Web site.

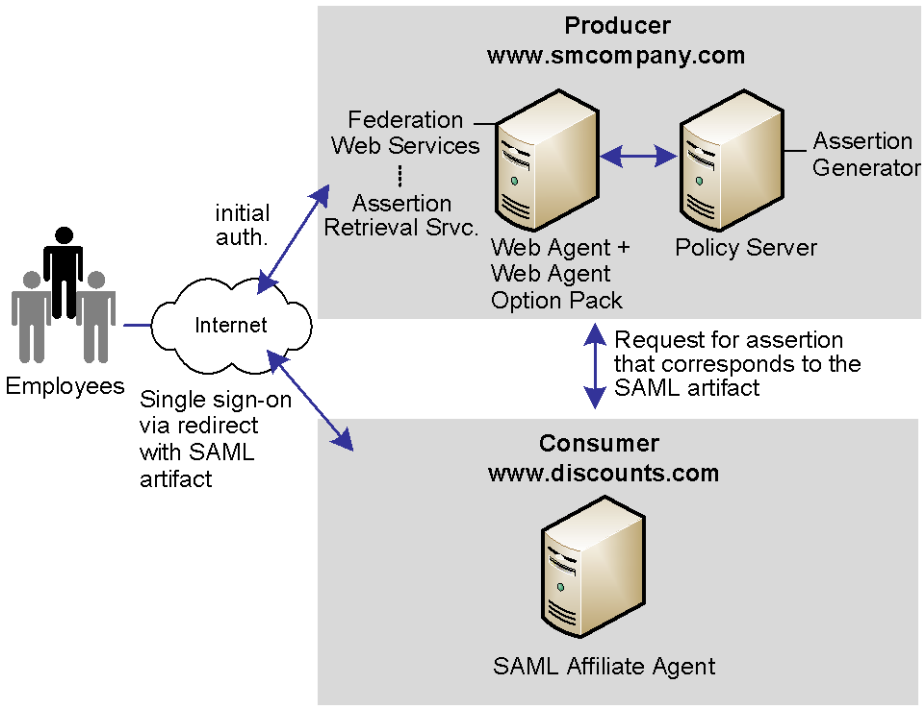
Solution 3: Single Sign-on with no Local User Account

Solution 3 shows how SiteMinder Federation Security Services can be deployed at smcompany.com and discounts.com to solve Use Case 3: Single Sign-on with No Local User Account (see page 22).

SiteMinder is deployed at smcompany.com by installing the Web Agent with the Web Agent Option pack on one machine, and installing the Policy Server on another machine. The SAML Affiliate Agent is installed at discounts.com.

Note: The SAML Affiliate Agent only supports SAML 1.0 and is not FIPS-compatible.

The following figure shows single sign-on with no local user account.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

Smcompany.com is acting as a SAML 1.x producer. When an employee of smcompany.com accesses an employee portal at www.smcompany.com, the following occurs:

1. The Web Agent provides the initial authentication.
2. When the employee clicks a link at www.smcompany.com to access deals at discounts.com, the link makes a request to the Web Agent at www.smcompany.com.
3. The Web Agent at www.smcompany.com calls the assertion generator, which creates a SAML assertion, inserts the assertion into the SiteMinder session server, and returns a SAML artifact.
4. The Web Agent redirects the user to www.discounts.com with the SAML artifact in accordance with the SAML browser artifact protocol.

Discounts.com is acting as the consumer site. The redirect request with the SAML artifact is handled by the SAML Affiliate Agent at www.discounts.com, as follows:

1. The SAML Affiliate Agent obtains the location of the assertion retrieval service at www.smcompany.com from a configuration file.
2. The SAML Affiliate Agent calls the assertion retrieval service at www.smcompany.com.
3. The assertion retrieval service at www.smcompany.com retrieves the assertion from the SiteMinder session server and returns it to the SAML affiliate agent at www.discounts.com.
4. The SAML Affiliate Agent then validates the SAML assertion and issues a SiteMinder affiliate session cookie to the user's browser.
5. The user is allowed access to resources at discounts.com.

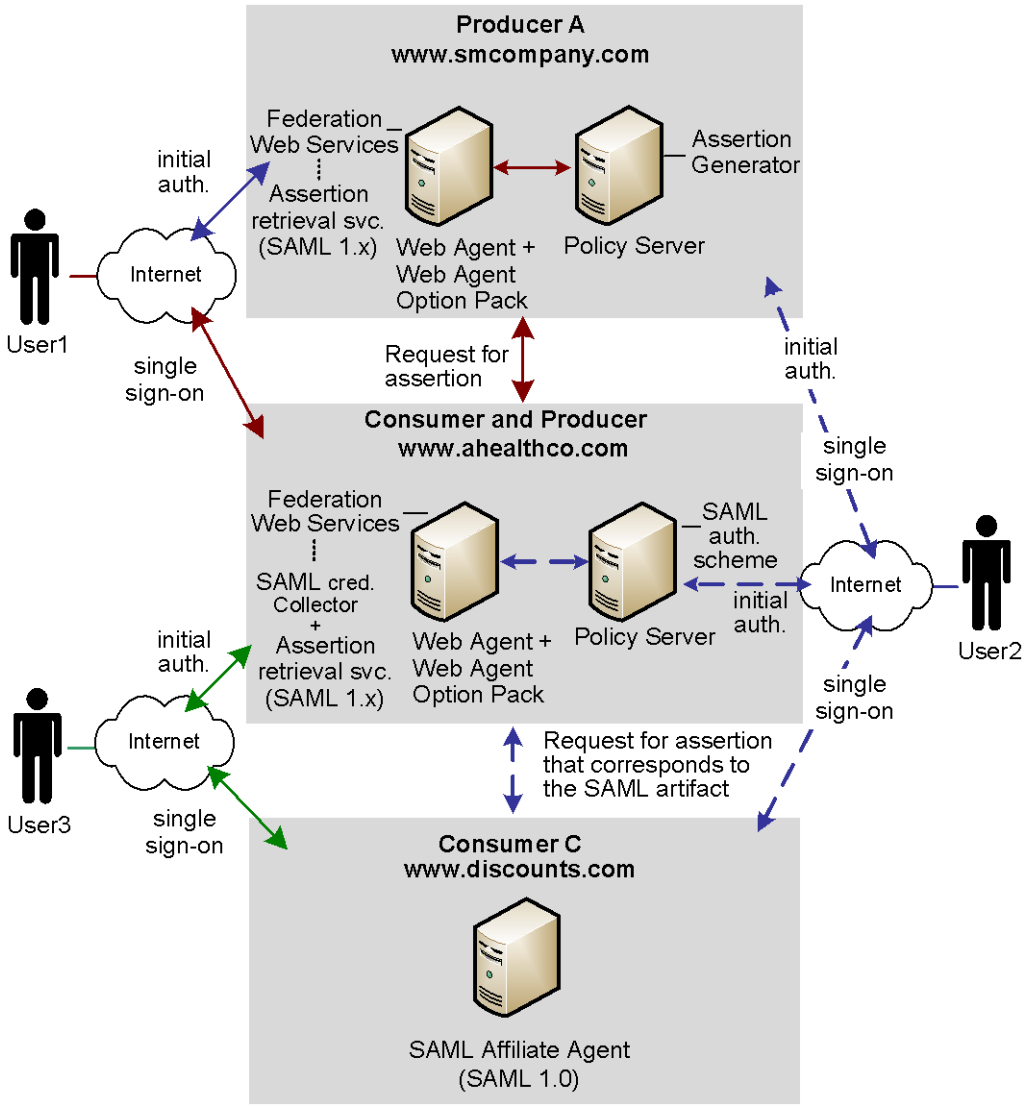
The administrator at smcompany.com uses the Policy Server User Interface to configure an affiliate for discounts.com. The affiliate is configured with attribute information to be passed to discounts.com. The assertion generator will include those attributes as part of the user profile in a SAML assertion created for discounts.com.

The administrator at discounts.com configures the SAML Affiliate Agent with information about the discounts.com site, the location of the assertion retriever service at smcompany.com, and what resources are to be protected by the affiliate defined at smcompany.com.

Solution 4: Extended Networks

Solution 4 illustrates how SiteMinder Federation Security Services can be deployed at smcompany.com, ahealthco.com, and discounts.com to solve Use Case 4: Extended Networks (see page 23).

The following illustration shows an extended network. SAML 1.x is the protocol being used.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

SiteMinder is deployed at smcompany.com and ahealthco.com by installing the Web Agent with the Web Agent Option Pack on one machine, and the Policy Server on another machine. The SAML Affiliate Agent is installed at discounts.com.

In Solution 4:

- smcompany.com acts as a producer for User1 and a consumer for User2
- ahealthco.com acts as a consumer for User1 and a producer for User2 and a producer for User3
- discounts.com acts as a consumer for User1, User2, and User3

The administrator for smcompany.com has configured two entities in an affiliate domain, which represents ahealthco.com and discounts.com. These sites are configured in a similar manner as in Examples 1 and 3 described previously, but the configurations have been extended as follows:

- At smcompany.com, the administrator has configured a SAML authentication scheme (artifact or POST). For User2, the authentication scheme enables smcompany.com to act as a consumer for ahealthco.com.
- At ahealthco.com:
  - The administrator has configured an affiliate object that represents smcompany.com so an assertion is produced for User2. This makes single sign-on to smcompany.com possible.
  - The administrator has configured an affiliate object that represents discounts.com so an assertion is produced for User2 and User3. This makes single sign-on to discounts.com possible.
- At discounts.com, the administrator has configured the SAML Affiliate Agent to act as a consumer for smcompany.com, as in Example 3 (an arrow connecting the two sites is not shown in the illustration). The administrator at discounts.com has also added configuration information about ahealthco.com so that the SAML Affiliate Agent can consume assertions from ahealthco.com for User2 and User3.

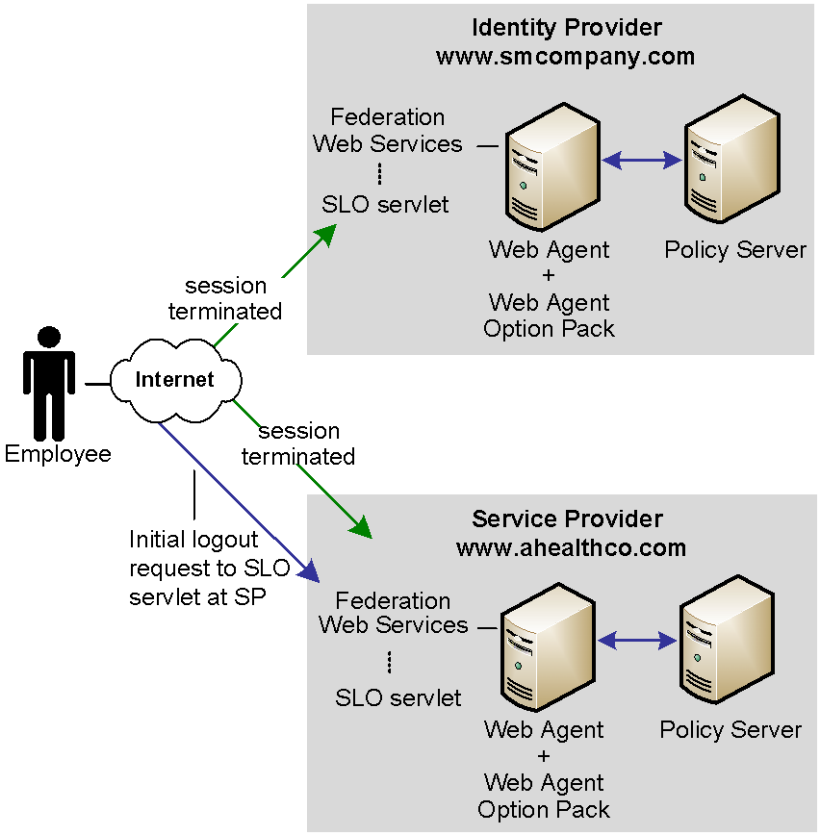
Solution 5: Single Logout (SAML 2.0)

Solution 5 illustrates how SiteMinder Federation Security Services can be employed to solve Use Case 5: Single Logout (see page 24).

In this solution:

- smcompany.com is the Identity Provider
- ahealthco is the Service Provider that initiates the logout request.
- Single logout is enabled using the FSS Administrative UI at the Identity Provider and the Service Provider.

The following figure shows the SiteMinder solution for single logout.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The sequence of events is as follows:

1. Employee performs single sign-on between smcompany.com and ahealthco.com. Smcompany.com places information about ahealthco.com in its session server. Ahealthco.com places information about smcompany.com in its session server.
2. After the employee has finished looking at her health benefits, she clicks a log out link at the Service Provider. This user's browser accesses the single logout servlet at the Service Provider.
3. The user's session is terminated from the Service Provider's session store.

   Note: This does not remove the session from the session store; it merely sets the state to LogoutInProgress.
4. Based on information in the session store, the session is identified as one created by a SAML assertion received from the Identity Provider, smcompany.com.

5. The user's browser is forwarded to the single logout servlet at smcompany.com, the Identity Provider, with the logout request message as a query parameter.
6. The Identity Provider invalidates the user's session from all Service Providers associated with that user's session, other than ahealthco.com, who initiated the logout request. After all Service Providers confirm the logout, the Identity Provider removes the user session from its session store.

   Note: Other Service Providers are not identified in the illustration.
7. The Identity Provider returns a logout response message to ahealthco.com, the initiating Service Provider, and the user's session is removed from the session store.
8. The user is finally sent to a logout confirmation page at ahealthco.com.

Terminating both sessions ensures that an unauthorized employee cannot use the existing session to view benefits of the authorized employee.

Solution 6: WS-Federation Signout

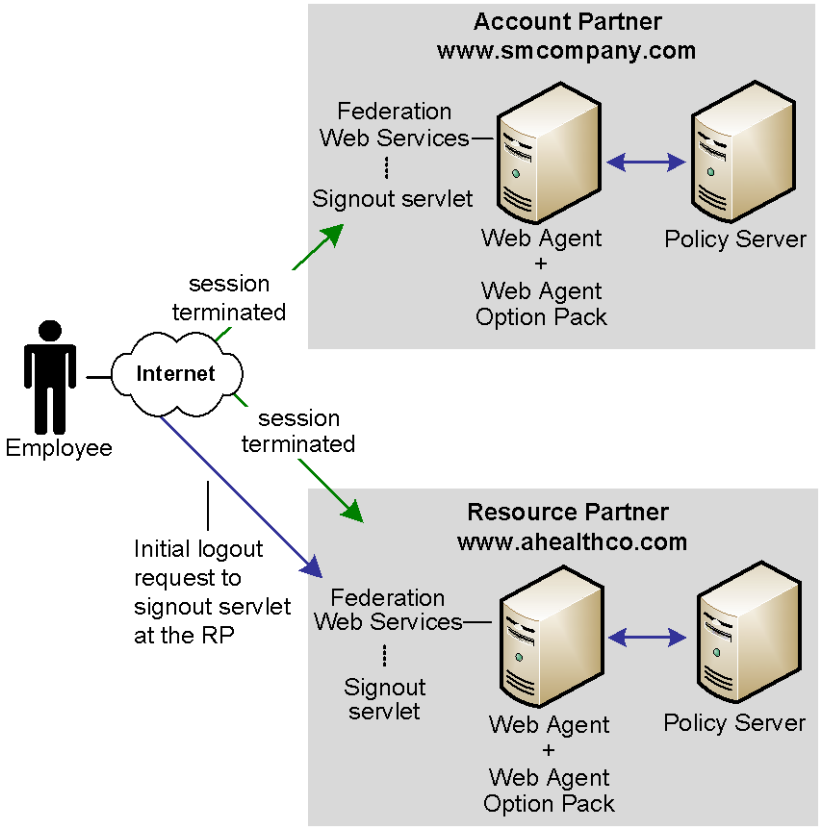
Solution 6 illustrates how SiteMinder Federation Security Services can be employed to solve Use Case 6: WS-Federation Signout (see page 25).

In this solution:

- smcompany.com is the Account Partner
- ahealthco.com is the Resource Partner that initiates the signout request.

WS-Federation signout is enabled using the FSS Administrative UI at the Account Partner and the Resource Partner.

The following figure illustrates WS-Federation sign-out.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The sequence of events is as follows:

1. An employee performs single sign-on between smcompany.com and ahealthco.com. As a result, smcompany.com places information about ahealthco.com in its session server. Ahealthco.com places information about smcompany.com in its session server.
2. After the employee has finished looking at her health benefits, she clicks a log-out link at the Account Partner, which calls the signout servlet at the Account Partner.
3. The user's session is terminated from the Account Partner's session store and all references to Resource Partners for that user are also removed from the session store.

4. The Account Provider retrieves a SignoutConfirm JSP page, which includes a Signout Cleanup URLs for each Resource Partner.

   The SignoutConfirm page generates a frame-based HTML page with each frame containing a signoutcleanup URL for each Resource Partner associated with the user session.

5. The user's browser then accesses the signout Cleanup URL at ahealthco.com and the user's session is removed from the session store.

6. The user's browser is finally sent back to the Account Partner.

Steps 4-6 are repeated for each Resource Partner simultaneously for complete signout for that user session.

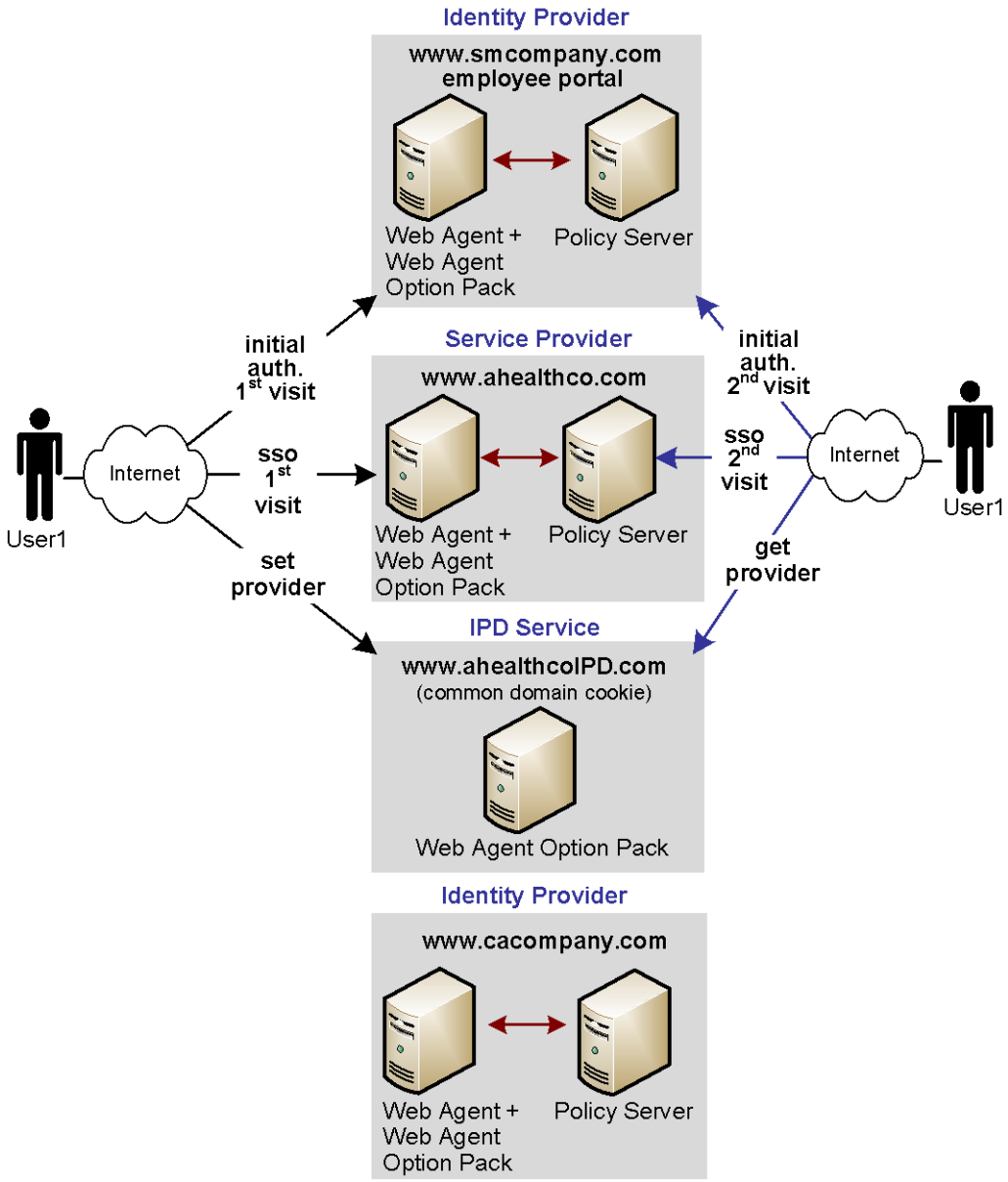
Solution 7: Identity Provider Discovery Profile (SAML 2.0)

Solution 7 illustrates how SiteMinder Federation Security Services can be employed to solve Use Case 7: Identity Provider Discovery Profile (see page 25).

In this solution:

- smcompany.com issues assertions for User 1 and has ahealthco.com configured as its Service Provider
- ahealthco.com is the Service Provider for smcompany.com and cacompany.com, and has a SAML 2.0 authentication scheme configured for each of these Identity Providers. This enables single sign-on.
- ahealthcoIPD.com is the Identity Provider Discovery Service for ahealthco.com. The Federation Web Services application, installed with the Web Agent Option Pack, provides the IPD service which can read the common domain cookie that includes all relevant Identity Providers for ahealthco.com.
- cacompany.com is another Identity Provider where users other than User1 can log in.

The following illustration shows the SiteMinder federated network for this solution.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The sequence of events is as follows:

1. User 1 initially authenticates at smcompany.com and then signs on to ahealthco.com without having to reauthenticate.

   There is an existing agreement between smcompany.com and ahealthcoIPD.com to use ahealthcoIPD.com as the IPD service. During the initial authentication process, the Identity Provider URL of smcompany.com is written to the common domain cookie at the IPD service.

2. User 1, now successfully logged on to ahealthco.com, can look at his health benefits.

3. User 1 then comes to a site selection page at ahealthco.com. Because a common domain cookie is set for smcompany.com and ahealthco.com is configured to use the IPD service, ahealthco.com knows that the user previously logged into smcompany.com. Therefore, ahealthco.com can make the appropriate links available to the user so that user can go back to smcompany.com to log in.

Solution 8: Multi-protocol Network

Solution 8 illustrates how SiteMinder Federation Security Services can be employed to solve Use Case 8: Multi-protocol Support (see page 26).

In this solution:

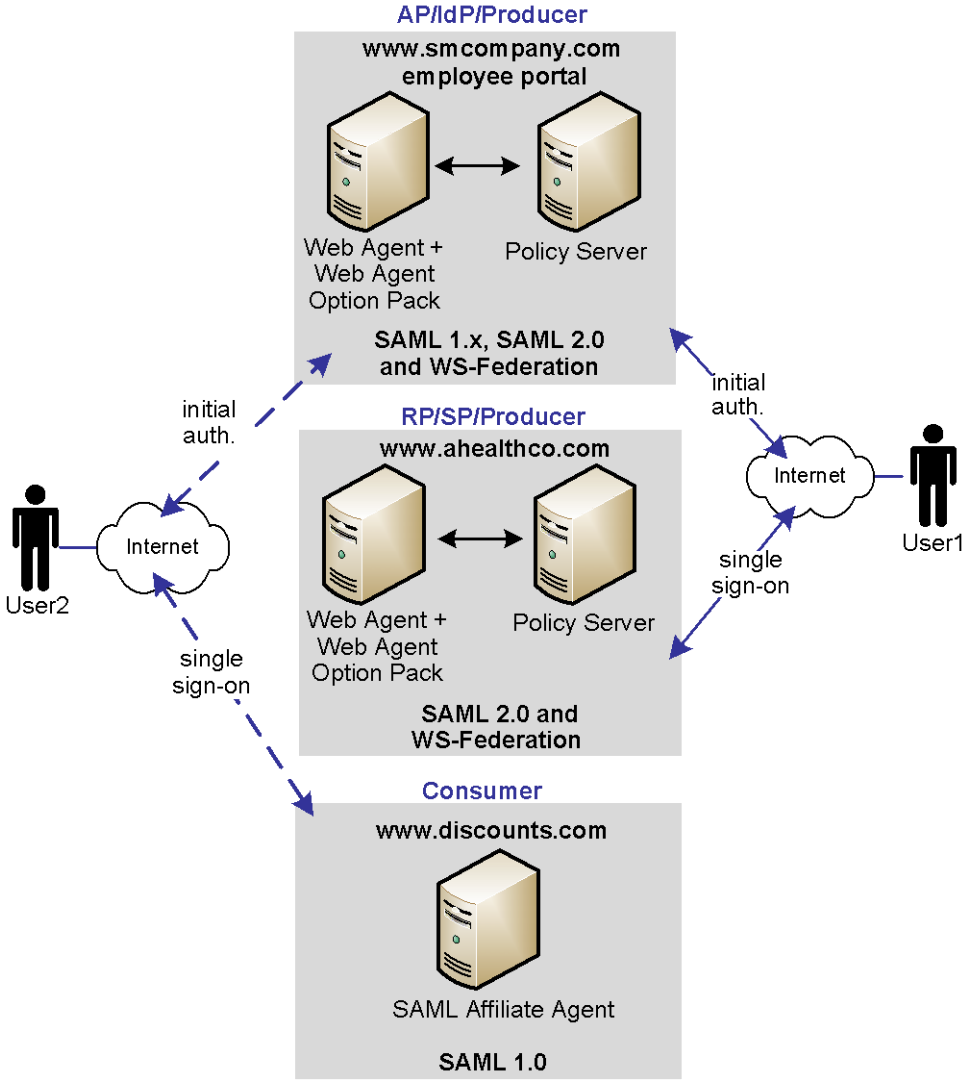
For User 1:

- smcompany.com is the SAML 2.0 Identity Provider for ahealthco.com. The partner, ahealthco.com, is included in an affiliate domain as a SAML 2.0 Service Provider.
- ahealthco.com is where the SAML 2.0 authentication scheme is configured, and where smcompany.com is identified as the Identity Provider.

For User 2:

- smcompany.com is the SAML 1.0 producer for discounts.com, which is a SAML 1.0 consumer. This site uses the SAML Affiliate Agent, which can only consume SAML 1.0 assertions. It cannot perform any authentication tasks.

The following illustration shows a SiteMinder federated network that implements multiprotocol support.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

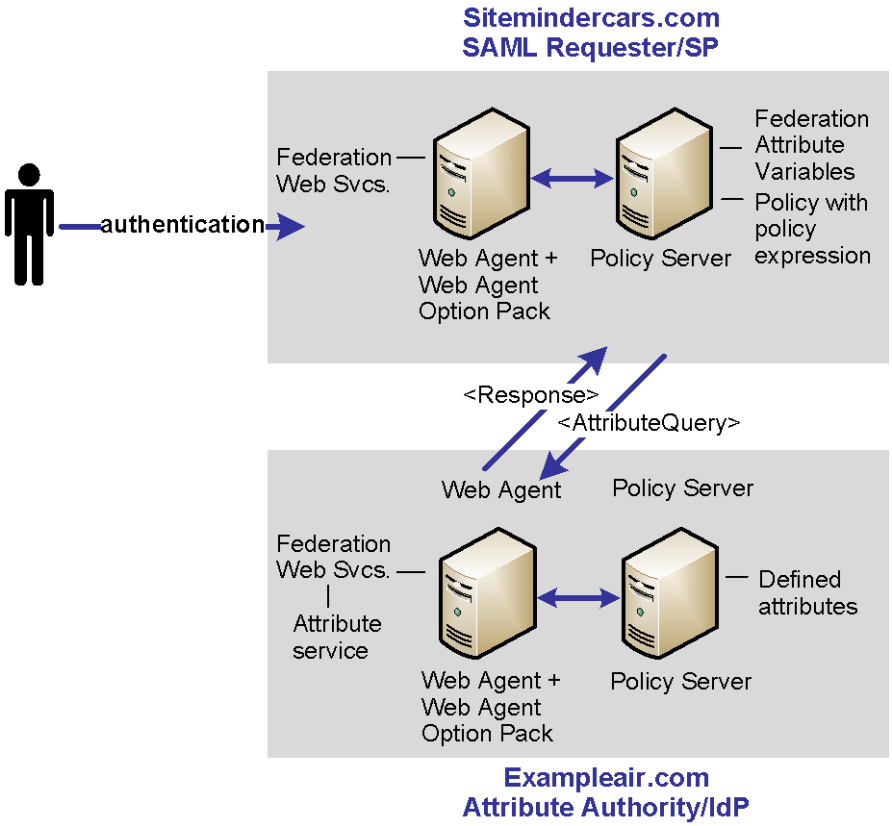
In this multiprotocol solution, smcompany.com can issue a SAML 2.0 assertion for User 1 to access resources at ahealthco.com. Additionally, smcompany.com can issue a SAML 1.0 assertion for User 2 to authenticate at discounts.com. Smcompany.com issues an assertion based on the session cookie that is set during initial authentication and determines the appropriate protocol for the assertion.

The SAML Affiliate Agent at discounts.com needs to be configured so that smcompany.com is added to its producer information settings in its AffiliateConfig.xml configuration file so that it accepts SAML 1.0 assertions from this site.

Solution 9: SAML 2.0 User Authorization Based on a User Attribute

Solution 9 shows how SiteMinder Federation Security Services can be deployed at sitemindercars.com and exampleair.com to solve Use Case 9: SAML 2.0 User Authorization Based on a User Attribute (see page 27).

Note: This solution is only for SAML 2.0.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

SiteMinder is deployed at both sites by installing the Web Agent with the Web Agent Option Pack on a Web server and the Policy Server with federation security services on another machine. The installations are the same for both sites.

In this solution, sitemindercars.com is a Service Provider acting as a SAML Requester. When a customer logs on at this site, the sequence of events is as follows:

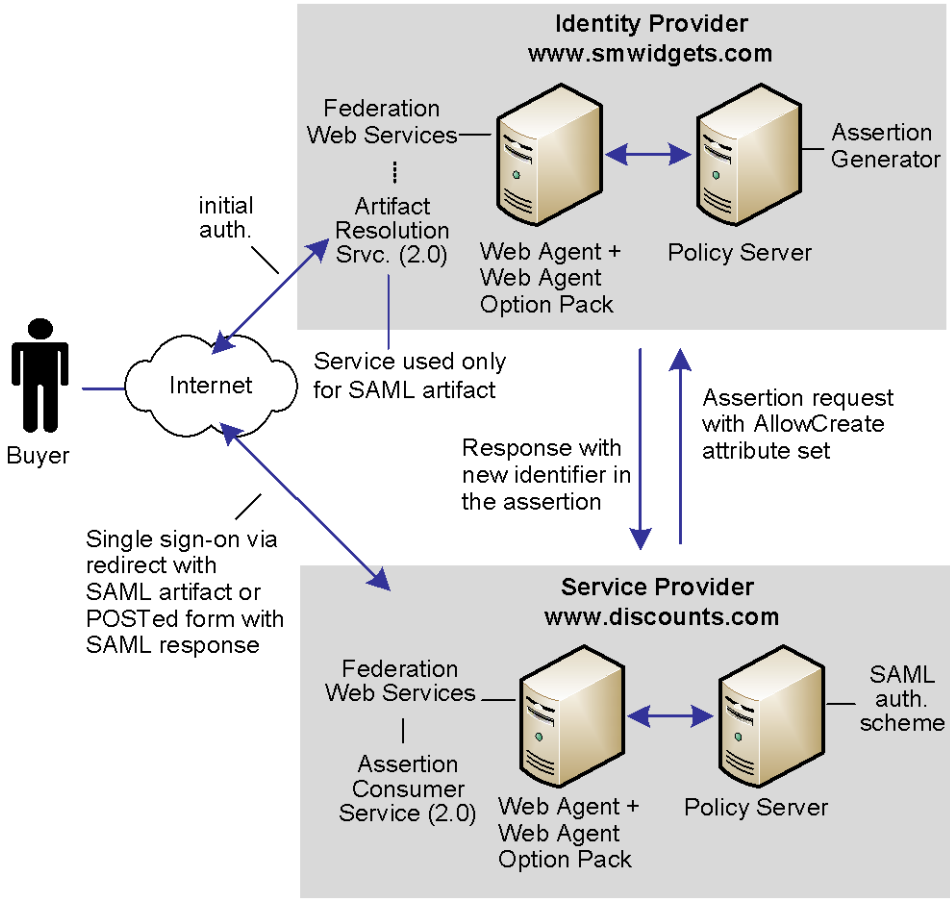
1. The user logs in to sitemindercars.com and the Web Agent provides the authentication.
2. When the user clicks a link to rent a car, the Web Agent first makes a request to the Policy Server at the local site.
3. The Policy Server evaluates the policy expression and determines that there are unresolved federation attribute variables. The Policy Server tries to resolve the variable by looking up the user in the user directory associated with the policy protecting the requested URL.
4. The local Policy Server cannot resolve the user attribute variable. It locates the NameID configuration for the Attribute Authority, Exampleair.com. This is the Attribute Authority where the <AttributeQuery> will be sent.
5. The Policy Server sends an <AttributeQuery> containing the NameID and the frequent flyer attribute to the Exampleair.com, which is acting as the Attribute Authority.
6. Exampleair.com returns a response to sitemindercars.com that contains an attribute assertion which includes the requested attribute.
7. The SAML Requester resolves the variables and evaluates the policy expression, returning authorization status to the Web Agent.
8. The Web Agent allows access to the appropriate resource.

Solution 10: Single Sign-on with No User ID at the IdP

Solution 10 shows how SiteMinder Federation Security Services can be deployed at smcompany.com and discounts.com to solve Use Case 10: SAML 2.0 Single Sign-on with No Name ID at the IdP (see page 28).

SiteMinder is deployed at discounts.com and smwidgets.com by installing the Web Agent with the Web Agent Option pack on one machine, and the Policy Server with federation security services on another machine.

In the following illustration, smwidgets.com is acting as the Identity Provider and discounts.com is acting as the Service Provider.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

For single sign-on between the two sites, where there is no federated user identity at the Identity Provider, the sequence of events is as follows:

1. The user clicks on a link at discounts.com to take him to the target site. This link initiates a call to the local Policy Server to generate an authentication request. In this request, an optional attribute called AllowCreate has been included, based on the configuration of the SAML 2.0 authentication scheme at the Service Provider.
2. The Federation Web Services application at the local Web Agent redirects the request to the Single Sign-on service at the IdP, smwidgets.com.

3. The request is then forwarded to the IdP Policy Server, which generates an assertion. During assertion generation, the Policy Server searches for the attribute associated with the user requesting access. For example, the request may ask for the telephone number as the value of the Name ID.

   If the Policy Server cannot find a value for the telephone number attribute, it checks its configuration for the AllowCreate option. If this option is configured, the Policy Server searches the authentication request from the Service Provider to see if the AllowCreate option exists.

   If both sides have the Allow/Create feature enabled, the Policy Server generates a new identifier for the user attribute and places that identifier in its user store.

   Note: The identifier is the value of the user attribute.

4. The assertion is returned in a response message to the IdP Web Agent (FWS). The IdP returns a form to the browser containing the response, the Assertion Consumer URL, and the javascript to submit the form.

5. This form is posted to the Assertion Consumer Service at the Service Provider, which uses the response message to log in to the Policy Server using the response as credentials.

6. The Service Provider at smwidgets.com validates the credential by looking for the attribute in its user store, and assuming it finds the user, the user is logged in by the SAML authentication scheme.

7. The SP Web Agent creates an SMSESSION cookie for the smwidgets.com domain, places it in the user's browser, and redirects the user to the target destination.

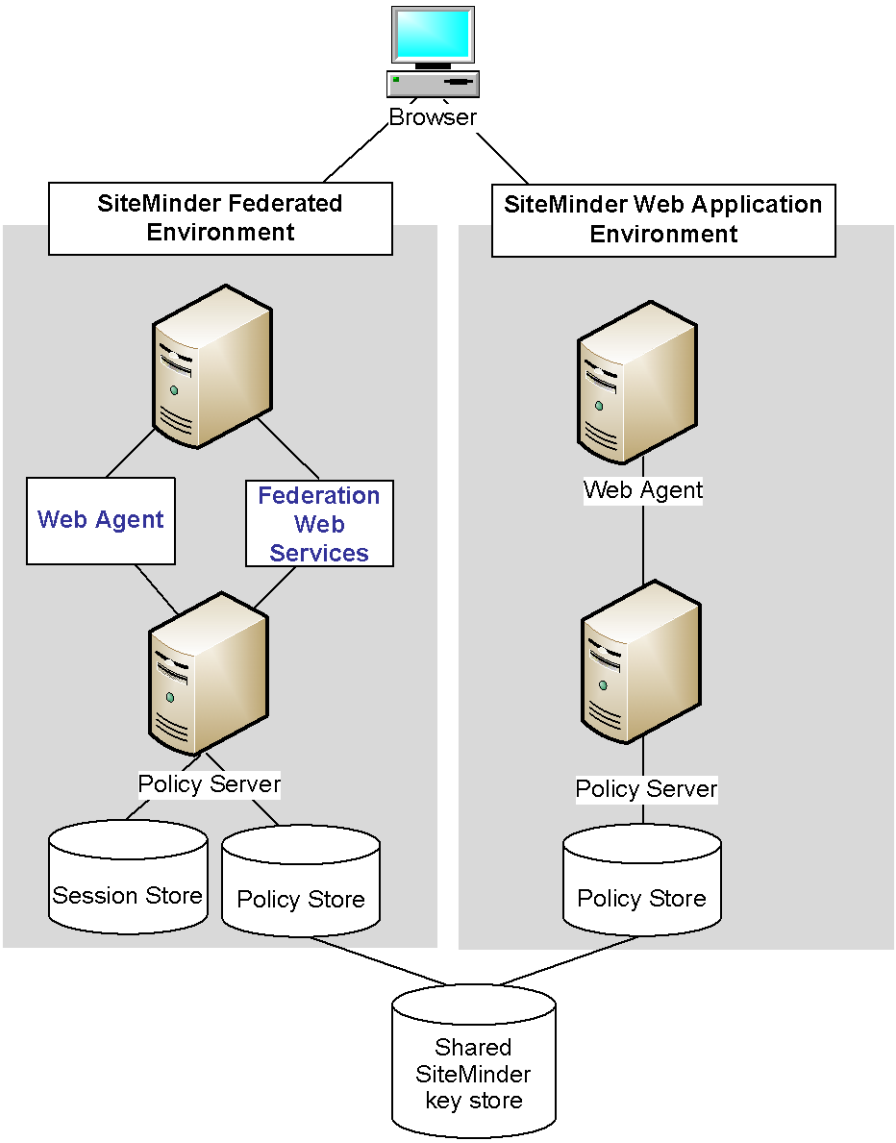
Solution 11: SAML Artifact SSO Using Security Zones

Solution 11 illustrates how you can set up a parallel web application and federation environments to solve Use Case 11.

SiteMinder's security zones can be used to eliminate the need for persistent user sessions associated with every request for applications protected by the SAML 1.x or SAML 2.0 artifact profiles.

A security zone is a segment of a single cookie domain, used as a method of partitioning applications to assign different security requirements. Security zones are implemented by Web Agents and can be configured for the producer-side Web Agents that are protecting the requested federated resources.

The following figure illustrates a deployment that uses two different SiteMinder environments at a single producing authority site. One SiteMinder environment is for federation functionality and the other is for web application protection.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The figure reflects the following set up:

Web application environment

Agent Configuration Object or Local Configuration File	Trusted Security Zones	Cookies that Can be Read by the Web Agent for the Zone
DefaultAgent	SM (default)--primary zone	The DefaultAgent configuration enables the Web Agent to read and write the default session cookie, SMSESSION and is backwards compatible with SiteMinder 5.x.

Federation Environment

Agent Configuration Object or Local Configuration File	Trusted Security Zones	Cookies that Can be Read by the Web Agent for the Zone
FedWA used by the Web Agent	FED--primary zone SM--additionally accepted zone	The FedWA configuration enables the Web Agent to read and write SESSIONSIGNOUT cookies, and read SMSESSION cookies.
FedFWS used by the FWS application	FED--primary zone only	Configures the FWS to read and write SESSIONSIGNOUT cookies.

All resources protected in the Web application environment use non-persistent user sessions. As a result, when users are authenticated and authorized, the SMSESSION cookie contains a non-persistent user session specification. The non-persistent session specification ensures that requests to web applications do not incur the performance penalty of calling the session server.

When the Web Agent in the federation environment receives a request, this request is directed to the Authentication URL to establish a user session. This user already has an SMSESSION cookie established by a prior authentication in the Web application environment, but the user has no SESSIONSIGNOUT cookie.

The Authentication URL, which authenticates users federating to a partner site, is protected by a persistent user session in the federation environment. This is why the Web Agent in the federation environment writes a SESSIONSIGNOUT cookie with a persistent user session specification and with the same session ID as the SMSESSION cookie.

The Web Agent in the federation environment reads the SMSESSION cookie and writes a SESSIONSIGNOUT cookie in accordance with the security zones associated with the FedWA configuration.

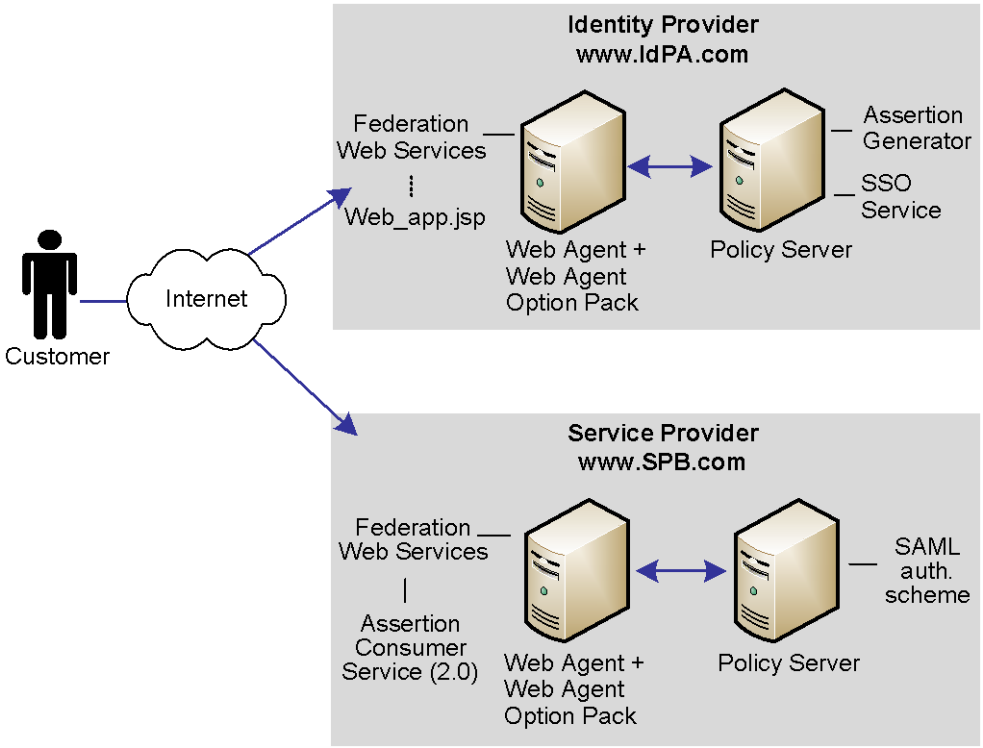
The FWS application in the federation environment reads the SESSIONSIGNOUT cookie. This cookie contains a persistent user session, therefore, a call to the session server is not necessary. The FWS application can successfully process federation requests that requires a persistent user session.

Solution 12: SSO with Attributes from a Web Application

Solution 12 shows how SiteMinder Federation Security Services can be deployed at IdPA.com and SPB.com to solve Use Case 12 (see page 30).

SiteMinder is deployed at both sites by installing the Web Agent with the Web Agent Option pack on one machine, and the Policy Server on another machine.

In the following illustration, IdPA.com is the Identity Provider and SPB.com is the Service Provider and single sign-on is initiated at the Identity Provider.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

For IdP-initiated single sign-on, the sequence of events is as follows

1. At the IdP, the user clicks on web page link and *one* of the following occurs:

   - The user is directed to IdPA.com's Single Sign-on (SSO) service. This service recognizes that the user does not have a session, so the user is redirected to the Authentication URL where he is prompted to log in. After successfully logging in, the user is redirected back to the SSO service. There is an application URL defined for the SSO service, which instructs the SSO service to redirect the user to a custom web application.

     Important! When the user goes to the SSO Service first, several query parameters (SPID, ProtocolBinding, RelayState) are included with the original SSO request. The SSO service groups this query data into one query parameter called SMPORTALSTATE, and then redirects the user (via a GET) to the web application.

   - The user logs in and is taken directly to the web application.

   Note: After the user is locally authenticated at the IdP, he is never redirected to the Authentication URL as long as he has a valid session.

2. Prompted by the web application, the user supplies the requested information. These attributes are POSTed to the SSO Service.

   Important! If the user starts at the SSO Service, and is redirected to the web application with the SMPORTALSTATE query parameter, the web application must POST the SMPORTALSTATE query parameter and the collected attributes back to the SSO Service.

3. The SSO service processes the SAML request. It unpacks the data from the SMPORTALSTATE parameter takes this data along with the attributes from the web application and passes all the POST data to the Assertion Generator.

4. The Assertion Generator creates the assertion.

   Important! The SSO Service makes all the attributes *available* to the Assertion Generator, but an Assertion Generator plug-in must be written and configured to add the attributes to the assertion.

5. After the assertion is generated, the user is redirected to the Assertion Consumer Service at the Service Provider, where the assertion is processed.

6. The user gains access to the requested resource at the Service Provider.

For SP-initiated single sign-on:

1. At the SP, the user clicks on a link and an AuthnRequest is sent to the Single Sign-on (SSO) service at the Identity Provider.

   Note: In the case of SP-initiated single sign-on, the request must arrive at the SSO service directly from the SP, as dictated by SAML specifications. The user cannot go directly to the web application.

2. At the IdP, the SSO service recognizes that the user does not have a session, so the user is redirected to the Authentication URL where he is prompted to log in. After successfully logging in, the user is redirected back to the SSO service. There is an application URL defined for the SSO service, which instructs the SSO service to redirect the user to a custom web application.

   Important! When the user is directed to the SSO Service, several query parameters (SPID, ProtocolBinding, RelayState) are included with the original SSO request. The SSO service groups this query data into one query parameter called SMPORTALSTATE, and then redirects the user (via a GET) to the web application.

3. Prompted by the web application, the user supplies the requested information. These attributes are POSTed to the SSO Service.

   Important! The web application must maintain and POST the SMPORTALSTATE query parameter and the collected attributes back to the SSO Service.

4. The SSO service processes the SAML request. It unpacks the data from the SMPORTALSTATE parameter takes this data along with the attributes from the web application and passes all the POST data to the Assertion Generator.

5. The assertion is generated with all the attributes and the user is redirected to the Assertion Consumer Service at the Service Provider, where the assertion is processed.

   Note: An Assertion Generator plug-in must be written and configured to add the attributes to the assertion.

6. The user gains access to the requested resource at the Service Provider.

Configure SSO with Attributes from a Web Application

To configure single sign-on based on attributes from a web application, configure the following

1. Create a custom web application for the IdP in your network. This custom application can prompt the user for as many attributes as required or it can simply supply standard attributes and not prompt the user for any information. How attributes are gathered is entirely dependant on how the custom application is written.

   Important! For IdP-initiated single sign-on, if the user is directed to the web application before the SSO service, the web application must include the parameter **AllowApplicationPost=yes** for the POST to be accepted by the SSO service.

   The SiteMinder Web Agent Option Pack comes with sample JSP applications that you can use as a basis for your custom web application. The path to the sample JSP applications is: *web_agent_home*/affwebservices/. The sample applications are:

   sample_application.jsp

   This sample application can be used for IdP- or SP-initiated single sign-on, when the user is first directed to the SSO Service and then sent to the custom web application.This application can be entered for the Application URL in the Service Provider Properties (SAML 2.0) dialog or the Resource Provider Properties (WS-Federation) dialog.

   unsolicited_application.jsp

   This sample application can be used for IdP-initiated single sign-on when the user is sent directly to the web application and not initially to the SSO Service. It assumes the user is already authenticated at the Identity Provider.

   Note: It shows how to use the AllowApplicationPost parameter in an application.

2. (Optional) If the user is initially directed to the IdP SSO service:
   a. Specify an Application URL in the SAML 2.0 authentication scheme.
   b. Configure the Assertion Generator plug-in to add the attributes to the assertion. The Assertion Generator Plug-in is specified in the Advanced tab of the SAML Service Provider Properties dialog.
3. (Optional) If the user is sent directly to the custom web application when they click on a link at the IdP, you do not have to provide a value for the Application URL parameter in the Policy Server User Interface. However, the Assertion Generator plug-in still needs to be written and configured to work with SiteMinder.

Note: The order of the procedure steps is provided as a guideline. You can perform these steps in a different order.

More information:

Integrate the Assertion Generator Plug-in with SiteMinder (SAML 2.0/WS-Federation) (see page 335)

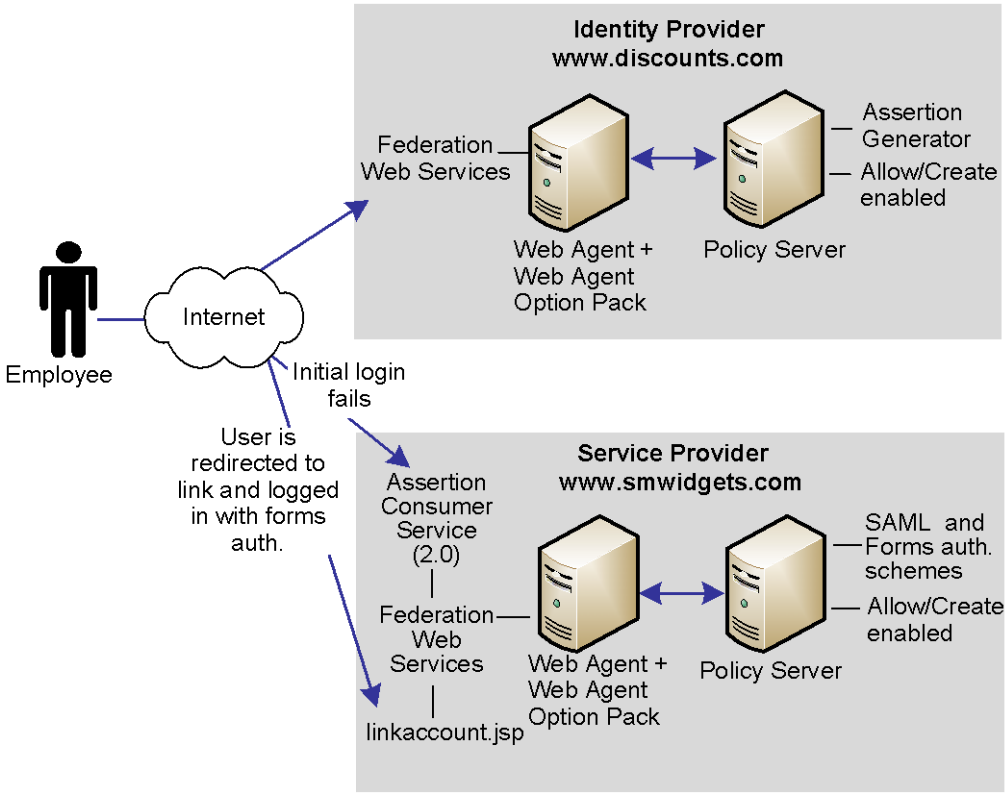
Solution 13: SAML 2.0 SSO with Dynamic Account Linking at the SP

Solution 13 shows how SiteMinder Federation Security Services can be deployed at IdPA.com and SPB.com to solve Use Case 13 (see page 31).

Note: Dynamic account linking is only supported with SAML 2.0.

SiteMinder is deployed at both sites by installing the Web Agent with the Web Agent Option pack on one machine, and the Policy Server on another machine.

The following figure shows single sign-on with dynamic account linking at the Service Provider.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The order of events for this solution is as follows

1. The employee initially logs in and authenticates at discounts.com. Discounts.com creates an assertion for the employee and posts the assertion (for POST binding). or redirects the user with an artifact (for artifact binding) to the Assertion Consumer Service at smwidgets.com. This assertion includes an attribute called buyerID.
2. The AssertionConsumer Service at smwidgets.com tries to authenticate the user with the SAML authentication scheme, but the employee's buyerID attribute does not map to a local user record so authentication fails.
3. As part of the SAML authentication scheme at the SP, a redirect URL is defined, which points to the directory *web_agent_home*/affwebservices/linkaccount.jsp. The employee is redirected to this URL.

   Note: The linkaccount.jsp file must be part of a protected realm. The default location is for this file is http://*sp_home*/affwebservices/public/. Copy the file from this location to a protected realm.
4. This linkaccount.jsp URL is protected by a Web Agent that authenticates the local user with the forms authentication scheme. After a successful authentication, a SiteMinder session at smwidgets.com is established and an SMSESSION cookie is placed in the employee's browser.
5. The linkacount.jsp gets loaded in the browser and the user sees a message to permit the link to the SP account. Click on the button to permit. the account linking.
6. The user is redirected to the Assertion Consumer Service, where the employee's browser presents the SMSESSION cookie along with the assertion to the Assertion Consumer Service.
7. The Assertion Consumer Service extracts the NameID from the assertion and inserts this value into a newly created buyerID attribute in the employee's existing user record. The Assertion Consumer Service knows which user record to map because the user is identified by the UserDN in the SMSESSION cookie.

   The Search Specification that is configured in the SAML 2.0 authentication scheme indicates which attribute is mapped to the NameID. In this case, the Search Specification is buyerID=%s.
8. After the user's attribute is mapped, the SAML authentication scheme authenticates the user based on the assertion and establishes a new user session.

   The next time the same user presents an assertion with the buyer ID, the mapping works and the user successfully gains access to the requested resource.

Configure SAML 2.0 SSO with Dynamic Account Linking at the SP

You need to configure several components at the Service Provider to enable SAML 2.0 single sign-on with dynamic account linking:

- AllowCreate feature--enables the creation of attributes in an existing user store
- Redirect URL--sends the user to the linkaccount.jsp file when authentication fails. This URL is protected by an authentication scheme that prompts the user to log in so a SiteMinder session is created.
- Post Preservation at the Web Agent--must be enabled at the Service Provider Web Agent
- Search Specification-- indicates which attribute will be replaced by the NameID from the assertion.

To enable dynamic account linking for POST or Artifact single sign-on, configure the following at the Service Provider

1. For the linkaccount.jsp file, do the following:
   - (Optional) Customize the linkaccount.jsp file to provide a custom user experience when the user is redirected after a failed authentication attempt. This file must POST the **accountlinking** and **samlresponse** parameters back to the Assertion Consumer Service URL. Note that accountlinking must be set to yes (accountlinking=yes).

     The default location for this file is http://*sp_home*/affwebservices/public/.
   - Protect the linkaccount.jsp file with a SiteMinder forms authentication scheme, which supports POST-Preservation. Using a scheme that supports POST preservation is necessary because the SAML response that contains the assertion is posted to the Assertion Consumer Service after the user has logged in locally at the Service Provider. The SAML response POST data needs to be preserved during the entire local authentication process.

     To protect resources with an authentication scheme, refer to information about authentication schemes in the *Policy Server Configuration Guide*.
2. Enable the Allow/Create feature at the Service Provider.
3. For the Web Agent at the Service Provider, set the POST Preservation parameter to yes. This enables the POST data from the SAML response to be preserved.

4. Configure a redirect URL that sends the user to the linkaccount.jsp file if authentication fails. You must direct the user only to this file.

   The redirect URL is part of the SAML 2.0 authentication scheme setup at the Service Provider, specifically, in the Advanced tab of the SAML Auth Properties dialog.

   Complete the following fields with the values shown:

   Redirect URL for the User Not Found Status

   http://*sp_home*/*protected_realm*/linkaccount.jsp

   Example: http://smwidgets.com/partner_resources/linkaccount.jsp

   The default location of the linkaccount.jsp file is http://*sp_home*/affwebservices/public/. Copy the file from this directory to a directory that will be configured as a protected realm.

   Mode

   Http POST

5. Configure a Search Specification in the Users tab of the SAML Auth Scheme Properties dialog. For example, if buyerID is going to be replaced by the Name ID from the assertion, the Search Specification would be buyerID=%s.

More information:

Use Case 13: SSO with Dynamic Account Linking at the SP (see page 31)
Allow the Identity Provider to Assign a Value for the NameID (see page 314)
Permit the Creation of a Name Identifier for SSO (see page 361)
Configure User Disambiguation for User Look Ups (see page 355)
Locate User Records for Authentication (see page 426)

Federation Security Services Process Flow

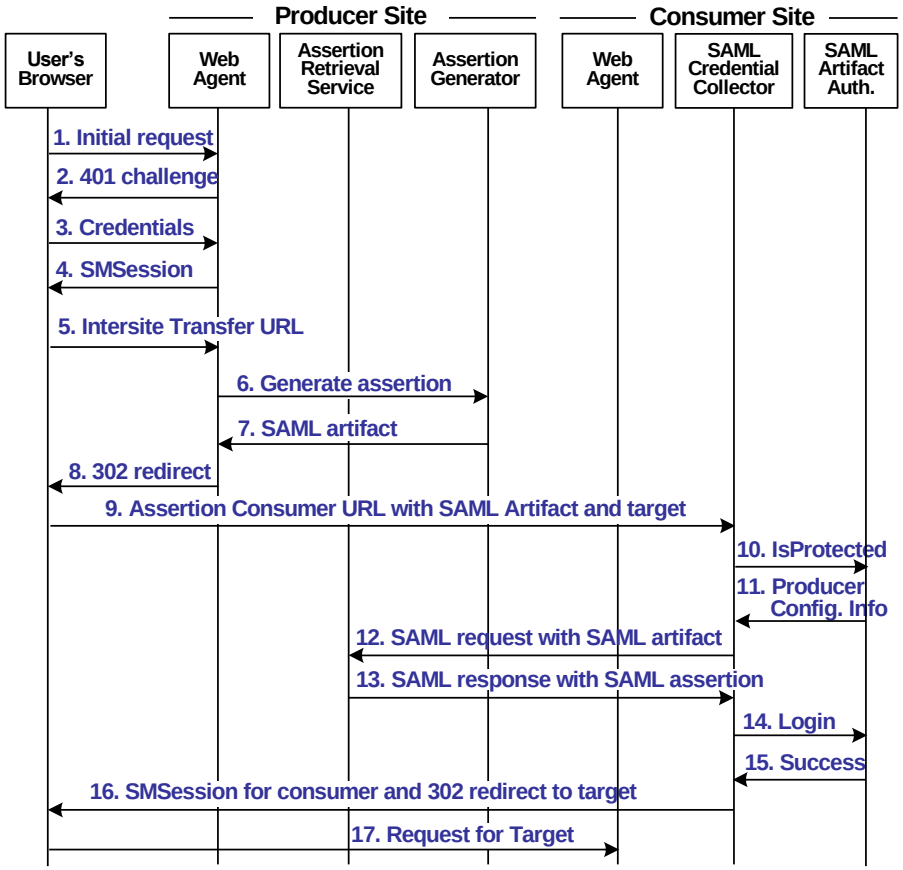
This section shows the detailed flow between the components that comprise the SiteMinder Federated Security Services. It assumes that the reader has some knowledge of SiteMinder interactions between a Web Agent and Policy Server.

Flow Diagram for SSO Using SAML 1.x Artifact Authentication

The illustration that follows shows the detailed flow between a user's browser and the Federation Security Service components deployed at the producer and consumer sites. This set-up enables single sign-on between the sites. SAML artifact profile is the authentication method and the flow diagram assumes successful authentication and authorization at the producer and consumer sites.

Note: This flow applies to examples that do not use the SAML Affiliate Agent.

The process flow diagram for SAML 1.x Artifact Authentication follows.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. In the flow diagram, the Web Agent block would be the embedded Web Agent in the SPS federation gateway. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The sequence of actions is as follows:

1. The user makes an initial request to a protected page at the producer site.
2. The Web Agent at the producer site responds with a 401 challenge to the user.
3. The user submits credentials, such as user name and password to the Web Agent.
4. The Web Agent issues a SiteMinder SMSESSION cookie to the user's browser for the producer site domain.
5. The user clicks a link to visit the consumer site. This link is referred to as the intersite transfer URL because it results in transferring the user to another site. The intersite transfer URL makes a request to the Web Agent at the producer site first. This URL contains the location of the SAML credential collector and the target URL to access at the consumer site.
6. The Web Agent at the producer site handles the intersite transfer URL request by calling the assertion generator.
7. The assertion generator generates a SAML assertion, places it in the SiteMinder session server and returns the SAML artifact for the assertion.
8. The Web Agent responds with a 302 redirect to the SAML credential collector at the consumer with the SAML artifact and the target URL as query parameters.
9. The user's browser makes a request to the SAML credential collector at the consumer site. This is known as the assertion consumer URL.
10. The SAML credential collector handles the assertion consumer URL request by making an isProtected call to the SAML artifact authentication scheme.
11. The SAML artifact authentication scheme returns the producer configuration information.
12. The SAML credential collector uses the producer configuration information to make a SAML request to the assertion retrieval service at the producer. In this step, the SAML credential collector is acting as an HTTP client.
13. The assertion retrieval service at the producer retrieves the SAML assertion from the session server and responds with a SAML response that contains the SAML assertion.
14. The SAML credential collector makes a login call to the SAML artifact authentication scheme, passing the SAML assertion as credentials.
15. The SAML artifact authentication scheme validates the SAML assertion. It looks up the user record for the user based on the user mapping information configured for the SAML authentication scheme, and returns a success reply. If the SAML assertion is not valid or a user record can not be located, a failure is returned.

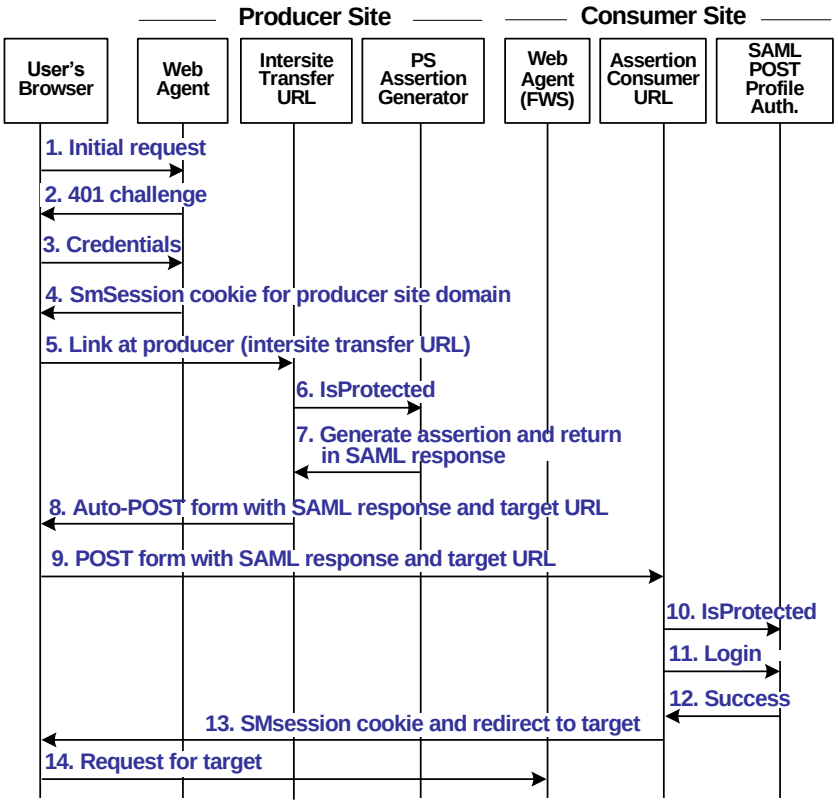
16. If a success reply is returned, the SAML credential collector issues a SiteMinder SMSESSION cookie to the user's browser for the consumer site domain. It also issues a 302 redirect to the target URL. If failure is returned from the SAML artifact authentication scheme, the SAML credential collector issue a 302 redirect to a no access URL.
17. The user's browser makes a request to the target URL, which is protected by the Web Agent at the consumer.

Flow Diagram for SSO Using SAML 1.x POST Profile Authentication

The illustration that follows shows the detailed flow between a user's browser and the Federation Security Service components deployed at producer and consumer sites. This set-up enables single sign-on between the sites. SAML POST profile is the authentication method and the diagram assumes successful authentication and authorization at the producer and consumer sites.

Note: This flow applies to examples that do not use the SAML Affiliate Agent.

The process flow diagram for SAML 1.x POST Profile follows.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. In the flow diagram, the Web Agent block would be the embedded Web Agent in the SPS federation gateway. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The sequence of events is as follows:

1. User requests a local page at the producer, which is protected by the Web Agent.
2. The Web Agent at the producer asks for user credentials.

   This flow diagram assumes that the resource is protected with basic authentication and that username and password are the required credentials.
3. The user submits credentials.
4. The Agent at the producer issues an SMSESSION cookie for the producer site domain and allows access to the local page.
5. The user clicks a link at the producer's local page to visit the consumer. The link looks like it goes to the consumer site but it actually goes to the intersite transfer URL, which contains the affiliate name, the assertion consumer URL, and the target resource as query parameters.
6. The Intersite Transfer Service makes an IsProtected call to the Policy Server for the resource. The URL contains the name query parameter that uniquely identifies the consumer.
7. The Policy Server recognizes the request as a request for a SAML assertion, generates the assertion and returns it in a digitally signed SAML response message. The Policy Server then returns the response to the intersite transfer URL.
8. The intersite transfer URL service generates an auto-POST form containing the encoded SAML response and the target URL as form variables and sends the form to the user's browser.
9. The user's browser automatically posts the HTML form to the Assertion Consumer URL at the consumer site. This URL was read from the SAML response message sent by the intersite transfer URL service.
10. The assertion consumer URL makes an isProtected call to the SAML POST profile authentication scheme. The authentication scheme informs the assertion consumer what type of credentials are required.
11. The assertion consumer URL makes a login call for the requested target resource to the SAML POST profile authentication scheme, passing the assertion as credentials.
12. If login succeeds, the assertion consumer URL generates an SMSESSION cookie for the consumer site domain.

13. The SMSESSION cookie is placed in the user's browser, and the assertion consumer URL redirects the user to the target resource.
14. The browser requests the target resource, which is protected by the consumer site Web Agent. Because the browser has an SMSESSION cookie for the consumer domain, the Web Agent does not challenge the user.

Flow Diagram for SSO Using SAML 2.0 Authentication with Artifact Binding

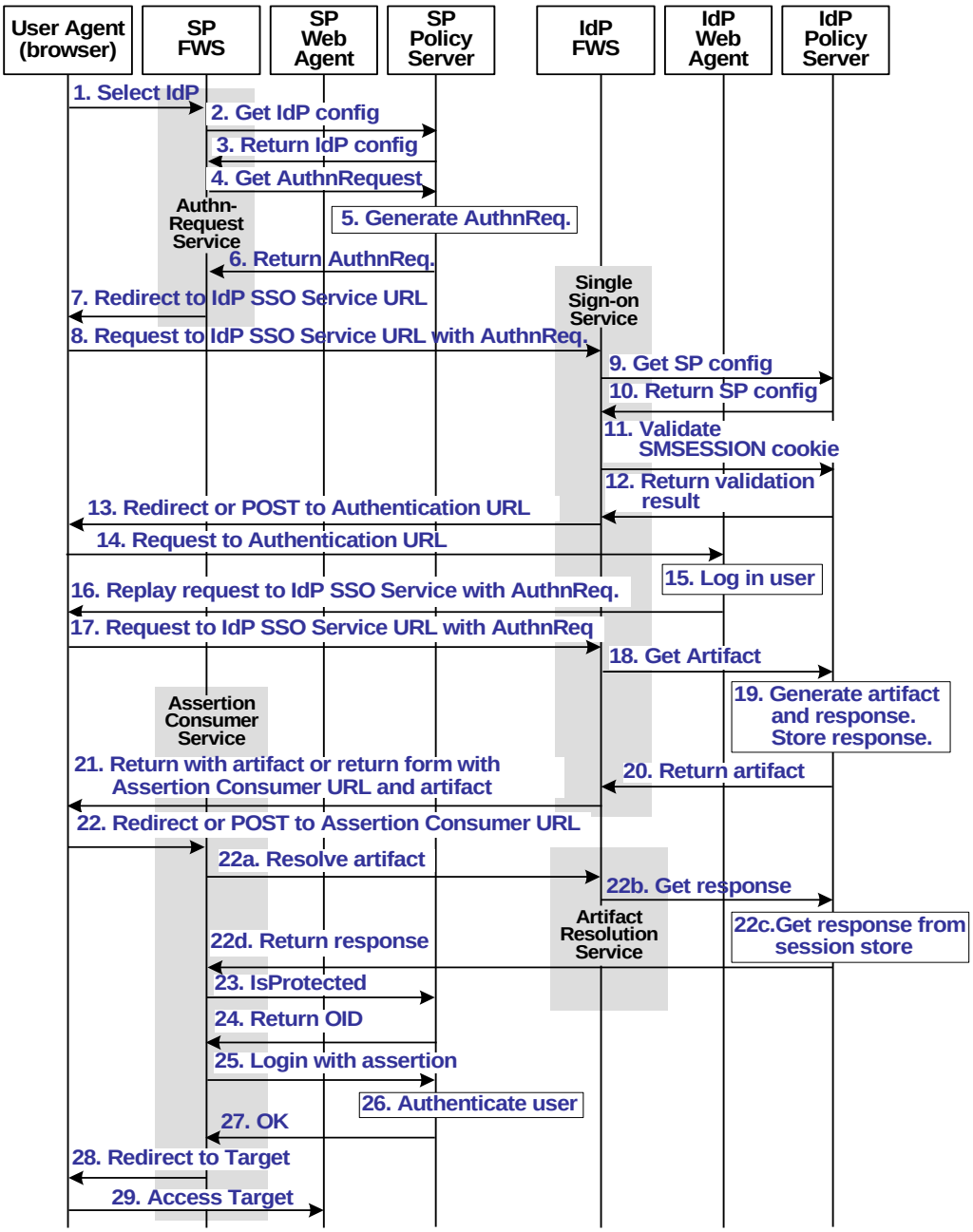
The illustration that follows shows the detailed flow between a user's browser and the Federation Security Service components deployed at the Identity Provider and Service Provider. This set-up enables single sign-on between the sites and uses the SAML 2.0 authentication scheme with artifact binding as the authentication method.

The flow diagram assumes the following:

- The SP initiates the request for a resource.
- Successful authentication and authorization at the IdP and SP sites.

Note: This flow applies to examples that do not use the SAML Affiliate Agent.

The flow diagram for SAML 2.0 Authentication-Artifact Binding follows.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. In the flow diagram, the Web Agent block would be the embedded Web Agent in the SPS federation gateway. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The sequence of events is as follows:

1. The user chooses a link at the SP to authenticate at a specific IdP. This link must include a Provider ID representing the chosen IdP.
2. SP FWS requests the IdP configuration information from the local Policy Server.
3. The local Policy Server returns the IdP configuration information to SP FWS. FWS may cache the configuration information.
4. SP FWS requests an AuthnRequest message from the local Policy Server via a tunnel call, passing the Provider ID. This call must contain the artifact profile in the ProtocolBinding element value.
5. The local Policy Server generates the AuthnRequest message in an HTTP redirect binding.
6. The local Policy Server returns the AuthnRequest message to the SP FWS in an HTTP redirect binding.
7. SP FWS redirects the user to the IdP SSO Service URL, which is obtained from the configuration information with the AuthnRequest message in an HTTP redirect binding.
8. The browser requests the IdP single sign-on service (SSO) URL.
9. IdP FWS requests the SP configuration information from the IdP local Policy Server.
10. The local Policy Server returns the configuration information. Note that FWS may cache the configuration information.
11. IdP FWS gets an SMSESSION cookie for this IdP's domain and calls the Policy Server to validate it. If there is no SMSESSION cookie, the IDP FWS skips redirects or posts to the Authentication URL.
12. The Policy Server verifies the validity of the SMSESSION cookie and returns the result.
13. If the SMSESSION cookie does not exist or is not valid, the IDP FWS redirects or posts to the Authentication URL obtained from the configuration information. If the SMSESSION cookie is valid, the IDP FWS requests a SAML 2.0 artifact from the local Policy Server (see step 18).
14. The browser requests the Authentication URL, which is protected by the IdP Web Agent.
15. The IdP Web Agent logs the user in, setting the SMSESSION cookie, and lets the request pass to the Authentication URL.
16. The Authentication URL is the redirect.jsp file, which replays the request to the IdP single sign-on service with the AuthnRequest message.

17. The browser requests the IdP single sign-on service URL. This request is equivalent to the request from step 8, but now the user has a valid SMSESSION cookie.

18. The IdP FWS requests a SAML 2.0 artifact from the local Policy Server, passing the AuthnRequest via an authorization call to the realm obtained from the configuration information.

19. The Policy Server generates the artifact and the corresponding response message based on the configuration information from the Service Provider. It stores the response in the session store.

    The message is stored as a session variable, and is named using the string representation of the artifact message handle.

20. The Policy Server returns the artifact to IdP FWS.

21. Based on the SP configuration information, the IdP FWS redirects the browser to the Assertion Consumer URL at the SP with the URL-encoded artifact as a URL parameter, or it returns a form containing the artifact form-encoded in two hidden form controls.

    The form is wrapped into a JavaScript to auto-POST the data when read by the browser. The Assertion Consumer URL is obtained from the configuration information.

    Note: If the assertion generator indicates that the authentication level for the current session is too low, the IdP FWS redirects to the authentication URL to facilitate step-up authentication.

22. If the artifact was sent as part of a URL, the browser redirects the user to the Assertion Consumer URL with the artifact. If the artifact was returned in a form, then the browser POSTs the artifact to the Assertion Consumer URL.

    The following steps reflect the back-channel call that the SP FWS Assertion Consumer service makes to the IdP FWS Artifact Resolution Service to resolve the artifact into a response message.

    a. The SP FWS obtains the artifact from the GET or POST data, depending on how the IdP FWS is configured to redirect the browser. It then obtains the SOAP endpoint of the Artifact Resolution Service from the IdP configuration information. The configuration data is retrieved by the source ID, which is part of the artifact. After obtaining the SOAP endpoint, the SP FWS makes a back-channel call to the IdP FWS Artifact Resolution service to resolve the artifact into a response message.

    b. The IdP FWS requests the response message from the local Policy Server. The message stored as a session variable is requested using the Java Agent API. The session ID is extracted from the artifact. The session variable name is the string representation of the artifact message handle.

c. The local Policy Server retrieves the response message from the session server and deletes it after the artifact retrieval.

d. The local Policy Server returns the response message to the IdP FWS. The IdP FWS returns the response message to the SP FWS Assertion Consumer Service.

The back-channel call is now complete.

23. The SP FWS obtains the response message from the post data, determines the target resource from the configuration and makes an isProtected call to the Policy Server for the target resource.

    If the assertion is encrypted, the FWS makes a tunnel call, which takes the encrypted assertion and returns the assertion in the clear.

24. The Policy Server returns the realm OID for the target resource.

25. The SP FWS passes the response message to the local Policy Server via a login call with the response message as credentials and the realm OID obtained from the isProtected call.

26. The SAML 2.0 authentication scheme logs the user in using the response message as credentials.

27. The local Policy Server returns OK to the SP FWS.

28. If a success reply is returned, SP FWS creates an SMSESSION cookie for the SP domain, places it in the user's browser and redirects the user to the target URL, which is obtained from the configuration information.

    If login fails, the SP FWS redirects the user to a No Access URL.

29. The user's browser requests the target URL, which is protected by the Web Agent at the SP. Because the user's browser has an SMSESSION cookie, the Web Agent does not challenge the user.

Flow Diagram for SSO Using SAML 2.0 Authentication with POST Binding

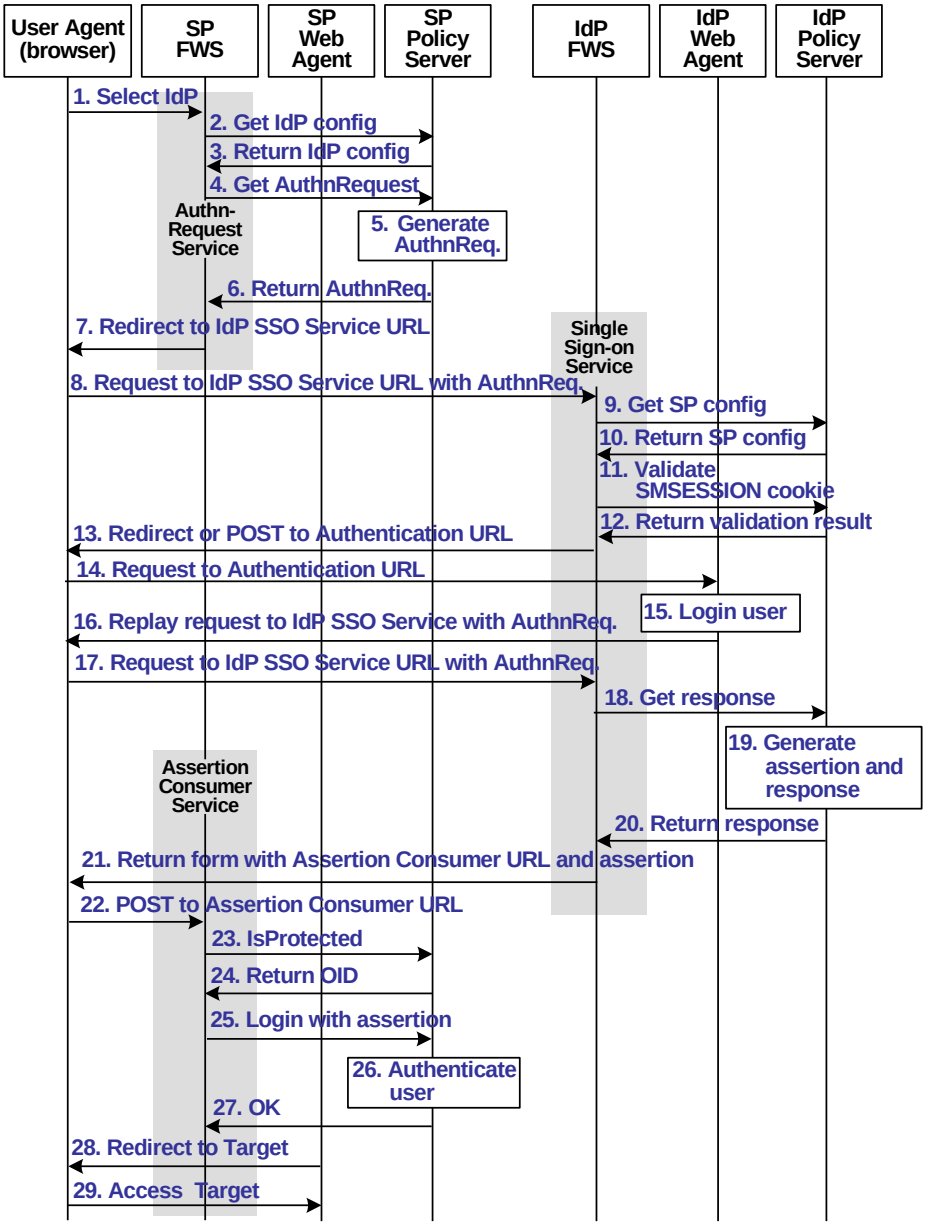
The illustration that follows shows the detailed flow between a user's browser and the Federation Security Service components deployed at an Identity Provider (IdP) and Service Provider (SP) sites. This set-up enables single sign-on between the sites, using SAML 2.0 POST binding as the method of obtaining the SAML assertion for authentication.

The flow diagram assumes the following:

- The SP initiates the request for a resource.
- Successful authentication and authorization at the IdP and SP sites.

Note: This flow applies to examples that do not use the SAML Affiliate Agent.

The flow diagram for SAML 2.0 authentication-POST binding follows.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. In the flow diagram, the Web Agent block would be the embedded Web Agent in the SPS federation gateway. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The sequence of events is as follows:

1. The user chooses a link at the SP to authenticate at a specific IdP. This link must include a Provider ID representing the chosen IdP.
2. SP FWS requests the IdP configuration information from the local Policy Server.
3. The Policy Server returns the IdP configuration information to SP FWS. FWS may cache this configuration information.
4. SP FWS requests an AuthnRequest message from the local Policy Server via a tunnel call, passing the Provider ID.
5. The Policy Server generates the AuthnRequest message in an HTTP redirect binding.
6. The local Policy Server returns the AuthnRequest message to the SP FWS in an HTTP redirect binding.
7. SP FWS redirects the user to the IdP Single Sign-on Service URL, which is obtained from the configuration information with the AuthnRequest message.
8. The browser requests the IdP Single Sign-on Service URL.
9. IdP FWS requests the SP configuration information from the IdP local Policy Server.
10. The local Policy Server returns the configuration information. Note that FWS may cache the configuration information.
11. IdP FWS gets an SMSESSION cookie for this IdP's domain and calls the Policy Server to validate it. If there is no SMSESSION cookie, the IDP FWS redirects or posts to the Authentication URL.
12. The Policy Server verifies the validity of the SMSESSION cookie and returns the result.
13. If the SMSESSION cookie does not exist or is not valid, the IDP FWS redirects or posts to the Authentication URL obtained from the configuration information. If the SMSESSION cookie is valid, the IDP FWS skips to 18.
14. The browser requests the Authentication URL, which is protected by the IdP Web Agent.
15. The IdP Web Agent logs the user in, setting the SMSESSION cookie and lets the request pass to the Authentication URL.
16. The Authentication URL is the redirect.jsp file, which replays the request to the IdP single sign-on service with the AuthnRequest message.
17. The browser requests the IdP single sign-on service URL. This request is equivalent to the request from step 8, but now the user has a valid SMSESSION cookie.

18. The IdP FWS request a a SAML 2.0 assertion from the Policy Server, passing the AuthnRequest via an authorize call to the realm obtained from the configuration information.
19. The Policy Server generates an assertion based on the configuration information for the SP, signs it, and returns the assertion wrapped in a response message.
20. The response message is returned to IdP FWS.
21. IdP FWS returns a form to the user, which contains the response message, the Assertion Consumer URL, obtained from the configuration information and the JavaScript to submit the form.

    Note: If the assertion generator returns an indication that the current sessions authentication level too low, the IdP FWS redirects to the authentication URL as in Step 13, to facilitate step-up authentication.
22. The user's browser posts the response message to the Assertion Consumer URL at the SP.
23. The SP FWS obtains the response message from the POST data, determines the target resource from the configuration and makes an isProtected call to the Policy Server for the target resource.

    If the assertion is encrypted, the FWS makes a tunnel call, which takes the encrypted assertion and returns the assertion in the clear.
24. The Policy Server returns the realm OID for the target resource.
25. The SP FWS passes the response message to the local Policy Server via a login call with the response message as credentials and the realm OID obtained from the isProtected call.
26. The SAML 2.0 authentication scheme logs the user in using the response message as credentials.
27. The local Policy Server returns OK to the SP FWS.
28. If a success reply is returned, SP FWS creates an SMSESSION cookie for the SP domain, places it in the user's browser and redirects the user to the target URL, which is obtained from the configuration information.

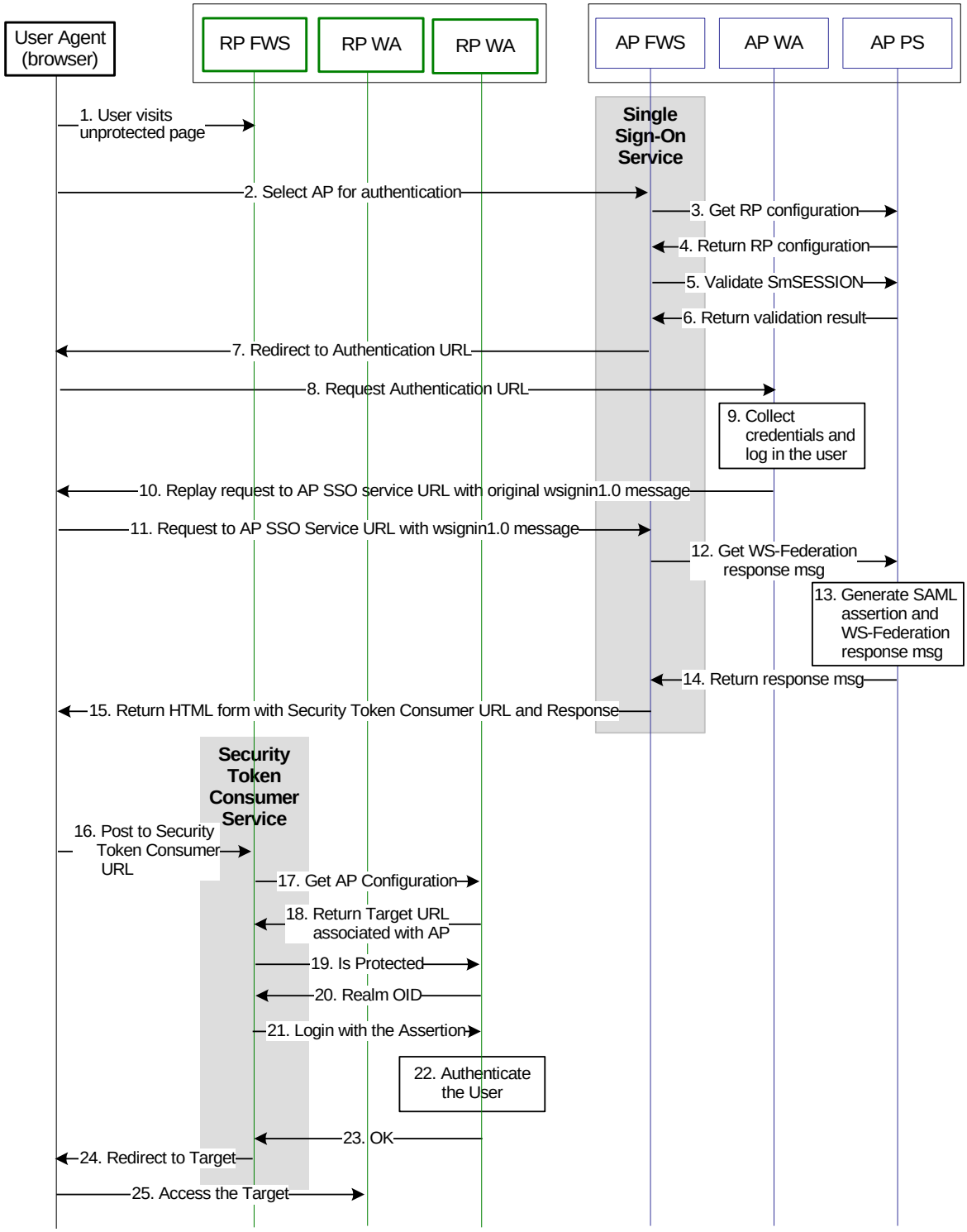
    If login fails, the SP FWS redirects the user to a No Access URL.
29. The user's browser requests to the target URL, which is protected by the Web Agent at the SP. Because the user's browser has an SMSESSION cookie, the Web Agent does not challenge the user.

Flow Diagram for WS-Federation SSO Initiated at the Resource Partner

The illustration that follows shows the detailed flow between a user's browser and the Federation Security Service components deployed at an Account Partner (AP) and Resource Partner (RP) sites. This set-up enables single sign-on between the sites, using WS-Federation as the method of obtaining the SAML assertion for authentication.

The flow diagram assumes the following:

- The Resource Partner initiates the request for a resource.
- Successful authentication and authorization at the AP and RP sites.


User Agent (browser)
RP FWS
RP WA
RP WA
AP FWS
AP WA
AP PS
Single Sign-On Service
1. User visits unprotected page
2. Select AP for authentication
3. Get RP configuration
4. Return RP configuration
5. Validate SmSESSION
6. Return validation result
7. Redirect to Authentication URL
8. Request Authentication URL
9. Collect credentials and log in the user
10. Replay request to AP SSO service URL with original wsignin1.0 message
11. Request to AP SSO Service URL with wsignin1.0 message
12. Get WS-Federation response msg
13. Generate SAML assertion and WS-Federation response msg
14. Return response msg
15. Return HTML form with Security Token Consumer URL and Response
Security Token Consumer Service
16. Post to Security Token Consumer URL
17. Get AP Configuration
18. Return Target URL associated with AP
19. Is Protected
20. Realm OID
21. Login with the Assertion
22. Authenticate the User
23. OK
24. Redirect to Target
25. Access the Target

Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. In the flow diagram, the Web Agent block would be the embedded Web Agent in the SPS federation gateway. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The WS-Federation single sign-on process is as follows:

1. The user visits an unprotected site selection page at the Resource Partner.
2. The user chooses a link to authenticate for AP that is a federated partner. This link actually points to the Single Sign-on Service at the AP, and must contain the Provider ID of the RP and may include some optional parameters, such as the wctx parameter. The browser requests the AP SSO Service URL.
3. Based on RP provider ID specified as a query parameter, the AP FWS requests the RP configuration information from the local Policy Server.
4. The local Policy Server returns the configuration information. Note that the FWS may cache the configuration information.
5. The AP FWS gets the SMSESSION cookie for the AP domain and calls the Policy Server to validate it. If there is no SMSESSION cookie, the AP FWS skips to step 7.
6. The Policy Server verifies the validity of the SMSESSION cookie and returns the result to the FWS application.
7. If the SMSESSION cookie does not exist or is not valid, the AP FWS redirects the user to the Authentication URL obtained from the RP configuration information. If the SMSESSION cookie is valid, the AP FWS skips to step 12.
8. The browser requests the Authentication URL which is protected by the AP Web Agent (WA).
9. The AP WA authenticates the user, sets the SMSESSION cookie and lets the request pass to the Authentication URL.
10. The Authentication URL points to the redirect.jsp, which replays the request to the AP SSO service with the original wsignin message.
11. The browser requests the AP SSO Service URL. This request is equivalent to the request from step 2, but now the user has a valid SMSESSION cookie
12. The AP FWS requests a WS-Federation <RequestSecurityTokenResponse> from the Policy Server via an authorize call to the realm obtained from the configuration information.
13. The Policy Server generates a SAML1.1 assertion based on the configuration information for the RP, signs it, and returns the assertion wrapped in an <RequestSecurityTokenResponse> message.

14. The <RequestSecurityTokenResponse> message is returned to the AP FWS.
15. The AP FWS returns a form to the user containing the following:
    - URL encoded <RequestSecurityTokenResponse> message
    - Security Token Consumer Service URL
    - Optional wctx that came with the wsignin message
    - JavaScript to auto submit the form.

    If the original wsignin request contains the wreply parameter, its value is used as Security Token Consumer URL, only if Security Token Consumer URL config setting is not specified in RP configuration information. For security reasons, the Security Token Consumer URL setting in the RP configuration information takes precedence over the value specified for the wreply parameter.

    Note: If the assertion generator indicates that the current session's authentication level is too low, the AP FWS redirects to the authentication URL as in step 7 to facilitate "step-up" authentication.
16. The user agent posts the <RequestSecurityTokenResponse> message and wctx to the Security Token Consumer URL at the RP.
17. The RP FWS obtains the <RequestSecurityTokenResponse> message and wctx from the POST data. RP FWS requests the AP configuration information from the local Policy Server.
18. RP FWS determines the target resource from the AP configuration information received from local Policy Server. If target resource is not specified as part of AP configuration, and the wctx parameter is found in the POST data, its value is used as target resource.
19. FWS makes an isProtected call to the Policy Server for the target resource.
20. The Policy Server returns the realm OID for the target resource.
21. The RP FWS passes the <RequestSecurityTokenResponse> message to the local Policy Server via a login call with the <RequestSecurityTokenResponse> message as credentials and the realm OID obtained from the isProtected call.
22. The WS-Federation authentication scheme logs the user in using the <RequestSecurityTokenResponse> message as credentials.
23. The local Policy Server returns an OK status message to the RP FWS.

24. The RP FWS creates a SMSESSION cookie for the RP domain, places it in the user's browser and redirects the user to the Target URL obtained from the configuration information or to the wctx POST data. If login fails the RP FWS redirects the user to a No Access URL.
25. The user agent requests the Target URL that is protected by the Web Agent at the RP. Since the user's browser has a SMSESSION cookie for the RP domain, the Web Agent does not have to challenge the user.

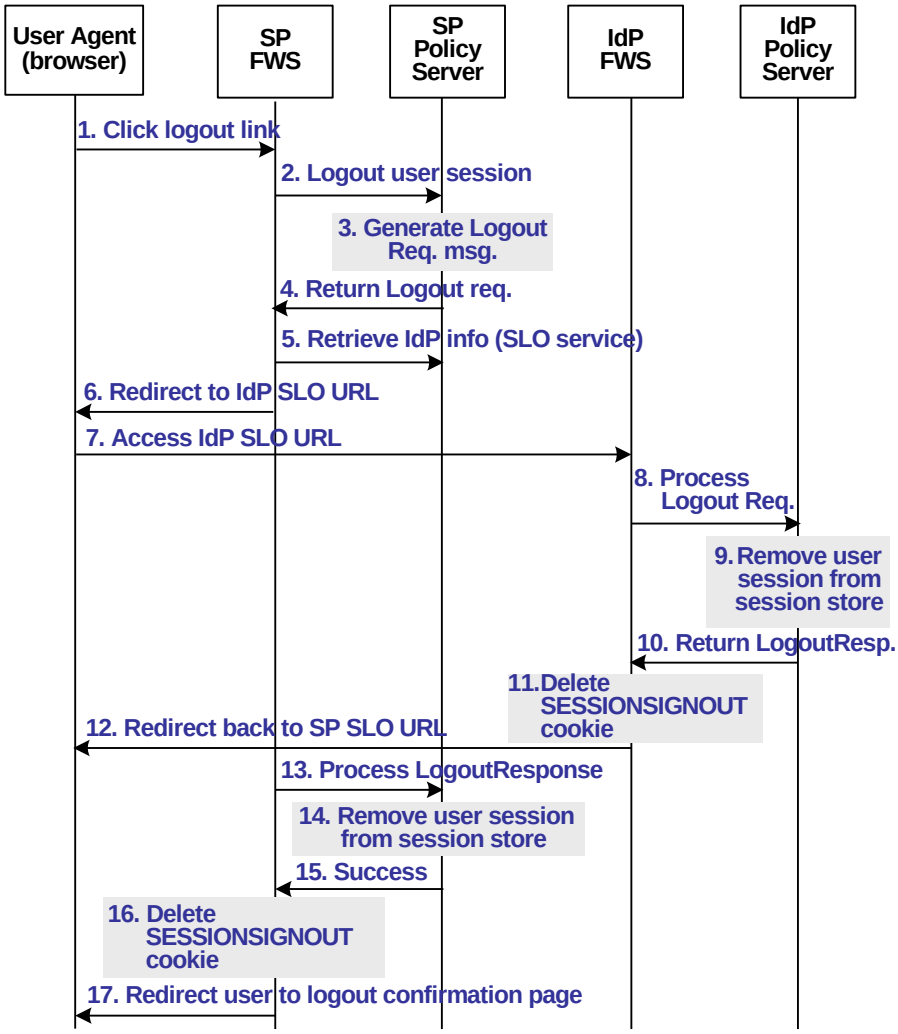
WS-Federation SSO Initiated at the Account Partner

Single sign-on initiated by the Account Partner is similar to the RP-initiated use case. HTML content at AP contains intersite transfer links to different RP sites. When the user clicks on any link, the web browser requests the AP SSO Service URL and the rest of the processing is same as specified in in the RP-initiated use case

Flow Diagram for SAML 2.0 Single Logout

The illustration that follows shows the detailed flow for a single logout request between a user's browser and the Federation Security Service components deployed at an Identity Provider (IdP) and Service Provider (SP) sites. This set-up enables single logout for all entities that have a session with a particular user.

The following diagram assumes that the SP initiates the log out request.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack, which provide the FWS application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The sequence of events is as follows:

1. The user clicks a link at SP to end his global session. The user's browser accesses the Single Logout servlet at the SP.

   SP FWS renames the SMSESSION cookie to SESSIONSIGNOUT to invalidate the user's current session.

2. FWS reads the SessionId value from the SESSIONSIGNOUT cookie and asks the Policy Server to terminate the user session.

3. Based on the session store information, the user session status is changed to a 'LogoutInProgress' state in the session store. The Policy Server determines that the user session was created based on the SAML assertion received from an IdP. It generates a LogoutRequest request to invalidate the user's session at the IdP.
4. The Policy Server returns a LogoutRequest request to SP FWS. It also returns the IdP's Provider ID and provider type.
5. SP FWS retrieves the IdP's provider configuration data, which includes the SLO service URL, from the Policy Server.
6. SP FWS redirects the user to the SLO service at the IdP with the SAML LogoutRequest message added as query parameter.
7. User's browser accesses SLO service at the IdP.

   When the IdP FWS receives a LogoutRequest message, it renames the SMSESSION cookie to SESSIONSIGNOUT.
8. The IdP processes the signed LogoutRequest message then tries to invalidate the user's session at all SPs specified in the session store for that user session, with the exception of the SP that sent the original LogoutRequest.

   Note: The process for logging the user out at each SP is similar to Step 2 through Step 7.
9. After terminating the user's session from all relevant SPs, the IdP removes the user session from the session store.
10. The IdP Policy Server returns a signed LogoutResponse message to the IdP FWS, containing the SP's provider ID and provider type. It also informs FWS that user session is removed from session store.
11. After learning that the user session is removed from the session store, IdP FWS deletes the SESSIONSIGNOUT cookie.
12. The IdP FWS redirects the user to the single logout service at the SP with the SAML LogoutResponse message added as query parameter. The single logout service is part of the SP FWS application.

    The user's browser accesses SP's SLO service, which processes the signed LogoutResponse message.

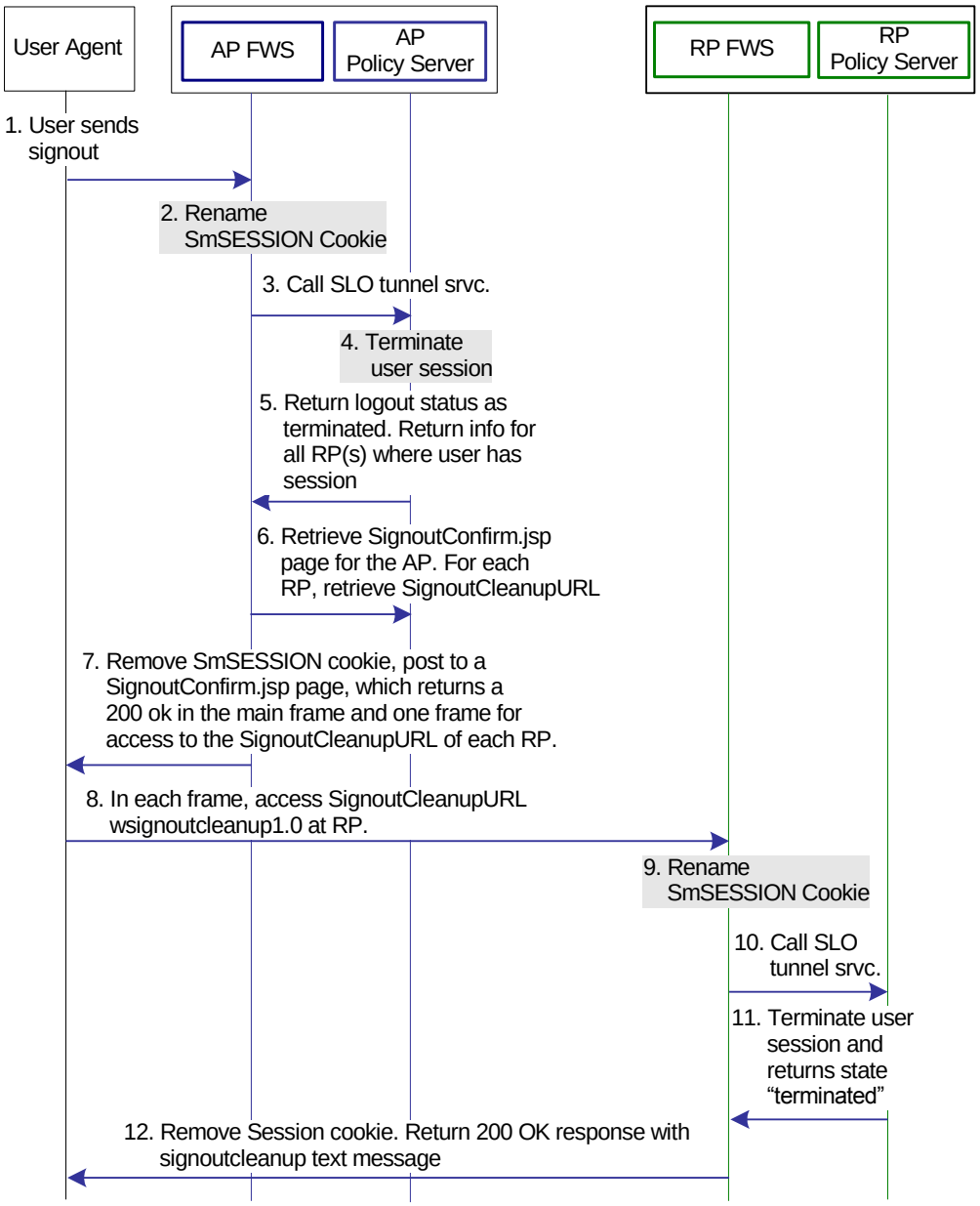
    If the LogoutResponse message contains non-SUCCESS return code, FWS issues a SIGNOUTFAILURE cookie, and a base 64-encoded Partner ID is appended to the cookie value. If there are multiple IDs in the cookie, they are separated by a space character.
13. The SP Policy Server receives the LogoutResponse message from FWS and processes it.
14. The SP Policy Server removes the user session from the session store.

15. After the session is removed from the session store, the Policy Server sends a SUCCESS return code to FWS along with the SP provider ID in the final LogoutResponse message.
16. If there are no more LogoutRequest or LogoutResponse messages to process, SP FWS deletes the SESSIONSIGNOUT cookie.
17. FWS redirects the user to the Logout Confirmation page at the SP.

Flow Diagram for WS-Federation Signout (AP-initiated)

The illustration that follows shows the detailed flow for a signout request between a user's browser and the Federation Security Service components deployed at an Account Partner (AP) and Resource Partner sites. This set-up enables signout for all entities that have a session with a particular user.

The following illustration assumes that the AP initiates the signout request.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack, which provide the FWS application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

When signout is initiated at the Account Partner, the process flow is as follows:

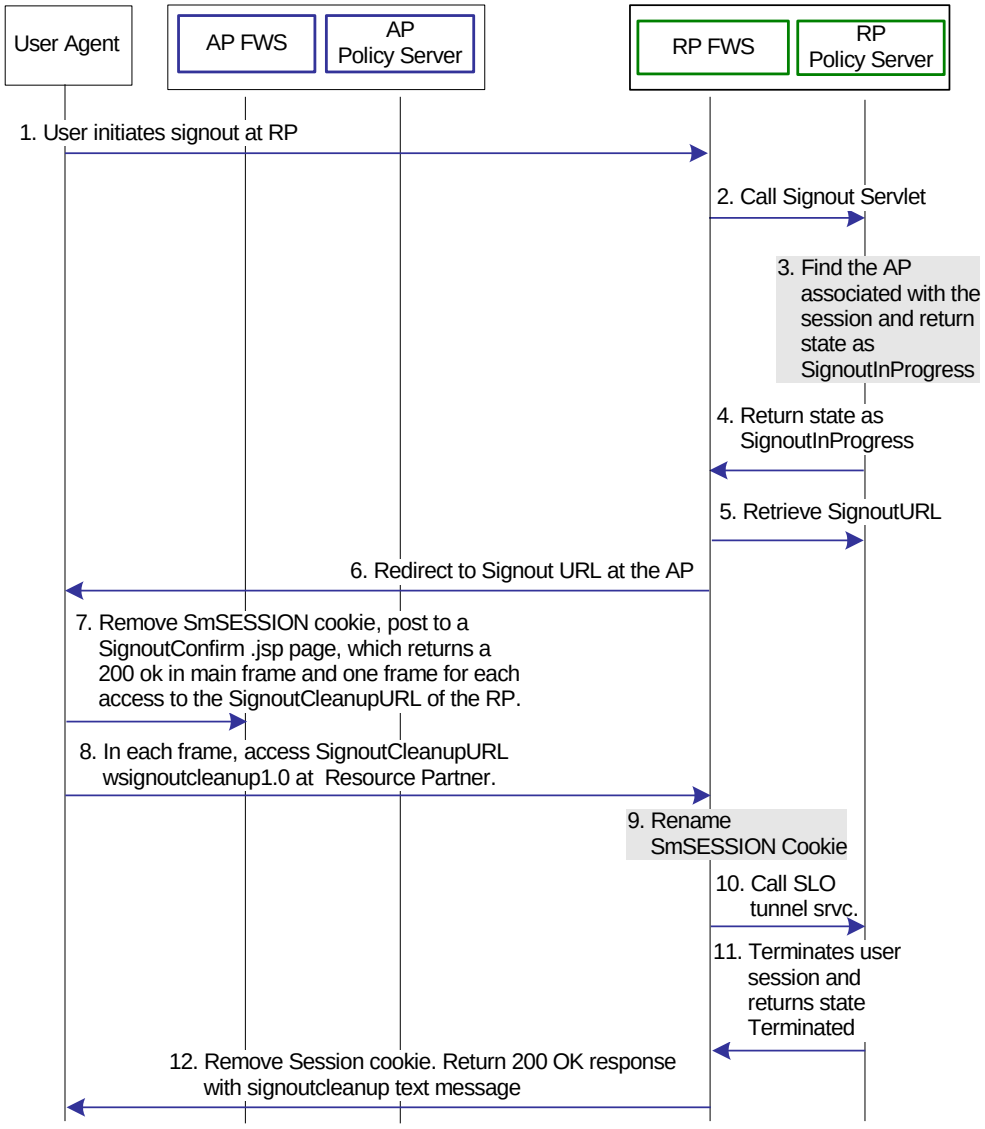
1. The user clicks on a link at the Account Partner to end his global session. The user's browser sends a HTTP-based wsignout request to the signout servlet at the Account Partner.
2. FWS renames the SMSESSION cookie to SESSIONSIGNOUT to invalidate the user's current session.
3. FWS reads the SessionId value from the SESSIONSIGNOUT cookie and calls the SLO Tunnel Service API to terminate the user session from the session store.
4. The SLO Tunnel Service API sets the user session status to "Terminated" in the session store and removes all the RP references from the session store that are associated with that user session.
5. The SLO Tunnel Service API returns the logout status "Terminated" to the FWS Signout Servlet. The Tunnel library also returns the RP providerID and providerType for all the RPs associated with the user session.
6. FWS retrieves the RP's provider configuration data, which includes the signout cleanup URL, from the provider's cache maintained in FWS.
7. FWS removes the SESSIONSIGNOUT cookie then posts an AP Signout message and multiple RP-SignoutCleanup locations as post data to the SignoutConfirmURL JSP. The SignoutConfirmURL JSP is responsible for parsing various post variables and creating a frame-based HTML page. The main frame in this HTML page displays the AP-SignOut message. Each of the remaining frames accesses the SignoutCleanupURL of individual RPs associated with the user session.
8. The user's browser accesses SignoutCleanup service at the Resource Partner site in an individual frame.
9. When FWS (Signout Servlet) at the Resource Partner receives a wsignoutcleanup request, it renames the SMSESSION cookie to SESSIONSIGNOUT and calls the SLO Tunnel Service API to process the wsignoutcleanup request.
10. The SLO tunnel library processes the wsignoutcleanup request and terminates the user session from the session store.
11. Then SLO tunnel library returns FWS with a "Terminated" status message indicating that the user session no longer exists in the session store.
12. The FWS Signout Servlet removes the SESSIONSIGNOUT cookie and returns a 200 OK response in the frame.

Note: Steps 8-12 are repeated for individual RPs simultaneously in different frames of the same HTML page.

Flow Diagram for WS-Federation Signout (RP-initiated)

The illustration that follows shows the detailed flow for a signout request between a user's browser and the Federation Security Service components deployed at an Account Partner (AP) and Resource Partner sites. This set-up enables signout for all entities that have a session with a particular user.

The following diagram assumes that the RP initiates the sign out request.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack, which provide the FWS application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

When signout is initiated at the Resource Partner, the process flow is as follows:

1. The user clicks on a link at the Resource Partner to end his global session. The user's browser sends a HTTP-based wsignout request to the Signout servlet at the Resource Partner.

   Note: that the RP site is receiving a wsignout message and not a wsignoutcleanup message.

2. FWS reads the SessionId value from the SMSESSION cookie, renames the SMSESSION cookie to SESSIONSIGNOUT, and calls the SLO tunnel library with the wsignout request.

3. Based on the information found in session store, the tunnel library determines that the user session was created by consuming a SAML assertion from an Account Partner. The SLO tunnel library sets the user session state to "SignoutInProgress," but does not terminate it.

4. The tunnel library returns the SignoutInProgress state message and the Account Partner providerID and providerType.

5. FWS retrieves Account Partner configuration data, which includes the Signout URL, from the FWS cache or Policy Server.

6. FWS redirects the user's browser to the Signout URL.

7. FWS removes the SESSIONSIGNOUT cookie then posts an AP Signout message and multiple RP-SignoutCleanup locations as post data to the SignoutConfirmURL JSP. The SignoutConfirmURL JSP is responsible for parsing various post variables and creating a frame-based HTML page. The main frame in this HTML page displays the AP-SignOut message. Each of the remaining frames accesses the SignoutCleanupURL of individual RPs associated with the user session.

8. The user's browser accesses SignoutCleanup service at the Resource Partner site in an individual frame.

9. When FWS (Signout Servlet) at the Resource Partner receives a wsignoutcleanup request, it renames the SMSESSION cookie to SESSIONSIGNOUT and calls the SLO Tunnel Service API to process the wsignoutcleanup request.

10. The SLO tunnel library processes the wsignoutcleanup request and terminates the user session from the session store.

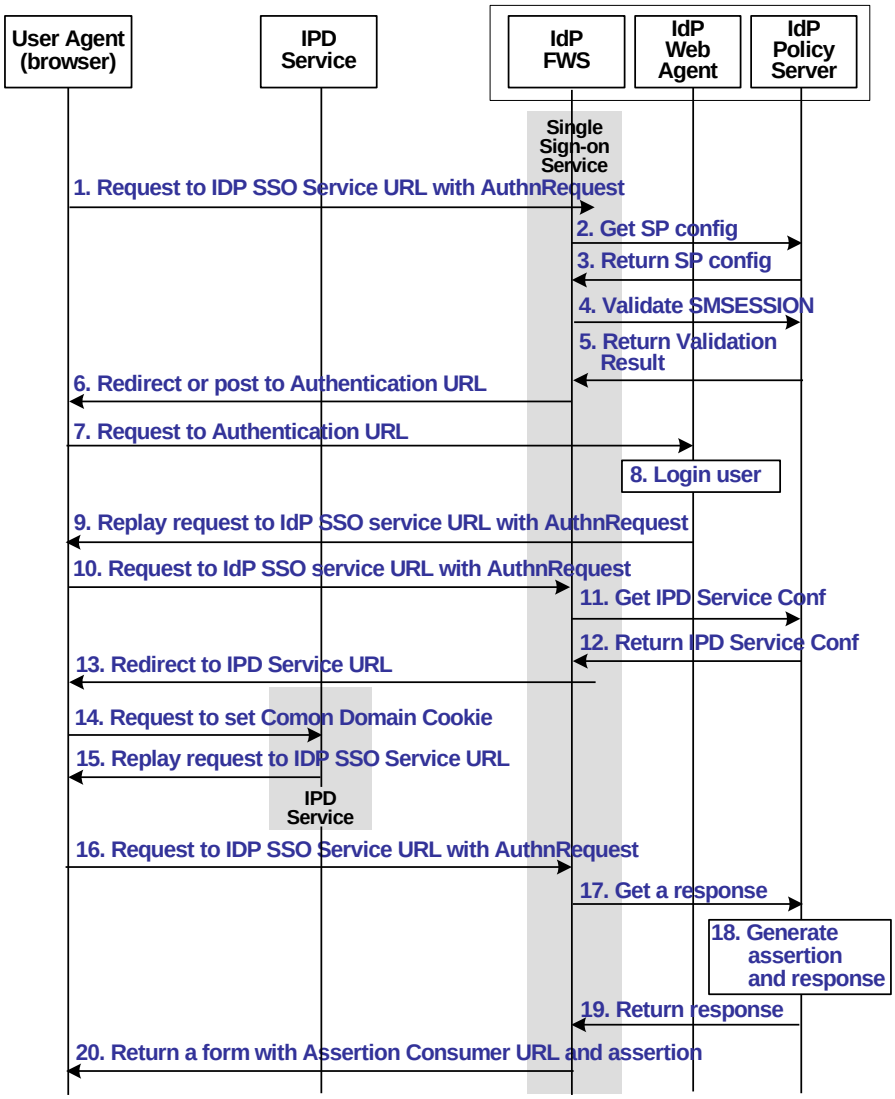
11. Then SLO tunnel library returns FWS with a "Terminated" status status message indicating that the user session no longer exists in the session store.
12. The FWS Signout Servlet removes the SESSIONSIGNOUT cookie and returns a 200 OK response in the frame.

Note: Steps 8-12 are repeated for individual RPs simultaneously in different frames of the same HTML page.

Flow Diagram for Identity Provider Discovery Profile

The illustration that follows shows the detailed flow for an Identity Provider Discovery service between a user's browser and the Federation Security Service components deployed at an Identity Provider site. This set-up involves redirecting from an Identity Provider to the Identity Provider Discovery Profile service to set the common domain cookie.

The following diagram assumes that the SP FWS redirects the user to the IdP SSO Service URL.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. In the flow diagram, the Web Agent block would be the embedded Web Agent in the SPS federation gateway. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The Identity Provider Discovery process is as follows:

1. The user agent (browser) requests the IdP SSO Service URL.
2. The IdP FWS requests the SP configuration information from the local Policy Server.
3. The local Policy Server returns the configuration information.

   Note that the FWS may cache the configuration information.
4. The IdP FWS gets the SMSESSION cookie for the IdP domain and calls to the Policy Server to validate it. If there is no SMSESSION cookie, the IdP FWS skips to Step 6.
5. The Policy Server verifies the validity of the SMSESSION cookie and returns the result.
6. If the SMSESSION cookie does not exist or is not valid, the IdP FWS redirects or posts to the Authentication URL obtained from the configuration information. If the SMSESSION cookie is valid, the IdP FWS skips to Step 18.
7. The user agent requests the Authentication URL, which is protected by the IdP Web Agent.
8. The IdP Web Agent logs the user in, setting the SMSESSION cookie and lets the request pass to the Authentication URL.
9. The Authentication URL is the redirect.jsp file, which replays the request to the IdP SSO Service with the AuthnRequest message.
10. The user agent requests the IdP SSO Service URL. This request is equivalent to the request from step 8, but now the user has a valid SMSESSION cookie.
11. The IdP FWS requests the Identity Provider Discovery Profile (IPD) configuration from the Policy Server, passing the Identity Provider ID.
12. The Policy Server returns with the IPD configuration, such as IPD Service URL, common domain cookie, and persistence information of the common domain cookie.
13. The IdP FWS redirects the user to the IPD Service URL to set the common domain cookie.
14. The IdP FWS redirects the user to the IPD Service URL.
15. The IPD Service sets/updates the common domain cookie with the Identity Provider's ID and redirects the user agent back to the IdP FWS from which it received the Set Request.
16. The user agent requests the IdP SSO Service URL.
17. The IdP FWS requests a SAML 2.0 assertion from the Policy Server, passing the AuthnRequest via an authorize call to the realm obtained from the configuration information.

18. The Policy Server generates an assertion based on the configuration information for the Service Provider, signs it, and returns the assertion wrapped in a response message.
19. The response message is returned to the IdP FWS.
20. The IdP FWS returns a form to the user containing the response message, the Assertion Consumer URL obtained from the configuration information and Javascript to submit the form.

    Note: If the assertion generator indicates that the current session's authentication level is too low, the IdP FWS will redirect to the authentication URL as in Step 13 to facilitate step-up authentication.

After the final step in the diagram, the user agent posts the response message to the Assertion Consumer URL at the Service Provider.

SiteMinder Administrative User Interfaces

Beginning with SiteMinder r12 SP1, there are two graphical user interfaces (UIs) that configure SiteMinder policy objects, as follows:

Administrative UI

The Administrative UI is a web-based administration console that is installed independent of the Policy Server. Use the Administrative UI to view, modify, and delete all Policy Server objects except those related to Federation Security Services. All federation-related configuration tasks should be handled using the FSS Administrative UI.

Federation Security Services Administrative UI (FSS Administrative UI)

The FSS Administrative UI is an applet-based application that is installed with the Policy Server. The federation-specific UI objects consist of affiliates (consumers, service providers, resource partners) and SAML authentication schemes that you configure to support federated communication between two partners.

The intent of the FSS Administrative UI is to let you manage SiteMinder Federation Security Services. If you are familiar with previous versions of the SiteMinder Policy Server User Interface, you will notice that all SiteMinder objects appear in the FSS Administrative UI, except the application objects for Enterprise Policy Management (EPM). You may use the FSS Administrative UI to manage these objects. If you need information while using the FSS Administrative UI, please consult the online help.

Important! You must register each UI with the Policy Server. Registering the FSS Administrative UI with the Policy Server ensures that the communication between both components is FIPS-encrypted (AES encryption). For more information about registering a UI, see the *Policy Server Installation Guide*.

Chapter 2: Deploying Federation with the FSS Sample Application

This section contains the following topics:

Federation Sample Application Overview

The easiest way to become familiar with SiteMinder Federation Security Services is to deploy the SiteMinder FSS sample application and use it to test SAML 2.0 single sign-on and single logout. After running the sample application, you can look at the SiteMinder policy objects created by the sample application and examine the SiteMinder logs containing assertions. Finally, you can use the sample application objects as a basis for configuring your own federation environment.

Note: The FSS sample application cannot be used with SAML 1.x.

The federation sample application automates all the configuration tasks you would perform manually to accomplish SAML 2.0 single sign-on and single logout.

In a deployment that includes only SiteMinder Federation Security Services, we recommend that you install all components on a single system acting as an Identity Provider (IdP) and Service Provider (SP). However, the sample application can be installed on two separate machines, one acting as the IdP and the other as the SP.

The sample application contains the following components:

- Configuration files for creating SiteMinder policy objects and SMFE objects
  - FederationSample.conf

    FederationSample.conf contains configuration settings that define the IdP and SP-side SiteMinder policy objects. The information in this file is also used to create sample web pages to test single sign-on and single logout using the local environment settings.
  - SMFEConfig.conf

    Important! For FSS-to-FSS communication, the SMFEConfig.conf file is not used, but it is installed with the Policy Server.

    SMFEConfig.conf contains information used to create SMFE objects, such as the SP and IdP connection settings for SMFE-to-FSS communication. The information in this file is also used to create sample web pages to test single sign-on and single logout using the local environment settings.

    For information about the SMFEConfig.conf file, see the *SiteMinder Federation Endpoint Deployment Guide*.
- SetupFederationSample.pl Perl script

  SetupFederationSample.pl is a Perl script that executes the FSS sample application. This script creates the objects needed for the IdP and SP sites. The script also creates the necessary web pages required to initiate single sign-on and single logout between the IdP and the SP. The script relies on the information in the FederationSample.conf file to operate.

  Note: By default, the script assumes an FSS-to-FSS configuration.
- Web pages to Test Single Sign-on and Single Logout

  The sample application installs web pages with HTML links to trigger SAML 2.0 single sign-on and single logout transactions between the IdP and SP. When you install the sample application, the directories with these pages are copied to the web server's document root directory that you specify in the FederationSample.conf file.

  The IdP web pages are in the idpsample directory within the web server's document root. These pages include:
  - index.jsp

    Index.jsp is the first web page the user accesses at the IdP for Idp-initiated single sign-on. This page provides the link to the protected target resource at the sp.demo partner site. This page also provides a single logout link.

    Note: The single logout link is displayed only if FSS is the IdP and an SMSESSION cookie is in the request headers.

- SLOConfirm.jsp

  SLOConfirm.jsp displays a message that the user has successfully logged out from idp.demo and sp.demo domains.

The SP web pages are in the spsample directory under the web server's document root. These pages include:

- index.jsp

  Index.jsp is the first web page the user accesses at the SP for SP-initiated single sign-on. This page provides a link to the protected target resource with the user's credentials at the idp.demo partner site. This page also provides single logout link.

  Note: The single logout link is displayed only if FSS is the IdP and an SMSESSION cookie is in the request headers.

- target.jsp

  Target.jsp a protected page at the sp.demo partner site, located in /spsample/protected directory. It is protected by the SAML 2.0 authentication scheme. A user sees this page when single sign-on between the IdP and SP is successful.

- SLOConfirm.jsp

  SLOConfirm.jsp displays a message that the user has successfully logged out from the idp.demo and sp.demo domains.

Prerequisites for Using the FSS Sample Application (r12sp1 FSS Gd)

Before you run the FSS sample application, you must satisfy the following requirements:

- SiteMinder requirements (SiteMinder r12 SP1 components recommended):
  - Install an LDAP or ODBC user directory and policy store
  - Install a SiteMinder Policy Server
  - Install a SiteMinder Web Agent

    The web server where the Web Agent is installed does not require an SSL port.
  - Ensure the Policy Server and Web Agent are configured properly and that you can protect a resource using any authentication scheme.

  Important! Core SiteMinder has to be functioning properly to run the sample application successfully.

- SiteMinder Federation Security Services requirements
  - Install the SiteMinder Policy Server.

    Important! If you choose to initialize a new policy store, the Policy Server installer will automatically import the affiliate objects contained in the ampolicy.smdif file. These objects are necessary for federation. If you use an existing policy store that you do not initialize, you will have to manually import the affiliate objects.To verify that the import is successful, log in to the FSS Administrative UI and click on Domains in the System tab. You should see the FederationWebServices domain object.
  - Install the SiteMinder Web Agent Option Pack on the same web server as the Web Agent. This is required because Federation Web Services, which is installed by the Web Agent Option Pack, has to run on the same system as ServletExec, the servlet engine being used with the sample application.
  - (Optional) If you want to see the assertion that is generated when you test single sign-on, you have to enable FSS trace logging so that the FWSTrace.log file is generated. You enable logging in the LoggerConfig.properties file, located in the directory *web_agent_home*/affwebservices/WEB-INF/classes.
  - Install and configure ServletExec.

    You should have received a license file called licensekey50.txt from CA Support. From this license file, copy the license key and enter it in the ServletExec License dialog of the ServletExec Administration Console.
  - Deploy Federation Web Services as a ServletExec web application.

    You do not have to setup the Federation Web Services Application; these tasks are done by the sample application. However, you do have to deploy Federation Web Services as a ServletExec web application. You deploy a web application using the ServletExec Administration Console.

    Note: For instructions on installing ServletExec, setting the license key, and deploying web applications, see New Atlanta Communication's ServletExec documentation.
  - Configure and enable a session store (SQL or Oracle ODBC database). Setup the database instance using a session server scheme file.

    For instructions on configuring a session server, see the *SiteMinder Policy Server Installation Guide*. To point the Policy Server to the session server after you have created it, see the *SiteMinder Policy Server Administration Guide*.

  Note: If you are using two separate systems, install all these components on both systems.

- Use the Perl interpreter shipped with the FSS sample application to run the application.
- Add the variable <*NETE_PS_ROOT*>\CLI\bin to the system PATH environment variable to invoke the Perl script to run the sample application.

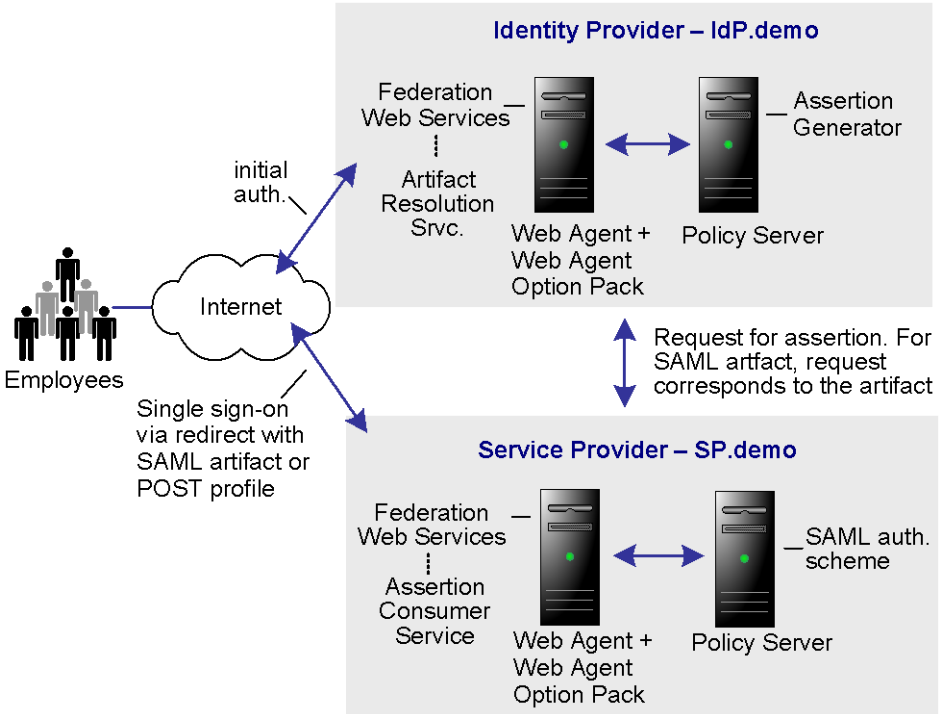
  Important! Ensure that the Perl binary bundled with the Policy Server is the first or only such binary in the PATH so that the bundled Perl binary is invoked and not another Perl script.
- The user running the Perl script must have read/write permissions to the web server's document root directory.

Note: If your Federation Security Services system is communicating with a SiteMinder Federation Endpoint system, see the SiteMinder Federation Endpoint Guide for the additional endpoint requirements.

Sample FSS Network (for sample app)(r12sp1)

The sample Web sites in the SiteMinder federated network are an Identity Provider named idp.demo, and a Service Provider named sp.demo. There is a business partnership between idp.demo and sp.demo.

The following illustration shows the sample federated network.



How To Run the Sample Application

After completing the necessary prerequisites, you can run the sample application.

To use the FSS sample application, complete the following process

1. Modify the settings in the FederationSample.conf file for your environment.
2. Run the SetupFederationSample.pl Perl script.
3. Test single sign-on and single logout.

Modify the FederationSample.conf File

The FederationSample.conf file holds the settings for the local environment, such as your web server port and user directory. It also contains one setting for the partner site.

At an FSS site, the information in this file is used to create IdP and SP SiteMinder policy objects, such as policy domains and SAML Service Provider objects.

To access the FederationSample.conf file and modify the settings

1. Go to *policy_server_home*/samples/federation.
2. Open the FederationSample.conf file.
3. Modify the settings in the file.
4. Save the file.

FederationSample.conf Settings

You must configure all the settings in the FederationSample.conf file at an FSS site.

The settings are as follows:

USER_DIRECTORY

Specifies the name of an existing user directory object specified in the FSS Administrative UI. This directory must contain at least one user entry. If no value is specified for this setting, the sample application script reads the user directory information from the policy store, provided there is only one user directory listed. If more than one user directory is listed, the sample application script asks the user to enter the user directory name in this file. There is no default value.

USER_ATTRIBUTE

Indicates that the value of this attribute becomes the Name Identifier value in the SAML assertion. If no value is specified for this setting, the sample application script chooses a value based on the user directory type. Example of attribute values can include:

- LDAP: uid or mail
- ODBC: name or email

If no value is specified, the following defaults are used:

- For LDAP: uid
- For ODBC: name
- For ActiveDirectory: cn

AGENT_NAME

Defines the name of the DefaultAgentName configuration setting for the Web Agent. This setting is specified in the Agent Configuration Object of the Policy Serve User Interface. If no value is specified for this setting, the sample application script reads the DefaultAgentName from the policy store, provided only one Agent configuration object found in the policy store. If more than one Agent configuration object exists, the sample application prompts the user to enter the DefaultAgentName value in this file.

WEB_SERVER_DOC_ROOT

Specifies the full path to the web server's document root directory. The default value is C:\Inetpub\wwwroot, the root directory for an IIS Web server. For example, if you are using a Sun Java System web server, the path would be *server_root*/docs .

WEB_SERVER_PORT

Specifies the Web server's listening port. The default port is 80.

PARTNER_WEB_SERVER_PORT

Specifies the listening port of the web server on the opposite side of the federation connection. For example, if your site is the IdP, then this is the SP's web server port. The default port is 80.

SetupFederationSample.pl Command Options

The SetupFederationSample.pl script executes the sample application and sets up the Idp and SP objects that enable single sign-on and single logout.

This script is located in the directory *policy_server_home*/samples/federation

To run the sample application script, use the following command and the associated command options.

The command syntax is:

perl SetupFederationSample.pl *-command_option value*

You can specify several command options in a command line.

Example:

perl SetupFederationSample.pl -idp FSS

Important! All the command line options are case-sensitive.

The SetupFederationSample.pl command options are:

-admin

Specifies the SiteMinder Administrator's user name. Use this option only when you are setting up a SiteMinder FSS system.

-password

Specifies the SiteMinder Administrator's password in clear text. Use this option only when you are setting up a SiteMinder FSS system.

-remove

Removes all objects created by the sample application.

-idp

Creates only the IdP objects in the SiteMinder policy store. You cannot use this option and the -sp option together. If you do not specify a value for this option or the -sp option, the sample application assumes a default of FSS-to-FSS communication. The possible values are FSS or SMFE.

-sp

Creates only SP policy objects in the SiteMinder policy store. You cannot use this option and the -idp option together. The possible values are FSS or SMFE.

-partner

(optional) Indicates which application is installed at the partner site. The default is FSS. Possible values are: FSS or SMFE.

Deploy the Sample Application on One System

To run the FSS sample application, you execute the SetupFederationSample.pl script from a command line. Be aware that after you run the SetupFederationSample.pl once, running it again deletes the sample policy objects created by the previous execution of the script.

Important! You must use the Perl interpreter that is shipped with SiteMinder. This script is located in the directory *policy_server_home*/CLI/bin.

To run the sample application on a single system

1. Complete all core SiteMinder and Federation prerequisites.
2. (Optional) If you are using a web browser on a system that does not have the correct host mappings for www.idp.demo and www.sp.demo, add these mappings to the system's hosts file.
   - On Windows, the host file is typically located in WINDOWS\system32\drivers\etc\hosts.
   - On Solaris/UNIX, the host file is commonly located in /etc/hosts.
3. Define your environment by configuring the FederationSample.conf file (see page 116).
4. Open up a command window.
5. Navigate to *policy_server_home*/siteminder/samples/federation
6. Enter the following command then follow the prompts:

   perl SetupFederationSample.pl -admin *siteminder_administrator* -password *administrator_password*

   Note: When you are prompted to continue with the installation, enter the word "yes." Do not only enter the letter "y."
7. Restart the Policy Server after the script is finished.
8. Test single sign-on and single logout (see page 122).

The script accomplishes the following:

- reads the configuration information from FederationSample.conf file.
- creates policy objects in the policy store that are needed to establish the SAML 2.0 single sign-on and single logout profiles.
- copies web pages to the web server document root
- adds a private key and the corresponding certificate data to smkeydatabase.
- modifies the system's hosts file to map a loopback IP address, 127.0.0.1 to www.sp.demo and www.idp.demo

Deploy the Sample Application on Two Systems

You can install the sample application on two separate systems, one system acting as the Identity Provider and the other system acting as the Service Provider. Be aware that after you run the SetupFederationSample.pl once, running it again deletes the sample policy objects created by the previous execution of the script.

To execute the sample application on two systems

1. Complete all the core SiteMinder and Federation prerequisites on both systems.
2. Modify the host file of each system so it recognizes the other system with which it is communicating.
   - On the IdP system, www.idp.demo, modify the host file of this system to include the IP address of the SP system.
   - On the SP system, www.sp.demo, modify the host file of this system to include the IP address of the IdP system.

   On Windows, the host file is typically located in WINDOWS\system32\drivers\etc\hosts.

   On Solaris/UNIX, the host file is commonly located in /etc/hosts.
3. (Optional) If you are using a web browser on a system that does not have the correct host mappings for www.idp.demo and www.sp.demo, add these mappings to the system's hosts file.
4. Define your environment by configuring the FederationSample.conf file (see page 116) for each system.
5. Execute the sample application as follows:
   - On the IdP system, enter the following command:

     perl SetupFederationSample.pl -admin *siteminder_administrator* -password *administrator_password* -idp FSS
   - On the SP system, enter the following command:

     perl SetupFederationSample.pl -admin *siteminder_administrator* -password *administrator_password* -sp FSS
6. Restart both Policy Servers.
7. Test single sign-on and single logout (see page 122).

Test Single Sign-on with the FSS Sample Application

After running the sample application, you can test single sign-on.

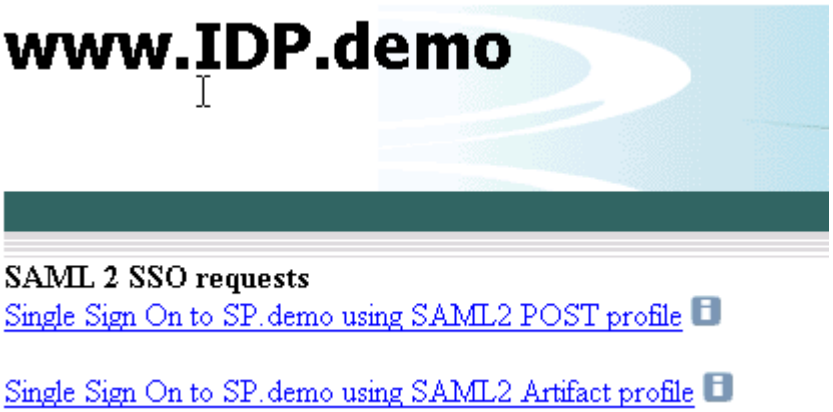
To test federated single sign-on

1. Open up a browser.
2. Enter the URL for the web page that has links to trigger single sign-on.
   - For IdP-initiated single sign-on, access the index.jsp page at:

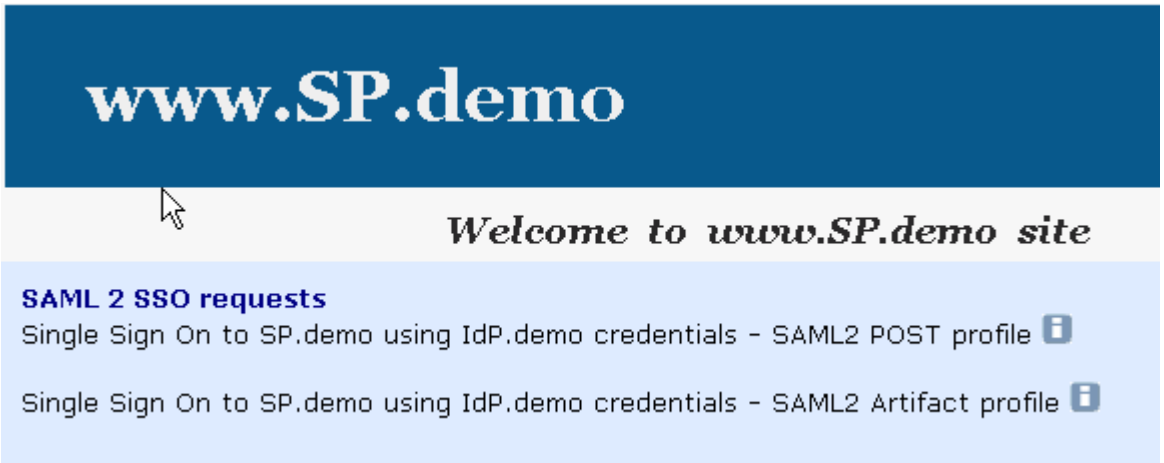
     http://www.idp.demo:*server_port*/idpsample/index.jsp
   - For SP-initiated single sign-on, access the index.jsp page at:

     http://www.sp.demo:*server_port*/spsample/index.jsp

   The following figure is the IdP.demo home page:

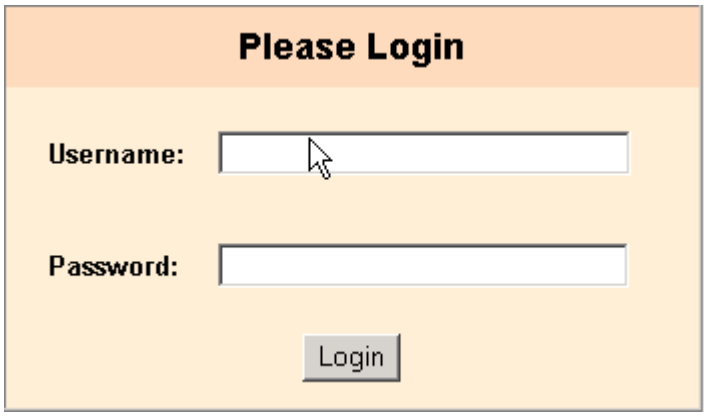


   The following figure is the SP.demo home page:



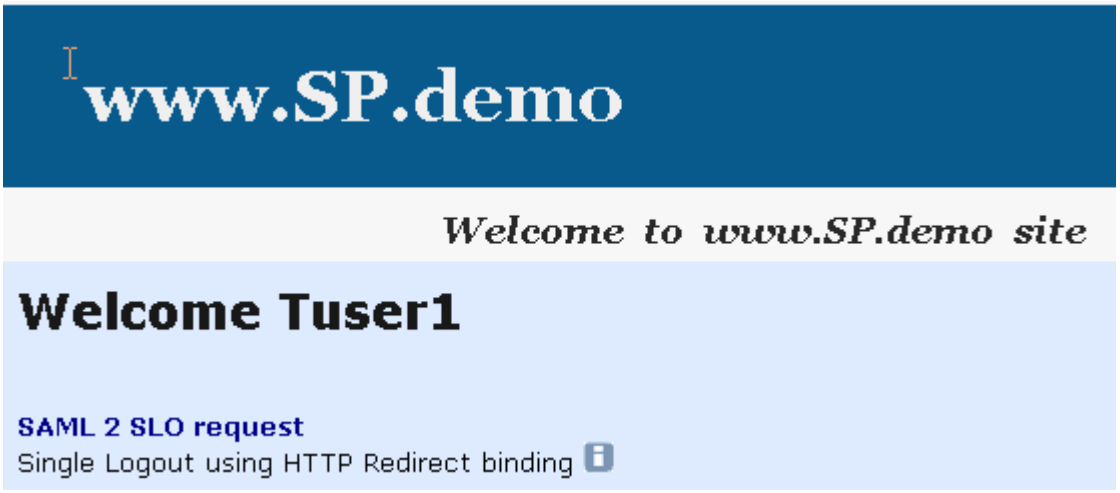
3. Click on one of the single sign-on links.

   A login challenge like the following is presented:



4. Using the login of an existing user in your user store, enter the user's credentials. For example, if Tuser1 is a user in the user store, enter the credentials for this user.

   If single sign-on is successful, you should see the following welcome page:



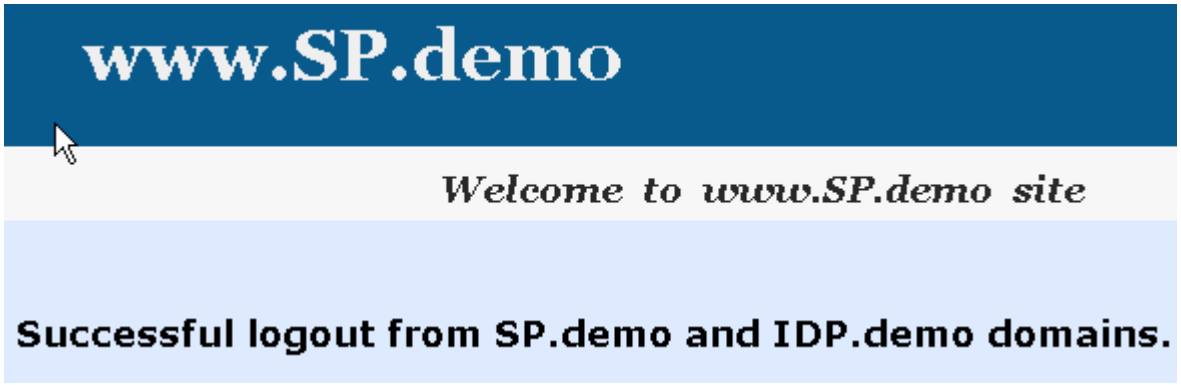
Test Single Logout with the FSS Sample Application

After you have successfully tested single sign-on, you can test single logout from the SP.demo welcome page.

To test single logout

On the SP Welcome page, click on the link labeled Single Logout using HTTP Redirect binding.

The following page is displayed:



If you see this message, single logout is successful.

Review Application-Generated SiteMinder Objects

The FSS sample application automatically creates policy objects that enable the federated single sign-on and logout processes. After successfully signing on, log on to the FSS Administrative UI and look at the various policy server objects set up by the sample application.

Objects to look at include:

- sp.demo in the IdP Federation Sample Partners affiliate domain

  This is the Service Provider Properties object created by the sample application

- Partner Idp.demo Auth Scheme

  This is the SAML Authentication Scheme created for the SP-site by the sample application.

To see the SAML assertion generated by SiteMinder, look at the FWSTrace.log, located in the directory *web_agent_home*/log.

Note: You have to enable trace logging in the LoggerConfig.properties file to create a trace log. The LoggerConfig.properties file is located in *web_agent_home*/affwebservices/WEB-INF/classes.

Chapter 3: Deploying Federation without the FSS Sample Application

This section contains the following topics:

Manual FSS-to-FSS Deployment Overview

You can accomplish manually what the sample application deploys automatically. The manual deployment tasks begin with a simple configuration--single sign-on with POST binding. By starting with a basic configuration, you can complete the least number of steps to see how SiteMinder federation works.

After getting POST single sign-on to work, additional tasks, such as configuring artifact binding, digital signing, and encryption are described so you can add these features to reflect a real production environment.

Important! The deployment exercise is only for SAML 2.0. These procedures do not apply to a SAML 1.x or WS-Federation configuration.

The manual deployment examples are different from the sample application deployment in the following ways:

- The deployment described is set up across two systems, with a Policy Server and Web Agent on each system. The two systems represent the IdP and the SP.
- Additional features are documented for the manual configuration that the sample application does not set up, including:
  - configuring SSL for the artifact back channel
  - adding an attribute to an assertion

- digitally signing and verifying an assertion
- encrypting and decrypting an assertion

Important! The procedures throughout the manual deployment use sample data. To use data from your environment, specify entries for your Identity Provider and Service Provider configuration.

Manual Deployment Prerequisites

This deployment assumes you know how to do the following:

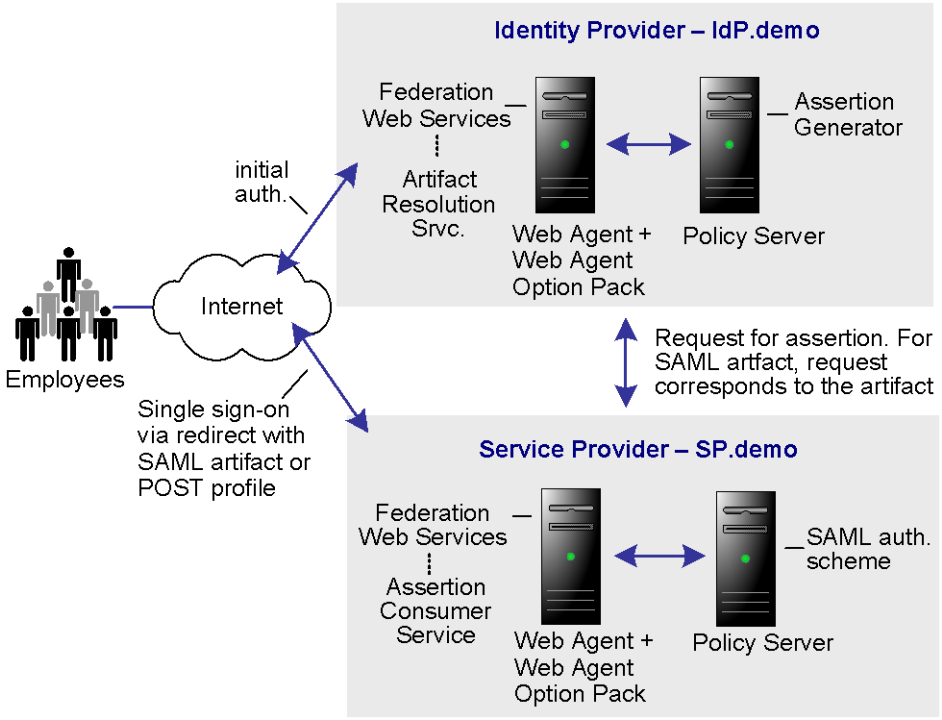
- Install and configure the SiteMinder Policy Server and Web Agent and any associated Option Pack.
- Enable a Web or application server for SSL communication (needed for artifact binding).
- Work with certificates and understand certificate operation, such as how to request a certificate and have it signed by a certificate authority, know the difference between a private key and a public key.
- Add users to a user store. For example, if you have a Sun ONE Directory Server, you have to know how to use the Sun ONE Server Console.
- Set up an ODBC database to be enabled as a session store.

  For instructions on setting up a session store database, see the *Policy Server Installation Guide*. Enable the session store using the Policy Server Management Console.

Sample Federation Network

The sample Web sites in the SiteMinder federated network are an Identity Provider named idp.demo, and a Service Provider named sp.demo. There is a business partnership between idp.demo and sp.demo.

The following illustration shows the sample federated network.



Identity Provider Data for a Basic Configuration

IdP.demo is the Identity Provider. The following two tables list the site's set-up for a basic SAML 2.0 POST configuration and then a more advanced configuration. You can also fill in information for your network.

The following table contains information required for the most basic SAML 2.0 POST single sign-on configuration.

Identity Provider Component	Sample Network	Your Network
IdP Policy Server	**Server**: www.idp.demo:80 **Server type**: IIS 6.0 Web Server	Server: Server type:

Identity Provider Component	Sample Network	Your Network
IdP policy store	**IP Address**: www.idp.demo:389 **Storage**: LDAP (Sun One Directory Server) **Root DN**: o=idp.demo **Admin Username**: cn=Directory Manager **Password**: federation	IP Address: Storage: Root DN: Admin Username: Password:
User store	**Server**: www.idp.demo:42088 **Server Type**: Sun One Directory Server (LDAP) **User store**: The LDAP directory contains the following users: ■ Tuser1 ■ Tuser2 **userpassword**: test **mail**: <*user_name*>@idp.demo **Root**: dc=idp,dc=demo **Start**: uid= **End**: ,ou=People,dc=idp,dc=demo	Server: Server Type: User store: Users' passwords: Attribute: Attribute description: Root: Start: End:
IdP Web Agent with Web Agent Option Pack	**Server**: www.idp.demo:80 **Server Type**: IIS 6.0 Web Server **Agent name**: idp-webagent	Server: Server Type: Agent name:
Assertion Consumer Service URL	**URL**: http://www.sp.demo:81/affwebservices/ public/saml2assertionconsumer	URL:
Assertion Retrieval Service URL	URL: http://www.idp.demo:80/affwebservices/assertionretriever	
Authentication URL	**URL**: http://www.idp.demo/siteminderagent/ redirectjsp/redirect.jsp	URL:

Identity Provider Data for an Advanced Configuration

The following table contains sample data for more advanced SAML 2.0 features, such as the artifact profile as well as signing and encrypting assertions.

Identity Provider Component	Sample Network	Your Network
Session server	**Server:** www.idp.demo **Database type:** ODBC **Database Source Information:** SiteMinder Session Data Source **User Name:** admin **Password**: dbpassword	Server: Database type: Database Source Information: User Name: Password:
SSL-enabled server	**Server:** www.idp.demo:443 **Server Type**: IIS 6.0 Web The web server with the Web Agent Option Pack is SSL-enabled for artifact binding	Server: Server Type:
Certificate of the Certificate Authority (CA)	**Certificate of CA**: docCA.crt **DER-encoded Cert:** docCA.der This CA signs the server-side certificate to enable SSL	Certificate of CA: DER-encoded Cert:
Public key certificate and private key to sign SAML responses	**Certificate**: post-cert.crt **Private key**: post-pkey.der **Password**: fedsvcs	Certificate: Private key: Password:
Public key for encryption	**Public key**: sp-encrypt.crt	Public key:
Attribute to include in assertion	**Attribute**: unspecified (default) **Attribute Kind**: User DN **Variable Name**: firstname **Variable Value**: givenname	Attribute: Attribute Kind: Variable Name: Variable Value:

Service Provider Data for a Basic Configuration

Sp.demo is the Service Provider. The following two tables list the site's set-up for a basic SAML 2.0 POST configuration and a more advanced SAML 2.0 configuration. You can also fill in information for your network.

The following table contains information required for the most basic SAML 2.0 POST single sign-on configuration.

Service Provider Component	Sample Network	Your Network
SP Policy Server	**Server**: www.sp.demo:80 **Server type**: IIS 6.0 Web Server	Server: Server type:
SP policy store	**IP Address**: www.sp.demo:389 **Storage**: LDAP (Sun One Directory Server) **Root DN**: o=ca.com **Admin Username**: cn=Directory Manager **Password**: federation	IP Address: Storage: Root DN: Admin Username: Password:
User Store	**Server**: www.sp.demo:32941 **Server Type**: LDAP (Sun One Directory Server) **User store**: The LDAP directory contains the following users: ■ Tuser1 ■ Tuser2 **userpassword**: customer **mail**: <user_name>@sp.demo **Root**: dc=sp,dc=demo **Start**: uid= **End**: ,ou=People,dc=sp,dc=demo	Server: Server Type: User store: User passwords: Users' password: Attribute: Attribute description: Root: Start: End:
SP Web Agent and Web Agent Option Pack	**Server**: www.sp.demo:81 **Server type**: Sun ONE 6.1 Web Server **Agent name**: sp-webagent	Server: Server type: Agent name:
Single Sign-on Service	**SSO Service**: http://www.idp.demo:80/affwebservices/public/saml2sso	SSO Service:

Service Provider Component	Sample Network	Your Network
Target Resource	**Target Resource**: http://www.sp.demo:81/spsample/protected/target.jsp	Target:

Service Provider Data for an Advanced Configuration

The following table lists sample data for more advanced SAML 2.0 features, such as setting up the artifact profile as well as signing and encrypting assertions.

Service Provider Component	Sample Network	Your Network
Artifact Resolution Service	**Resolution Service**: https://www.idp.demo:443/affwebservices/saml2artifactresolution	Resolution Service:
Certificate of Certificate Authority (CA)	**Certificate of CA**: docCA.crt **DER-encoded cert**: docCA.der This CA signs the server-side certificate to enable SSL	Certificate of CA: DER-encoded cert:
Public key certificate Used to verify signature of SAML responses	**Certificate**: post-cert.crt	Certificate:
Private key and public key certificate Used for decryption and digital signing	**Private key**: sp-encrypt.der **Public key**: sp-encrypt.crt **Password**: fedsvcs **Issuer DN**: CN=Certificate Manager,OU=IAM,O=CA.COM **Serial Number**: 008D 8B6A D18C 46D8 5B	Private key: Public key: Password: Issuer DN: Serial Number:

Set Up the Identity Provider

To deploy Federation Security Services at the Identity Provider, the following information details the tasks.

Install the IdP Policy Server

Set up the Policy Server.

To install the Policy Server

1. Install a Policy Server.

   For instructions, see the *SiteMinder Policy Server Installation Guide*.

2. Select the Web server to be used for the FSS Administrative UI.

   In this deployment, IIS 6.0 Web server is the server on which the Policy Server is installed. Your network may use a different web server.

3. Select a policy store.

   In this deployment, a Sun Java LDAP directory is serving as the policy store. The installation will configure and initialize this policy store for you.

   Important! If you choose to initialize a new policy store, the Policy Server installer will automatically import the affiliate objects contained in the ampolicy.smdif file. These objects are necessary for federation. If you use an existing policy store that you do not initialize, you will have to manually import the affiliate objects.To verify that the import is successful, log in to the FSS Administrative UI and click on Domains in the System tab. You should see the FederationWebServices domain object.

4. (Optional) Enable Policy Server Trace Logging so you can use the log to troubleshoot your setup.

5. Point the Policy Server to the LDAP Policy Store.

More information:

Point the Policy Server to the IdP LDAP Policy Store (see page 132)
Enable Policy Server Trace Logging at the IdP (see page 134)

Point the Policy Server to the IdP LDAP Policy Store

In this deployment, an LDAP policy store is being used.

To ensure the Policy Server is pointing to the LDAP policy store

1. Open the Policy Server Management Console.
2. Select the Data tab.

3. Complete the following fields:

   Databases

   Policy Store

   Storage

   LDAP

   IP Address (LDAP directory)

   www.idp.demo:389

   Root DN

   o=idp.demo

   Admin Username

   cn=Directory Manager

   Password

   password

   Confirm Password

   password

4. Click OK to save your changes and exit the console.
5. Go to Set Up the IdP User Store (see page 133).

Set Up the IdP User Store

At the IdP, you must have a user store with users defined. The assertion generation can create assertions for these users.

In this deployment, the user store is a Sun ONE LDAP user directory. The Sun ONE Server Console is the tool used to add users to this user store.

To configure the user store

1. Add the following users:
   - Tuser1
   - Tuser2
2. Fill-in the attributes for Tuser1 and Tuser2 as follows:

Tuser1	Tuser2
userpassword: test	userpassword: test

Tuser1	Tuser2
mail: Tuser1@idp.demo	mail: Tuser2@idp.demo

Important! The email address must be the same in the Service Provider user store for the same users.

3. Enable trace logging (see page 134).

Enable Policy Server Trace Logging at the IdP

At the IdP, enable logging for the Policy Server so you can view the log file smtracedefault.log and examine trace messages about single sign-on and single logout. This log file is located in the directory *policy_server_home*/siteminder/log.

To enable trace logging for federation

1. Open the Policy Server Management Console.
2. Click on the Profiler tab and customize the contents of the trace log. Be sure to include the Fed_Server component in the log to see the federation trace messages.

   You configure trace logging at the Policy Server using the Policy Server Management Console.
3. Install the IdP Web Agent (see page 134).

Install the IdP Web Agent

To install the Web Agent at the IdP

1. Install a Web Agent on a supported Web Server.

   For instructions on installing a Web Agent, see *SiteMinder Web Agent Installation Guide*.

   In this deployment, the web server is an IIS 6.0 Web server. Your server may be different.
2. Register the machine with the Agent as a trusted host.
3. Enable the Web Agent in the WebAgent.conf file.

   In this deployment the Web Agent is installed on an IIS 6.0 Web Server.
4. Install the IdP Web Agent Option Pack.

Install the IdP Web Agent Option Pack

The Web Agent Option pack installs the Federation Web Services (FWS) application.

To set up the Web Agent Option Pack

1. Install the Web Agent Option Pack on the same Web server as the Web Agent. In this deployment, the server is an IIS 6.0 Web Server.

   For instructions on installing the Web Agent Option Pack, see the *Web Agent Option Pack Guide*.

2. Configure the Web Server with the Web Agent Option Pack (see page 135).

Configure the Web Server with the Web Agent Option Pack

The Web Agent Option Pack installs the Federation Web Services (FWS) application.

For FWS to work, do the following

- Install the JDK for Federation Web Services (see page 135)
- Install and Configure ServletExec to work with FWS at the IdP (see page 135)
- Configure the AffWebServices.properties File at the IdP (see page 138)
- Test Federation Web Services at the IdP (see page 139)

Install the JDK for Federation Web Services

The Web Agent Option Pack requires a JDK to run the Federation Web Services application.

For the correct JDK version, go to the Technical Support site and search for SiteMinder Platform Support Matrix for the release.

Install and Configure ServletExec to work with FWS at the IdP

For FWS to operate, you can install ServletExec or any supported application server. This sample network uses ServletExec on an IIS 6.0 Web server.

Note: You should have received a ServletExec license key file called licensekey50.txt from CA Support. From this license file, copy the license key and enter it in the ServletExec License dialog of the ServletExec Administration Console. For instructions on licensing ServletExec, see ServletExec documentation, available at the New Atlanta Communication http://www.newatlanta.com web site.

Be sure to apply the most current hot fixes for the supported version of ServletExec you are using. Without the hot fixes, Federation Web Services will not work with ServletExec. To obtain hot fixes, go to the web site for New Atlanta Communication.

To set up ServletExec

1. Install ServletExec. Refer to New Atlanta's documentation for instructions.
2. Open the ServletExec Administration Console.
3. Under Web Applications, select manage.

   The Manage Web Applications dialog opens.
4. Click Add a Web Application.
5. Enter the following information:

   Application Name

   affwebservices

   URL Context Path

   /affwebservices/

   Location

   C:\program files\ca\webagent\affwebservices

   Note: The location of affwebservices in your setup may be different. Enter the correct location.
6. Click Submit.
7. Exit the ServletExec Console.
8. Modify the directory security settings for the IIS default user account.

Important! IIS does not allow any plug-in to write to a file system unless it is configured with a user account that has proper rights to do so. Therefore, for Federation Web Services to work with ServletExec, you need to modify the directory security settings for the IIS default user account.

More Information:

Enable ServletExec to Write to the IIS File System (see page 137)
Configure the AffWebServices.properties File at the IdP (see page 138)

Enable ServletExec to Write to the IIS File System

The IIS Web server does not allow a plug-in to write to its file system unless it is configured with a user account that has proper rights to do so. Therefore, for ServletExec to write to the federation log files, the anonymous user account that you associate with ServletExec must have permissions to write to file system.

To enable the user account used by ServletExec to write to the IIS file system

1. Open the IIS Internet Information Services Manager on the system where ServletExec is installed.
2. Navigate to Web Sites, Default Web Site.

   The set of applications is displayed in the right pane.
3. Select ServletExec and right-click Properties.
4. Select the Directory Security tab in the Properties dialog.
5. Click Edit in the Authentication and access control group box.

   The Authentication Methods dialog opens.
6. Set the controls as follows.
   a. Select Enable Anonymous Access.

      For anonymous access, enter a name and password of a user account that has the permissions to right to the Windows file system. Refer to Windows documentation to grant this right to a user account. For example, you might use the IUSR Internet Guest account for anonymous access.

   b. Deselect Basic authentication.

   c. Deselect Integrated Windows authentication.
7. If prompted, apply the security changes to all child components of the Web server.
8. Restart the Web server.

The user account associated with ServletExec can now write to the IIS file system.

Additionally, you must give the anonymous user the right to act as part of the operating system.

To give the anonymous user account the right to act as part of the operating system

1. Open Control Panel, Administrative Tools, Local Security Policy, Local Policies, User Rights Assignment.

   The Local Security Settings dialog displays.

2. Double-click Act as part of the operating system.

   The Act as part of the operating system Properties dialog opens.

3. Add the anonymous user account to the Local Security Setting dialog.

4. Click OK.

5. Exit from the control panel.

6. Although it is optional, we strongly recommend that you, look at the Agent Configuration Object for the Web Agent protecting the IIS Web server and ensure that the SetRemoteUser parameter is set to yes to make sure that the anonymous user can write to the file system.

Configure the AffWebServices.properties File at the IdP

The affwebservices.properties file contains all the initialization parameters for Federation Web Services. You need to modify at least one of the settings in this file.

To modify the affwebservices.properties file

1. On the IdP system with the Web Agent Option Pack, go to C:\Program Files\ca\webagent\affwebservices\WEB-INF\classes

2. Set the AgentConfigLocation parameter to the location of the WebAgent.conf file. It is mandatory to set a value for this parameter.

   For this deployment, an IIS 6.0 web server hosts the FWS application. So, the path to the WebAgent.conf file is:
   C:\\Program Files\\ca\\webagent\\bin\\IIS\\WebAgent.conf

   Note: Federation Web Services is a Java component, so the Windows paths must contain double back-slashes. This applies only to Windows.

   Ensure this path is entered on one line.

3. Save and close the file.

4. Test Federation Web Services at the IdP (see page 139).

Test Federation Web Services at the IdP

After setting up Federation Web Services, ensure it is operating correctly.

To test that Federation Web Services is operating

1. Open a Web browser and enter the following link:

   http://<*fqhn*>:<*port_number*>/affwebservices/assertionretriever

   where *fqhn* is the fully-qualified host name and *port_number* is the port number of the server where the Web Agent and Web Agent Option Pack are installed.

   For this deployment, enter:

   http://www.idp.demo:80/affwebservices/assertionretriever

   If Federation Web Services is operating correctly, you should see a message that reads:

   Assertion Retrieval Service has been successfully initialized.

   The requested servlet accepts only HTTP POST requests.

   This message indicates that Federation Web Services is listening for data activity. If Federation Web Services is not operating correctly, you will get a message that the Assertion Retrieval Service has failed. In case of failure, check the Federation Web Services log.

2. Enable Web Agent Option Pack Logging at the IdP (see page 139).

Enable Web Agent Option Pack Logging at the IdP

At the IdP, enable logging for the system with the Web Agent Option Pack so you can view the following logs:

- affwebservices.log
- FWSTrace.log

To enable logging

1. Configure the affwebservices.log by setting up the LoggerConfig.properties file.
2. Configure FWS trace logging.
3. Specify the User Store for the IdP Policy Server (see page 140).

More Information:

Set up the LoggerConfig.properties File (see page 215)
Federation Security Services Trace Logging (see page 463)

Specify the User Store for the IdP Policy Server

The IdP user directory consists of user records for which the Identity Provider will generate assertions.

The following steps specify how to configure a user directory in the FSS Administrative UI. The directory, called IdP LDAP, is the Sun ONE LDAP directory that contains the users Tuser1 and Tuser2.

To configure a user directory

1. Log into the FSS Administrative UI.
2. Select the System tab.
3. Select Edit, System Configuration, Create User Directory.

   The User Directory Properties dialog opens.
4. Complete the following fields in the Directory Setup group box:

   Name

   IDP LDAP

   In the Directory Setup group box:

   NameSpace

   LDAP

   Server

   www.idp.demo:42088
5. Complete the following field in the LDAP Search group box:

   Root

   dc=idp,dc=demo

   Accept the defaults for the other values.

   Complete the following field in the LDAP User DN Lookup group box:

   Start

   uid=

   End

   ,ou=People,dc=idp,dc=demo
6. Click View Contents to ensure you can view the contents of the directory.
7. Click Submit.
8. Set up an Affiliate Domain at the IdP (see page 141).

Set up an Affiliate Domain at the IdP

To identify the Service Provider to the Identity Provider create an affiliate domain and add a service provider object for sp.demo.

To configure an affiliate domain

1. Log into the FSS Administrative UI.
2. From the menu bar of the SiteMinder Administration window, select Edit, System Configuration, Create Domain.

   The Domain Properties dialog opens.
3. Complete the following fields:

   Name

   Federation Sample Partners

   Description

   Domain for sp.demo
4. In the Domain Type group box, select Affiliate Domain.
5. Leave this dialog open and Add the User Directory to the Affiliate Domain at the IdP (see page 141).

Add the User Directory to the Affiliate Domain at the IdP

To associate a user directory for the affiliate domain

1. Begin at the User Directories tab in the Domain Properties dialog.
2. From the drop-down list box at the bottom of the dialog, select IdP LDAP and click Add.

   For your network, select the user store you set up at the IdP.
3. Click OK.
4. Go to Add the Service Provider to the Affiliate Domain at the IdP (see page 142).

Add the Service Provider to the Affiliate Domain at the IdP

To add sp.demo to the affiliate domain, you must specify values on the Users tab, the General tab, and the SSO tab before you can save a Service Provider object.

To add sp.demo to the Federation Sample Partners domain

1. Begin at the Domains tab.
2. Select Federation Sample Partners, right-click, and select Create SAML Service Provider.
3. Complete the following fields:

   Name

   sp.demo

   Description

   Service Provider

   Authentication URL

   http://www.idp.demo/siteminderagent/redirectjsp/redirect.jsp

   This redirect.jsp is included with the Web Agent Option Pack that is installed at the Identity Provider site. In this deployment, that server is www.idp.demo. If the user does not have a SiteMinder session, the SSO service at the IdP redirects the user to the authentication URL for log in.

   After successful authentication, the redirect.jsp application redirects the user back to the SSO service for assertion generation. This URL must also be protected by a SiteMinder policy.

   Enabled

   Ensure it is checked. It should be checked by default.
4. Keep the Policy Server User Interface open and Select Users For Which Assertions Will Be Generated at the IdP (see page 142).

Select Users For Which Assertions Will Be Generated at the IdP

When you specify a Service Provider for inclusion in an affiliate domain, you include a list of users and groups for which the Assertion Generator will generate SAML assertions. You may only add users and groups from directories that are in an affiliate domain.

To select users that will use assertions as credentials

1. Log in to the FSS Administrative UI.
2. From the Domains tab, expand Federation Sample Partners and select SAML Service Providers to display the Service Providers.
3. Select sp.demo and right-click to open the properties of this Service Provider.
4. From the Users tab of the SAML Service Provider Properties dialog, select the IdP user store tab. In this deployment, select the IdP LDAP tab.
5. Click Add/Remove.

   The Users/Groups dialog opens.
6. Search the Available Members list for Tuser1 and Tuser2. These are the employees listed in the IdP LDAP directory.
   a. Click the binoculars icon under the Available Members list.
   b. In the Search LDAP/AD Directory dialog, select Attribute-Value Pair and complete the fields as follows:

      Attribute

      uid

      Value

      *
   c. Click OK. The individual users in the IdP LDAP directory are displayed.
   d. Holding the CTRL or SHIFT key, select the entries for Tuser1 and Tuser2 then click the left arrow to move them to the Current Members list.
7. Click OK to return to the SAML Service Providers Properties dialog.
8. Configure a Name ID for Inclusion in the Assertion (see page 144).

Configure a Name ID for Inclusion in the Assertion

The Name ID is a unique way of identifying a user in an assertion. The NameID that you enter here is included in the assertion.

To configure name IDs

1. Select the Name IDs tab on the SAML Service Provider Properties dialog.

   Complete the following fields:

   Name ID Format

   Unspecified

   The email address format value means that the Name ID must use an email address in the user directory to identify the user.

   Name ID Type group box

   User Attribute

   Attribute Name

   mail

2. Keep the SAML Service Provider Properties dialog open and Identify the SP, IdP, and Other General Settings (see page 144).

Identify the SP, IdP, and Other General Settings

You must identify the Service Provider and the Identity Provider. The IdP ID identifies the Issuer of the assertion. The SP ID is used to accept the AuthnRequest when it is sent from the Service Provider.

To configure general settings

1. Select the General tab on the SAML Service Providers dialog box.

   Configure the following fields:

   SP ID

   sp.demo

   IdP ID

   idp.demo

   The values for the SP ID and IdP ID must match the values at the Service Provider.

   SAML Version

   2.0 (default)

Skew Time

30 seconds (default)

2. In the D-Sign Info box, check the Disable Signature Processing checkbox.

   Important! Disabling signing is intended *only* for debugging the initial single sign-on configuration. In a production environment, signature processing is a mandatory security requirement; you must enable it.

3. Keep the SAML Service Provider Properties dialog open and Configure POST Single Sign-on at the IdP (see page 145).

More Information:

Configure Digital Signing (required for POST Binding) (see page 174)

Configure POST Single Sign-on at the IdP

You need to specify the SAML 2.0 binding you want to use for single sign-on.

To configure single sign-on with POST binding

1. Select the SSO tab.

   Complete the following fields:

   Audience

   sp.demo

   Assertion Consumer Service

   http://www.sp.demo:81/affwebservices/public/saml2assertionconsumer

   This is the URL of the Assertion Consumer Service. For your network, the server you specify is the SP web server where the Web Agent Option Pack is installed.

   HTTP-POST

   select this check box

   Authentication Level

   5 (default)

Validity Duration

60 (default)

In a test environment, if you see the following message in the Policy Server trace log,

Assertion rejected(_b6717b8c00a5c32838208078738c05ce6237) –current time
(Fri Sep 09 17:28:33 EDT 2005) is after SessionNotOnOrAfter time (Fri Sep 09 17:28:20 EDT 2005)

you may want to increase the Validity Duration value above 60.

AuthnContext Class Ref

urn:oasis:names:tc:SAML:2.0:ac:classes:Password (default)

2. Accept the default values for all other remaining fields.
3. Click OK.
4. Protect the Authentication URL (see page 146).

Protect the Authentication URL (SAML 2.0)

You must protect the Authentication URL with a SiteMinder policy. Protecting the Authentication URL ensures that a user requesting a protected federated resource is presented with an authentication challenge if they do not have a SiteMinder session at the IdP.

To protect the Authentication URL at the Identity Provider

1. From the Domains tab, create a policy domain called Authentication URL Protection Domain.
2. Add the IdP LDAP user directory in the User Directories tab.
3. From the Authentication URL Protection domain, create a persistent realm with the following field entries:

Name

Authentication URL Protection Realm

Agent

Using the lookup button, select FSS web agent

This is the Web Agent protecting the server with the Web Agent Option Pack.

Resource Filter

/siteminderagent/redirectjsp/redirect.jsp

Accept the defaults for the other settings.

Session tab

Select Persistent Session

4. From the IDP Authentication URL Protection Realm, create a rule under the realm with the following field entries:

   Name

   Authentication URL Protection Rule

   Realm

   Authentication URL Protection Realm

   Resource

   *

   Web Agent actions

   Get

   Accept the defaults for the other settings.

5. From the Authentication URL Protection domain, create a policy with the following entries:

   Name

   Authentication URL Protection Policy

   Users tab

   Add user1 from the IdP LDAP user directory

   Rules tab

   add Authentication URL Protection Rule

   You now have a policy that protects the Authentication URL at the Identity Provider.

More Information:

Protect the Authentication URL to Create a SiteMinder Session (SAML 1.x) (see page 263)

Federation Web Services Access

The Web Agent that protects the Federation Web Services application needs to be bound to the realms associated with Federation Web Services, which are created by the Web Agent Option Pack installation. To associate the Web Agent with the realms, the Agent needs to be added to the default Web Agent group also created by the Web Agent Option Pack installation. Additionally, the Service Providers need access to the Assertion Retrieval Service to obtain assertions.

To allow access to Federation Web Services

Add the Web Agent that protects Federation Web Services to the Agent group FederationWebServicesAgentGroup.

This associates the Agent with the default realms.

Configure the Service Provider

After completing the configuration at the Identity Provider, you must Set Up the Service Provider (see page 148).

Set Up the Service Provider

There are a number of steps involved in setting up the Service Provider in a federation network.

Install the SP Policy Server

At the Service Provider, you need to install the Policy Server.

Set up the Policy Server.

To install the Policy Server

1. Install a Policy Server.

   For instructions, see the *SiteMinder Policy Server Installation Guide*.

2. Select the Web server to be used for the FSS Administrative UI.

   In this deployment, IIS 6.0 Web server is the server on which the Policy Server is installed. Your network may use a different web server.

3. Select a policy store.

   In this deployment, a Sun Java LDAP directory is serving as the policy store. The installation will configure and initialize this policy store for you.

   Important! If you choose to initialize a new policy store, the Policy Server installer will automatically import the affiliate objects contained in the ampolicy.smdif file. These objects are necessary for federation. If you use an existing policy store that you do not initialize, you will have to manually import the affiliate objects.To verify that the import is successful, log in to the FSS Administrative UI and click on Domains in the System tab. You should see the FederationWebServices domain object.

4. (Optional) Enable Policy Server Trace Logging so you can use the log to troubleshoot your setup.

Point the Policy Server to the LDAP Policy Store.

More information:

Enable Trace Logging for Federation Components at the SP (see page 151)
Point the Policy Server to the SP LDAP Policy Store (see page 149)

Point the Policy Server to the SP LDAP Policy Store

To set up the LDAP policy store

1. Open the Policy Server Management Console.
2. Select the Data tab.

   Complete the following fields:

   Databases

   Policy Store

   Storage

   LDAP

   LDAP IP Address

   sp.demo:389

   Root DN

   o=sp.demo

   Admin Username

   cn=Directory Manager

   Password

   federation

Confirm Password

federation

3. Click OK.
4. Set Up the SP User Store (see page 150).

Set Up the SP User Store

At the SP, configure a user store and add user records for users that require assertions. When the user's assertion is presented during authentication, the Service Provider looks in the user store for the user record.

In this deployment, the Sun ONE LDAP user directory is the user store and the Sun ONE Server Console is the tool used to add users to the directory.

To configure the user store

1. Add the following users:
   - Tuser1
   - Tuser2
2. Fill-in the attributes for Tuser1 and Tuser2 as follows:

Tuser1	Tuser2
userpassword: customer	userpassword: customer
mail: Tuser1@sp.demo	mail: Tuser2@sp.demo

Important! The email address must be the same in the Identity Provider user store for the same users.

3. Enable trace logging (see page 151).

Enable Trace Logging for Federation Components at the SP

At the SP Policy Server, configure the SiteMinder Profiler to log federation components to the trace log, smtracedefault.log and examine trace messages.

To enable logging

1. Open the Policy Server Management Console.
2. Click on the Profiler tab and customize the contents of the trace log. Be sure to include the Fed_Server component in the log to see the federation trace messages.

   To configure trace logging at the Policy Server, using the Policy Server Management Console.
3. Install the SP Web Agent (see page 151).

Install the SP Web Agent

To install the Web Agent at the Service Provider

1. Install a Web Agent on a supported web server.

   For instructions on installing a Web Agent, see *SiteMinder Web Agent Installation Guide*.

   In this deployment, the server is a Sun ONE 6.1 Web Server. Your server may be different.
2. Register the machine with the Agent as a trusted host.
3. Enable the Web Agent in the WebAgent.conf file.
4. Install the SP Web Agent Option Pack.

Install the SP Web Agent Option Pack

The Web Agent Option pack installs the Federation Web Services (FWS) application.

To set up the Web Agent Option Pack

1. Install a JDK.

   For the supported version of the JDK, see the SiteMinder r12 Platform Support Matrix on the Technical Support site. This matrix includes r12 SP1.

   Install the Web Agent Option Pack on the same web server as the Web Agent.

   In this deployment, the server is an IIS 6.0 Web Server.

   For instructions on installing the Web Agent Option Pack, see the *Web Agent Option Pack Guide.*

2. Configure the Web Server with the Web Agent Option Pack (see page 152).

Configure the Web Server with the Web Agent Option Pack

The Web Agent Option Pack installs the Federation Web Services (FWS) application.

For FWS to work, do the following

1. Install the JDK for Federation Web Services (see page 152)
2. Install and Configure ServletExec to Work with FWS at the SP (see page 153)
3. Configure the AffWebServices.properties file (see page 154)
4. Enable Web Agent Option Pack logging (see page 155)
5. Test Federation Web Services (see page 154)

Install the JDK for Federation Web Services

The Web Agent Option Pack requires a JDK to run the Federation Web Services application. For the specific version required, go the Technical Support site and search for SiteMinder Platform Support Matrix for the release.

Install and Configure ServletExec to Work with FWS at the SP

For FWS to operate, install ServletExec, JBOSS, WebLogic Application Server, or WebSphere Application Server. For this deployment, ServletExec is installed on a Sun ONE 6.1 web server.

Note: You should have received a ServletExec license key file called licensekey50.txt from CA Support. From this license file, copy the license key and enter it in the ServletExec License dialog of the ServletExec Administration Console. For instructions on licensing ServletExec, see ServletExec documentation, available at the New Atlanta Communication http://www.newatlanta.com web site.

Apply the most current hot fixes for the supported version of ServletExec. Without the hot fixes, Federation Web Services will not work with ServletExec. To obtain the hot fixes, go to the web site for New Atlanta Communications http://www.newatlanta.com.

To set up ServletExec

1. Install ServletExec.

   For instructions, refer to New Atlanta Communications documentation.

2. Open the ServletExec 5.0 Administration Console.

3. Under Web Applications, select manage.

   The Manage Web Applications dialog opens.

4. Click Add a Web Application.

5. Enter the following information:

   Application Name

   affwebservices

   URL Context Path

   /affwebservices/

   Location

   C:\program files\ca\webagent\affwebservices

   Note: The location of affwebservices in your network may be different. Enter the correct location.

6. Click Submit.

7. Exit the ServletExec Console.

8. Configure the AffWebServices.properties file (see page 154).

Configure the AffWebServices.properties file

The AffWebServices.properties file contains all the initialization parameters for Federation Web Services.

To set up the AffWebServices.properties file

1. On the SP system with the Web Agent Option Pack, go to C:\Program Files\ca\webagent\affwebservices\WEB-INF\classes
2. Set the AgentConfigLocation parameter to the location of the WebAgent.conf file. It is mandatory to set a value for this parameter.

   For this deployment, the web server hosting the FWS application at the Service Provider is a Sun ONE Web server. So, the path to the WebAgent.conf file is:

   C:\\Sun\\WebServer6.1\\https-sp.demo\\config\\WebAgent.conf

   Note: Federation Web Services is a Java component, so the Windows paths must contain double back-slashes. This entry should be on one line.
3. Save and close the file.
4. Test Federation Web Services (see page 154).

Test Federation Web Services

After you have set up the Federation Web Services application, ensure that it is operating properly.

To test that Federation Web Services is operating

1. Open a Web browser and enter the following link:

   http://*fqhn*:*port_number*/affwebservices/assertionretriever

   where *fqhn* is the fully-qualified host name and *port_number* is the port number of the server where the Web Agent and Web Agent Option Pack are installed.

   For this deployment, enter:

   http://www.sp.demo:81/affwebservices/assertionretriever

   If Federation Web Services is operating correctly, you should see a message that reads:

   Assertion Retrieval Service has been successfully initialized.
   The requested servlet accepts only HTTP POST requests.

   This message indicates that Federation Web Services is listening for data activity. If Federation Web Services is not operating correctly, you will get a message that the Assertion Retrieval Service has failed. In case of failure, check the Federation Web Services log.
2. Enable Web Agent Option Pack logging. (see page 155)

Enable Web Agent Option Pack Logging at the SP

At the SP, enable logging for the system with the Web Agent Option Pack so you can view the following logs:

- affwebserv.log

  Contains error logging messages.

- FWSTrace.log

To enable error and trace logging

1. Open up the LoggerConfig.properties file. This file can be found in the directory *web_agent_home*/affwebservices/WEB-INF/classes.
2. Set the LoggingOn parameter to Y.
3. Accept the default name and location for the LogFileName setting, which points to the affwebserv.log file
4. Set the TracingOn setting to Y.
5. Accept the default name and location for the TraceFileName setting, which points to the FWSTrace.log file.

Logging is now enabled.

More Information:

Set up the LoggerConfig.properties File (see page 215)
Federation Security Services Trace Logging (see page 463)

Specify the User Store for the SP Policy Server

The SP user directory consists of user records for which the Service Provider will use for authentication.

The following steps specify how to configure a user directory in the FSS Administrative UI. The directory, called SP LDAP, is the Sun ONE LDAP directory that contains the users Tuser1 and Tuser2.

To configure a user directory

1. Log into the FSS Administrative UI.
2. Select the System tab.
3. Select Edit, System Configuration, Create User Directory.

   The User Directory Properties dialog opens.

4. Complete the following field:

   Name

   SP LDAP

5. Complete the following fields in the Directory Setup group box:

   Namespace

   LDAP

   Server

   www.sp.demo:32941

6. Complete the following fields in the LDAP Search group box:

   Root

   dc=sp,dc=demo

   Accept the defaults for the other values.

7. Complete the following fields in the LDAP User DN Lookup group box:

   Start

   uid=

   End

   ,ou=People,dc=sp,dc=demo

8. Click View Contents to ensure you can view the contents of the directory.
9. Click Submit.

Specify the POST Binding Authentication at the SP

For the authentication scheme, you must indicate the single sign-on binding to be used so the Service Provider knows how to communicate with the Identity Provider.

To select a single sign-on binding at the SP

1. Select the SSO tab from the SAML 2.0 Auth Scheme Properties dialog.
2. Complete the following fields:

   Redirect Mode

   302 Cookie Data (default)

   User is redirected via an HTTP 302 redirect with a session cookie, but no other data.

   SSO Service

   http://www.idp.demo:80/affwebservices/public/saml2sso

Audience

sp.demo

This value must match the value at the Identity Provider.

Target

http://www.sp.demo:81/spsample/protected/target.jsp

If you begin the Target with http, enter the full path to the resource. The target must be protected by a SiteMinder policy that uses the SAML 2.0 authentication scheme.

3. Check the HTTP-POST check box.
4. Deselect the Enforce Single Use Policy check box.

   Unchecking this box makes the sample network non-compliant with SAML 2.0. If you want to enable the use of the single use policy feature you must set up a session store at the Service Provider.
5. Click OK until you exit the authentication scheme dialog.
6. Keep the Policy Server User Interface open and Protect the Target Resource Using SAML 2.0 Authentication (see page 158).

Configure the SAML 2.0 Authentication Scheme at the SP

To authenticate users at the Service Provider, configure the SAML 2.0 authentication scheme. The assertion from the IdP provides the credentials for authentication.

To configure the SAML 2.0 authentication scheme

1. Log into the FSS Administrative UI.
2. From the menu bar, select Edit, System Configuration, Create Authentication Scheme.

   The Authentication Scheme Properties dialog opens.
3. Complete the following fields:

   Scheme Common Setup group box:

   Name

   Partner IDP.demo Auth Scheme

   Authentication Scheme Type

   SAML 2.0 Template

   Protection Level

   5 (default)

Scheme Setup tab fields:

SP ID

sp.demo

IdP ID

idp.demo

SAML Version

2.0 (default)

Skew Time

30 (default)

Note: The SP ID and IdP ID values must match those at the IdP.

4. In the D-Sign Info box, select the Disable Signature Processing checkbox.

   Important! Disabling signing is intended *only* for debugging the initial single sign-on configuration. In a production environment, signature processing is a mandatory security requirement so signature validation must be enabled and the key store must be set up to validate signatures.

5. Click Additional Configuration.

   The SAML 2.0 Auth. Scheme Properties dialog opens.

6. Leave the Authentication Scheme Properties dialog open and Configure User Disambiguation at the SP.

More information:

Set Up smkeydatabase at the SP for Signature Validation (see page 175)

Protect the Target Resource at the SP

After configuring a SAML 2.0 authentication scheme, use this scheme in a policy that protects the target resource at Service Provider.

To protect the target resource

1. From the System tab of the FSS Administrative UI, create a policy domain called Domain for IdP.demo Visitors.
2. Define a Web Agent. In this deployment, the Agent is sp-webagent. This is the Agent protecting the server with the Web Agent Option Pack installed.
3. Associate the sp-webagent with the Domain for Idp.demo Visitors to protect the realm in this domain.
4. Add the user directory that holds users user1.

5. To the policy domain, add a persistent realm with the following components then click OK to save it.

   Name

   SP Target Page Protection Realm

   Agent

   sp-webagent

   Resource Filter

   This is the path to the target resource at the Service Provider web server. For this deployment, the resource filter is /spsample/protected.jsp

   Authentication Scheme

   Partner IdP.demo Auth Scheme

   Default Resource Protection

   Protected

6. To the realm, add a rule with the following components then click OK to save it.

   Name

   SP Target Page Protection Rule

   Realm

   SP Target Page Protection Realm

   Resource

   *

   Web Agent Actions

   Get

   Accept the defaults for all other fields.

7. Add a policy with the following components then click OK to save it.

   Name

   SP Target Page Protection Policy

   Users

   Add user1 so this user has access to the target

   Rules

   Add the SP Target Page Protection Rule

   The target resource is now protected by SiteMinder.

8. Exit the Policy Server User Interface.
9. Use HTML Pages to Test the Federation Set-up.

The protection policy for the target resource is complete.

Test SAML 2.0 Single Sign-on

To test single sign-on in an FSS-to-FSS network, you can use the web pages included with the FSS sample application, provided you have previously run the FSS sample application script. If you do not run the FSS sample application, you have to use your own web pages to test single sign-on.

The sample application web pages are located in the following two folders.

policy_server_home/samples/federation/content/idpsample

policy_server_home/samples/federation/content/spsample

policy_server_home

Specifies the installed location of the SiteMinder Policy Server.

Important! If you have run the sample application, the idpsample and spsample folders are automatically copied into your web server's document root directory.

If you choose to use your own html page to test SP-initiated single sign-on, the HTML page must contain a hard-coded link to the AuthnRequest service. For this deployment, the sample link for POST binding is:

http://www.sp.demo:81/affwebservices/public/saml2authnrequest?ProviderID=idp.demo

The AuthnRequest Service redirects the user to the Identity Provider specified in the link to retrieve the user's authentication context. After the Identity Provider authenticates the user and establishes a session, it directs the user back to the target resource at the Service Provider.

Note: The ProviderID in the Authnrequest link must match the IdP ID field value specified by the SAML authentication scheme at the SP. The IdP ID field is located on the Scheme Setup tab of the Authentication Scheme Properties dialog.

After running the sample application, you should can test single sign-on.

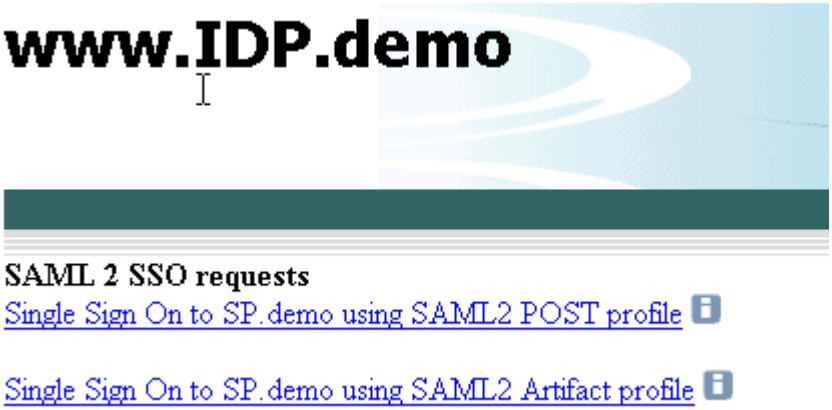
To test federated single sign-on

1. Open up a browser.
2. Enter the URL for the web page that has links to trigger single sign-on.
   - For IdP-initiated single sign-on, access the index.jsp page at:

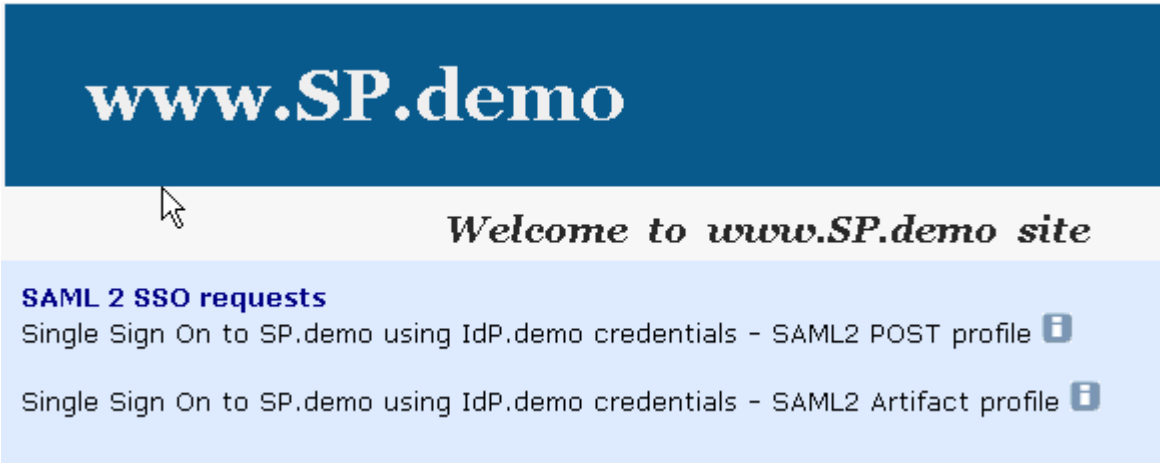
     http://www.idp.demo:*server_port*/idpsample/index.jsp
   - For SP-initiated single sign-on, access the index.jsp page at:

     http://www.sp.demo:*server_port*/spsample/index.jsp

   The following figure is the IdP.demo home page:

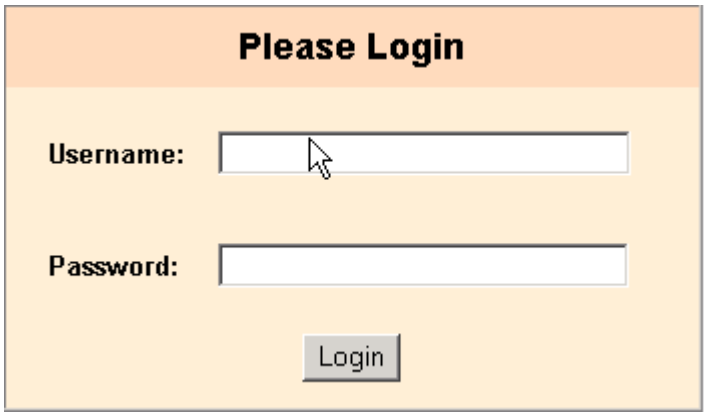


   The following figure is the SP.demo home page:



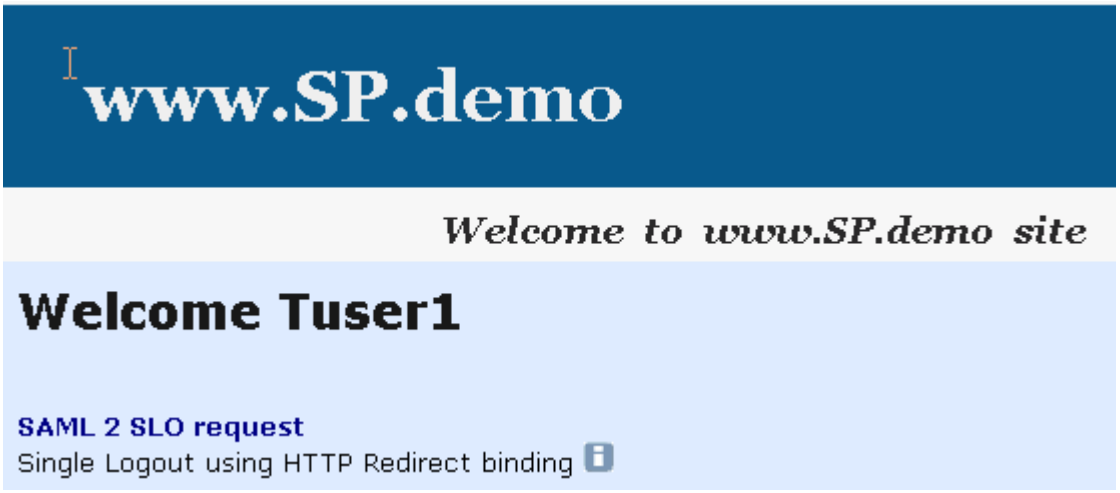
3. Click on the SAML2 POST profile link.

   A login challenge like the following is presented:



4. Using the login of an existing user in your user store, enter the user's credentials. For example, if Tuser1 is a user in the user store, enter the credentials for this user.

   If single sign-on is successful, you should see the following welcome page:



5. After you test single sign-on, you can Add Functionality to the Federation Deployment (see page 163).

Add Functionality to the Federation Deployment

After you complete the POST single sign-on configuration, you can add more features to the federated network.

The additional tasks covered in this deployment example are:

- Configuring single logout
- Configuring artifact single sign-on
- Adding an attribute to an assertion
- Configure digital signing of an assertion
- Encrypting and decrypting an assertion

Note: Some of these additional features described are required for single sign-on in a production environment, such as digital signing for POST binding. Required tasks are noted.

Configure Single Logout

The single logout protocol (SLO) results in the simultaneous end of all sessions for a particular user, thereby ensuring security. These sessions must be associated with the browser that initiated the logout. Single logout does not necessarily end all sessions for a user.

Note: SiteMinder only supports the HTTP-Redirect binding for the single logout protocol.

By configuring the settings on the SLO tab you are informing the Identity Provider whether the Service Provider supports the single logout protocol, and if so, how single logout is handled.

Enable Single Logout at the IdP

You can initiate single logout at the IdP. At the IdP, idp.demo, you enable single logout on a per-SP basis.

To configure single logout

1. Log in to the FSS Administrative UI and access the SAML Service Provider Properties dialog for sp.demo.
2. Select the SLO tab.
3. Select the HTTP-Redirect checkbox.

   The remaining fields become active.

4. Enter values for the following fields:

   SLO Location URL

   http://www.sp.demo:81/affwebservices/public/saml2slo

   This is the SLO servlet at the SP.

   SLO Confirm URL

   http://www.idp.demo:80/idpsample/SLOConfirm.jsp.

5. Accept defaults for the other fields.
6. From the Policy Server Management Console, enable the session server.

Enable Single Logout at the SP

You can initiate single logout at the Service Provider.

To configure single logout at the SP

1. Ensure that the realm with the protected resources is configured for persistent sessions.
2. From the Authentication Scheme Properties dialog, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog opens.

3. Select the SLO tab.
4. Select the HTTP-Redirect checkbox.

   The rest of the fields become active.

5. Complete the fields as follows:

   SLO Location URL

   http://www.idp.demo:80/affwebservices/public/saml2slo

   SLO Confirm URL

   http://www.sp.demo:81/spsample/SLOConfirm.jsp

6. Accept the default values for all other fields.
7. From the Policy Server Management Console, enable the session server.

Test Single Logout

You can use the web pages included with the sample application to test single logout, provided you have run the FSS sample application. These pages are located in the following two folders.

policy_server_home/samples/federation/content/idpsample

policy_server_home/samples/federation/content/spsample

policy_server_home

Specifies the installed location of the SiteMinder Policy Server.

Important! If you have run the sample application, the idpsample and spsample folders are automatically copied into your web server's document root directory.

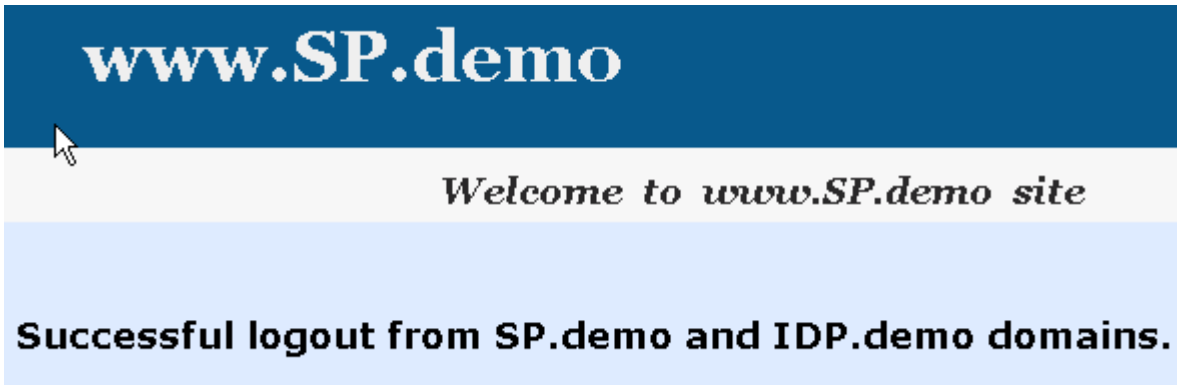
If you have not run the FSS sample application, use your own web pages, but ensure that your HTML page to test SP-initiated single sign-on includes a hard-coded link to the Single Logout service.

After you have successfully tested single sign-on, you can test single logout from the SP.demo welcome page.

To test single logout

On the SP Welcome page, click on the link labeled Single Logout using HTTP Redirect binding.

The following page is displayed:



If you see this message, single logout is successful.

Configure SAML 2.0 Artifact Single Sign-on

You need to complete tasks at the Identity Provider and Services Provider to configure artifact single sign-on.

Required tasks at the Identity Provider:

- Set Up the IdP Session Server for Artifact Single Sign-on (see page 166)
- Enable SSL for the IdP Web Server for Artifact Single Sign-on (see page 167)
- Enable a Persistent Session to Store Assertions at the IdP (see page 167)
- Protect Federation Web Services (see page 168)
- Select the Artifact Binding at the IdP (see page 169)

Required tasks at the Service Provider:

- Add a CA Certificate to the Smkeydatabase at the SP (see page 170)
- Enable the Artifact Binding for SAML Authentication at the SP (see page 171)
- Add a Link at the SP to Initiate Artifact Single Sign-on (see page 172)
- Test Artifact Single Sign-on

Set Up the IdP Session Server for Artifact Single Sign-on

For artifact binding, you need to set-up and enable the session server at the IdP. When you use the artifact binding, the session server is required to store the assertion prior to it being retrieved with the artifact.

Note: An ODBC database must be used as the session store.

To enable the session server

1. Install and configure an ODBC database to serve as the session store. In this deployment, we are using Microsoft SQL Server.

   For instructions, see the *Policy Server Installation Guide*.

2. Open the Policy Server Management Console.
3. Select the Data tab.
4. Choose Session Server From the Database drop-down list.

5. Complete the following fields:

   Data Source Information

   SiteMinder Session Data Source

   User Name

   admin

   Password

   dbpassword

   Confirm Password

   dbpassword

   Maximum connections

   16 (default)

6. Select the Enable Session Server check box.
7. Click OK to save the settings.
8. Enable SSL for the IdP Web Server for Artifact Single Sign-on (see page 167).

Enable SSL for the IdP Web Server for Artifact Single Sign-on

Enable SSL for the web server where the Web Agent Option Pack is installed. This ensures that the back channel over which the assertion is passed is secure.

To enable SSL at the IdP Web server

1. Create a server-side certificate request.
2. Have the Certificate Authority sign the server-side certificate.
3. Specify the server-side certificate in the web server's configuration.

   For the IIS Web server used in the sample network, the IIS Certificate Wizard would be used.
4. Enable a Persistent Session to Store Assertions at the IdP (see page 167).

Enable a Persistent Session to Store Assertions at the IdP

You need to enable a persistent session for the realm that contains the authentication URL that you protected according to the instructions in Protect the Authentication URL (see page 146). The persistent session is required to store assertions for SAML artifact binding.

If you did not already enable a persistent session when you set up the authentication URL protection, follow this procedure for SAML artifact binding.

To enable a persistent session

1. Log in to the FSS Administrative UI.
2. From the Domains tab, expand the domain that contains the realm with the authentication URL, then expand the Realms object.
3. From the Realms List, select the realm with the authentication URL and from the menu bar select Edit, Properties of Realm.

   The Realm Properties dialog opens.
4. Select the Session tab.
5. Click the Persistent Session radio button.
6. Click OK.
7. Select the Artifact Binding at the IdP (see page 169).

Protect Federation Web Services at the IdP (required-POST/Artifact)

Protecting the Federation Web Services application ensures that the services that make up the application are secure.

The policies for the Federation Web Services application are created automatically by the installation of the Web Agent Option Pack. However, to enforce protection and specify who can access Federation Web Services, there are a few additional steps.

To protect the Federation Web Services application at the IdP

1. Log on to the FSS Administrative UI.
2. Select the System tab.
3. From the menu bar, select Edit, Create Agent.
4. In the Agent Properties dialog, enter a name for the Web Agent then click OK. In this deployment, the Web Agent is idp-webagent.
5. If you do not have Agent Groups displayed, select View, Agent Groups from the menu bar.
6. Double-click the FederationWebServicesAgentGroup entry to open the Properties of Agent Group dialog.
7. Click on Add/Remove and the Available Agents and Groups dialog opens.
8. Add idp-webagent, the IdP Web Agent protecting the Federation Web Services application, to the Agent group, by selecting it from the Available Members list and clicking the left arrow to move it to the Current Members list.

9. Click OK until you exit the Agent Groups dialog.
10. Specify that all the Service Providers under the affiliate domain Federation Sample Partners can access the Federation Web Services application to retrieve the assertion, as follows:
    a. Select the Domains tab and expand FederationWebServicesDomain.
    b. Select Policies.
    c. From the Policy List, double-click the SAML2FWSArtifactResolutionServicePolicy entry.

       The SiteMinder Policy dialog box opens.
    d. From the Users tab, select the SAML2FederationCustomUserStore tab then click Add/Remove.

       affiliate: Federation Sample Partners is the "user" listed in the Available Members list.
    e. From the Available Members list, choose the SP Partners domain and move it to the Current Members list, then click Apply.
    f. Click OK to return to the Policy List.

Federation Web Services is now protected.

Select the Artifact Binding at the IdP

For artifact single sign-on, you need to enable the artifact binding.

To configure artifact single sign-on

1. Log in to the FSS Administrative UI.
2. From the Domains tab, expand Federation Sample Partners and select SAML Service Providers to display the Service Providers.
3. Select sp.demo and right-click to open the properties of this dialog.
4. Select the SSO tab.
5. Complete the following fields:

   Audience

   sp.demo

   This value must match the value at the Service Provider.

   Assertion Consumer Service

   http://www.sp.demo:81/affwebservices/public/saml2assertionconsumer
6. Select the HTTP-Artifact check box.

7. For the Artifact encoding, select URL.

   The artifact will be added to a URL-encoded query string.

8. Complete the password fields:

   Password

   smfederation

   Confirm Password

   smfederation

   This is the password that sp.demo will use to access the Federation Web Services application at the Identity Provider. This value must also match the value at the Service Provider.

9. For the Authentication Level, Validity Duration, and AuthnContext Class Ref fields, accept the defaults.

   In a test environment, you may want to increase the Validity Duration value above 60, the default, if you see the following message in the Policy Server trace log:

   Assertion rejected (_b6717b8c00a5c32838208078738c05ce6237) – current time (Fri Sep 09 17:28:33 EDT 2005) is after SessionNotOnOrAfter time (Fri Sep 09 17:28:20 EDT 2005)

10. Click OK.

11. Add a CA Certificate to the Smkeydatabase at the SP (see page 170).

Add a CA Certificate to the Smkeydatabase at the SP

For artifact single sign-on, if Basic over SSL is the authentication scheme protecting the Artifact Resolution Service, you must add a certificate to the Service Provider's smkeydatabase.

The smkeydatabase holds the certificate authority certificate that establishes an SSL connection between the Service Provider and the Identity Provider. The certificate secures the back channel that the assertion is sent across. The Artifact Resolution Service needs to be protected and the back channel need to be secure so the Service Provider knows the SSL connection is secured by a trusted authority.

A set of common root certificates are shipped with the default smkeydatabase. To use root certificate for web servers that are *not* in the key store, import the necessary root certificates into the smkeydatabase.

For this deployment, the alias is sampleAppCertCA and the certificate of the CA is docCA.crt.

Use the SiteMinder smkeytool utility to modify the database.

To add a certificate to the smkeydatabase

1. Open a command window.
2. Check whether the Certificate Authority certificate is already in the database by entering:

   smkeytool -listcerts

   Look for an entry type of CertificateAuthorityEntry.
3. If the CA certificate is not present, import a new CA certificate by entering:

   smkeytool -addCert -alias <*alias*> -infile <*cert_file*> -trustcacert

   For this deployment, the command is:

   smkeytool -addCert -alias sampleAppCertCA -infile docCA.crt -trustcacert
4. When asked if you trust the certificate, enter YES.

   The certificate is added to smkeydatabase.
5. Enable the Artifact Binding for SAML Authentication at the SP (see page 171).

Enable the Artifact Binding for SAML Authentication at the SP

At the Service Provider, you must configure the single sign-on bindings for the SAML authentication scheme so the Service Provider knows how to communicate with the Identity Provider.

To specify artifact binding for the authentication scheme

1. Log on to the FSS Administrative UI.
2. From the System tab, select Authentication Schemes.
3. Select Partner IdP.demo Auth Scheme and right-click to open the properties for this scheme.
4. Click Additional Configuration.
5. Select the SSO tab.
6. On the SSO tab, check HTTP-Artifact and enter the following value for the Resolution Service field:

   https:/www.idp.demo:443/affwebservices/saml2artifactresolution
7. Select the Backchannel tab and complete the following fields:

   Authentication

   Basic

   SP Name

   sp.demo

Password

password

Confirm Password

password

The password must match at the Identity Provider.

8. Click OK.
9. Add a Link at the SP to Initiate Artifact Single Sign-on (see page 172)

Test SP-Initiated Artifact Single Sign-on

To test single sign-on in an FSS-to-FSs network, you can use the web pages included with the FSS sample application, provided you have previously run the FSS sample application script. If you do not run the FSS sample application, you have to use your own web pages to test single sign-on.

The sample application web pages are located in the following two folders.

policy_server_home/samples/federation/content/idpsample

policy_server_home/samples/federation/content/spsample

policy_server_home

Specifies the installed location of the SiteMinder Policy Server

Important! If you have run the sample application, the idpsample and spsample folders are automatically copied into your web server's document root directory.

If you choose to use your own HTML page, it must contain a hard-coded link to the AuthnRequest service. For this deployment, the link for Artifact binding is:

http://<*server:port*>/affwebservices/public/saml2authnrequest?ProviderID=*IdP_ID*&ProtocolBinding=urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact

where *server:port* is the name and port of the server at the SP where the Web Agent Option Pack is installed and *IdP_ID* is the provider ID.

The link for this deployment is:

http://www.sp.demo:81/affwebservices/public/saml2authnrequest?ProviderID=idp.demo&ProtocolBinding=urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact

The HTML source file with the link might look like the following:

```
<a href="http://www.sp.demo:81/affwebservices/public/saml2authnrequest?ProviderID=
idp.demo&ProtocolBinding=urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact">
Link for ARTIFACT Single Sign-on</a>
```

The AuthnRequest Service redirects the user to the Identity Provider specified in the link to retrieve the user's authentication context. After the Identity Provider authenticates the user and establishes a session, it directs the user back to the target resource at the Service Provider.

Note: The ProviderID in the Authnrequest link must match the IdP ID field value specified by the SAML authentication scheme at the SP. The IdP ID field is located on the Scheme Setup tab of the Authentication Scheme Properties dialog.

You should now be ready to test single sign-on. Follow the steps to test SP-initiated single sign-on (see page 160).

Include an Attribute in the Assertion

You can add attributes from the user store record to a SAML assertion to further identify a user. The attribute must exist in the Identity Provider's user store for that specific user who is requesting access to the target resource.

For this deployment, an attribute will be added for Tuser1.

To add the firstname attribute

1. Log in to the FSS Administrative UI.
2. Select the Attributes tab from the SAML Service Provider Properties dialog.
3. Click Create.

   The SAML Service Provider Attribute dialog opens.
4. Complete the following fields:

   Attribute

   unspecified (default)

   Attribute Kind

   User Attribute

Variable Name

firstname

Attribute Name

givenname

givenname is a attribute in Tuser1's profile.

5. Click OK to save your changes and return to the Attributes tab.

Configure Digital Signing (required for POST Binding)

For POST single sign-on, the SAML response must be signed. There are configuration tasks at the Identity Provider and Service Provider to enable digital signing.

Important! In a production environment, signature processing is a mandatory security requirement.

Required task at the Identity Provider:

- Add a Private Key and Certificate to the IdP SMkeydatabase (see page 174)

Required tasks at the Service Provider:

- Set Up the Key Database at the SP to Validate Digital Signatures (see page 175)
- Enable Signature Validation at the SP (see page 176)

Add a Private Key and Certificate to the IdP Smkeydatabase

Keys and certificates used to sign SAML assertions for POST binding are stored in the smkeydatabase. Signing a SAML response is required, so you need to create smkeydatabase at the Identity Provider and add the appropriate items to it.

If you deployed the sample application, you can use the key that it automatically installs. If you want to create a new key, use the smkeytool utility to delete all the data from the smkeydatabase and complete the following procedures.

To create a key database and add a private key and certificate to it

1. Open a command window.
2. If necessary, create a key database for a Windows system by entering

   smkeytool.bat –createDB -password password

   This creates the smkeydatabase.

3. Add a private key and certificate to smkeydatabase.

   idp.demo signs the SAML response before sending it to sp.demo.

   The command for this deployment is:

   ```
   smkeytool.bat -addPrivKey -alias defaultenterpriseprivatekey -keyfile "c:\program
   files\ca\siteminder\certs\post-pkey.der" -certfile "c:\program
   files\ca\siteminder\certs\post-cert.crt" -password password
   ```

   The first part of this command is the location of the private key in DER format at the Identity Provider. For this deployment, that is post-pkey.der. The second part of the command is the location of the public key certificate, which is post-cert.crt followed by the password associated with the private key, which is password.

4. Log in to the FSS Administrative UI.
5. From the Domains tab, select Federation Sample Partners, then open the properties for the Service Provider, sp.demo.
6. Go to the General tab in the SAML Service Provider Properties dialog.
7. Uncheck the box labeled Disable Signature Processing. Deselecting this check box means that signature processing is enabled.
8. Click OK.
9. Set Up the smkeydatabase at the SP to Validate Digital Signatures (see page 175).

More Information:

Manage the Key Database for Signing and Encryption (see page 471)

Set Up smkeydatabase at the SP for Signature Validation

For POST single sign-on, the Identity Provider digitally signs the SAML assertion, as required by the SAML 2.0 specification. Consequently, the Service Provider must validate the signature.

To validate a digital signature, you need to add a public key to Service Provider's smkeydatabase file. When you configure the SAML authentication scheme, you specify the issuer's DN and serial number of the corresponding partner certificate.

To add the public key to smkeydatabase

1. Open a command window.
2. Create the smkeydatabase by entering:

   smkeytool.bat -createDB -password password

   This creates the smkeydatabase at the Service Provider with the password federation.

3. Add the public key certificate to smkeydatabase by entering:

   smkeytool.bat -addCert -alias <*alias*> -infile *path_to_X.509_certificate_file*

   In this deployment, the public key is post-cert.crt. The command is:

   smkeytool.bat -addCert -alias idp1cert -infile "c:\program files\ca\siteminder\certs\post-cert.crt"

4. Enable Signature Validation at the SP (see page 176).

More Information:

Manage the Key Database for Signing and Encryption (see page 471)

Enable Signature Validation at the SP

To validate a digital signature for POST single sign-on

1. Log into the FSS Administrative UI.
2. From the System tab, select Authentication Schemes to display the Authentication Scheme List.

   Select the existing SAML 2.0 authentication scheme, Partner IdP.demo Auth Scheme

   The Authentication Scheme Properties dialog box opens.
3. In the Scheme Common Setup group box, uncheck the Disable Signature Processing check box. Unchecking this box enables signature processing.
4. In the D-Sig Info box, enter the following:

   Issuer DN

   CN=Certificate Manager,OU=IAM,O=CA.COM

   Serial Number

   008D 8B6A D18C 46D8 5B

   The D-Sig information enables the Service Provider to verify the SAML response signature. The values for the Issuer DN and Serial Number are from the public key in the Service Provider's smkeydatabase.
5. Click OK.

   Validation configuration is now complete.
6. Test POST single sign-on.

Encrypt and Decrypt the Assertion

For added security, you can encrypt the assertion. Encryption is an optional task that can be performed after you have configured a basic single sign-on network.

The Identity Provider encrypts the assertion with the public key, which corresponds to the private key and certificate that the Service Provider uses to decrypt the assertion.

There are configuration tasks at the Identity Provider and Service Provider.

Required tasks at the IdP:

- Add a Public Key to SMkeydatabase at the IdP (see page 177)
- Enable Encryption in the Policy Server User Interface at the IdP (see page 177)

Required task at the SP:

- Decrypt an Encrypted Assertion at the SP (see page 178)

Add a Public Key to Smkeydatabase at the IdP

In this deployment, sp_encrypt.crt is the public key.

To add the public key to the IdP smkeydatabase

1. Open a command window.
2. Add the public key to the smkeydatabase by entering:

   smkeytool -addCert -alias idp1 -infile "c:\program files\ca\siteminder\certs\sp-encrypt.crt"

Enable Encryption in the Policy Server User Interface at the IdP

To enable encryption at the IdP

1. Log on to the FSS Administrative UI.
2. From the Service Provider Properties dialog, select the Encryption tab.
3. Check the Encrypt Assertion check box.
4. Accept the defaults for the Encryption Block Algorithm and the Encryption Key Algorithm.

5. In the Issuer DN, enter the issuer of the Service Provider's public key. In this deployment, the public key is sp-encrypt.crt.

   CN=Doc Certificate Authority, OU=Doc, O=CA.COM

   Note: The value you enter for the Issuer DN field should match the issuer DN of the certificate in the smkeydatabase. We recommend you open a command window and enter the command smkeytool -listCerts to list the certificates and view the DN to ensure that you enter a matching value.

6. In the Serial Number field, enter the serial number of the public key that resides in the Identity Provider's smkeydatabase. In this deployment, the value is 00EFF6AFB49925C3F4

   The number must be hexadecimal.

7. Click OK to save your changes.

8. Decrypt an Encrypted Assertion at the SP (see page 178).

Decrypt an Encrypted Assertion at the SP

If the assertion is encrypted at the Identity Provider, the Service Provider must have the private key and corresponding certificate in its smkeydatabase.

The Service Provider accepts an encrypted assertion from the Identity Provider as long as it has the private key and certificate to decrypt the assertion. You do not have to enable the Require an Encrypted Assertion feature for the SAML authentication scheme to accept an encrypted assertion at the Service Provider.

To add the private key and certificate to the smkeydatabase

1. Open a command window.
2. Do *one* of the following:
   - If the smkeydatabase has not been created already, enter the command:

     smkeytool.bat -createDB -password fedDB

     This creates the smkeydatabase at the Service Provider with the password fedDB.
   - If smkeydatabase does exist, skip to the next step.

3. Add a private key and certificate to the existing smkeydatabase.

   The command for this deployment is:

   smkeytool.bat -addPrivKey -alias sp1privkey -keyfile "c:\program files\ca\siteminder\certs\sp-encrypt.der" -certfile "c:\program files\ca\siteminder\certs\sp-encrypt.crt" -password fedsvcs

   The first part of this command is the location of the private key, sp-encrypt.der. The second part of the command is the location of the public key, sp-encrypt.crt, followed by the password, fedsvcs. Fedsvcs is the password associated with the private key.

4. Test single sign-on. Go to either of the following:

   - Test SAML 2.0 POST Single Sign-on
   - Test Artifact Single Sign-on

Chapter 4: Overview of a SiteMinder Federation Partnership Setup

This section contains the following topics:

Installation Overview

This overview outlines the set up of a SiteMinder federated network.

The steps in each procedure are divided by producing authority tasks and consuming authority tasks. Within this organization, the procedures are further divided by SiteMinder Policy Server and SiteMinder Web Agent tasks at each site.

A producing authority can be a:

- SAML 1.x producer
- SAML 2.0 Identity Provider
- WS-Federation Account Partner

A consuming authority can be a:

- SAML 1.x consumer
- SAML 2.0 Service Provider
- WS-Federation Resource Partner

Note: You can perform all the installation tasks first then complete the software configuration via the FSS Administrative UI. Either method works.

These procedures refer to the latest SiteMinder releases. For other compatible versions, see the SiteMinder Platform Matrix associated with the release.

To locate the SiteMinder Platform Support Matrix

1. Log on to the Technical Support Site.
2. Search for SiteMinder Platform Support Matrix.

Be aware of the following:

- SiteMinder does not support federation between two systems using the same cookie domain.
- This overview does not include the SAML Affiliate Agent. For information involving that Agent, see the *SiteMinder SAML Affiliate Agent Guide*.
- Federation Security Services and the SAML Affiliate Agent are separately-licensed items from SiteMinder.

Conventions in the Installation Overview Procedures

The following variables are used in installation and configuration procedures:

web_agent_home

Specifies the installed location of the Web Agent

policy_server_home

Specifies the installed location of the Policy Server

web_server_home

Indicates the installed location of the web server

fqhn

Designates fully-qualified host name

port_number

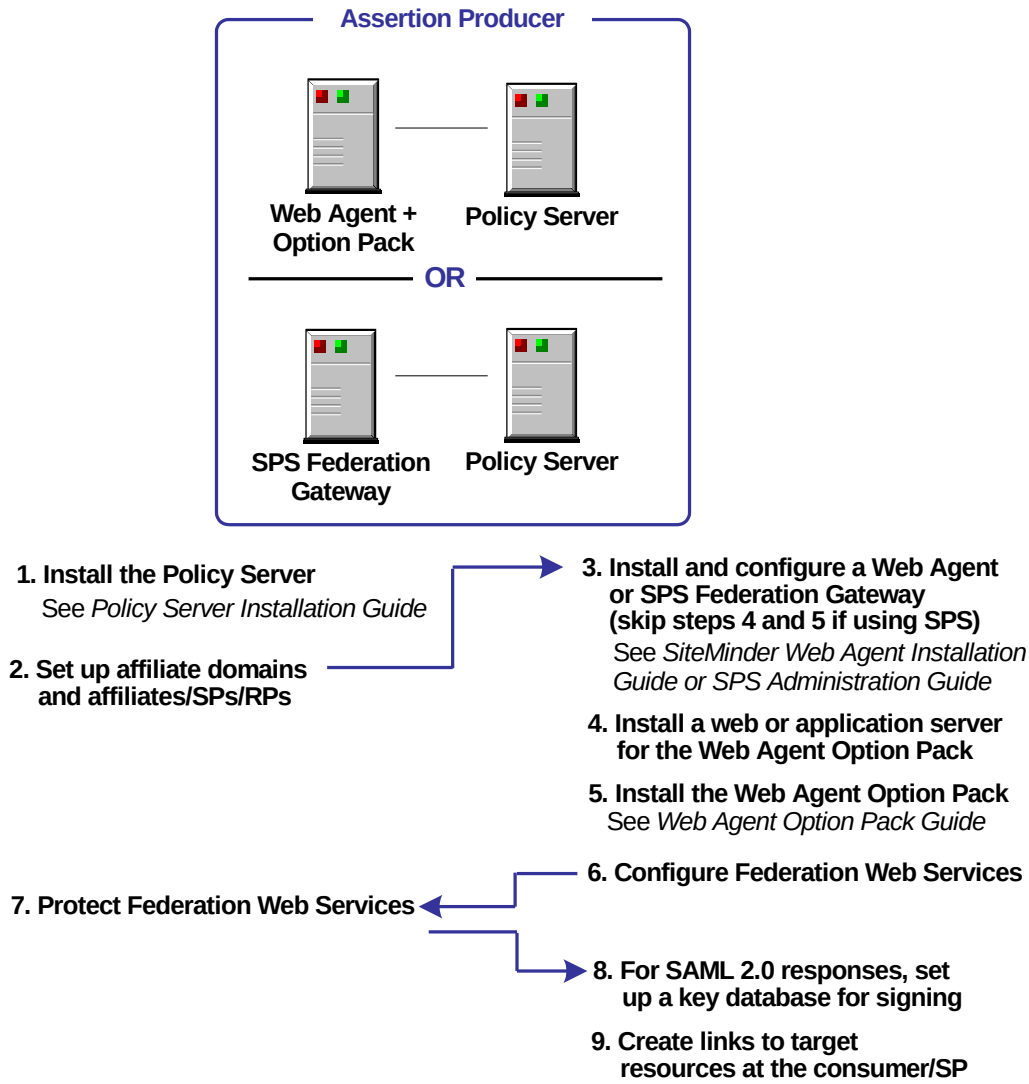
Specifies the port number of a server

sps_home

Specifies the installed location of the Secure Proxy Server

Set Up Producing Authority Components

The following illustration shows a SAML 1.x Producer, SAML 2.0 Identity Provider, or WS-Federation Account Partner setup.



Except where noted in the figure, see this guide for configuration instructions

Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

Install the Producing-side Policy Server

At the producing authority:

1. Install the Policy Server.

   See *SiteMinder Policy Server Installation Guide*.

2. Set up the Session Server and its database for artifact single sign-on only.

   See *SiteMinder Policy Server Administration Guide.*

   The session server is required only for artifact single sign-on because the session server stores an assertion prior to it being retrieved.

   Note: Do not use Microsoft Access as a session server database.

3. Set up a policy store for use by the Policy Server.

   See *SiteMinder Policy Server Installation Guide*.

   Important! If you choose to initialize a new policy store, the Policy Server installer will automatically import the affiliate objects contained in the ampolicy.smdif file. These objects are necessary for federation. If you use an existing policy store that you do not initialize, you will have to manually import the affiliate objects.To verify that the import is successful, log in to the FSS Administrative UI and click on Domains in the System tab. You should see the FederationWebServices domain object.

4. Set up a user store.

   See *SiteMinder Policy Server Configuration Guide*.

   This user store must contain the users for which assertions will be generated.

5. (Optional) You may want to enable error and trace logging for the Policy Server to see the communication between the producing authority and the consuming authority.

Set up Affiliate Domains and Add Sites to these Domains

Before you set up Federation Web Services, you establish affiliate domains and add the sites that will consume assertions to the affiliate domains. This identifies the partners to the site producing the assertions.

At the producing authority:

1. Access the FSS Administrative UI.
2. Create an affiliate domain.
3. Add a user store for users that the producing authority (producer, IdP, AP) will generate assertions.

4. Add an object for each consuming authority (consumer, SP, RP) to the affiliate domain.

   There should be a one-to-one correspondence between a consuming authority and each object added to the domain.

5. After adding sites to an affiliate domain, ensure that you protect the AuthenticationURL, which ensures that a user has a session at the producing authority prior to process a request for a federated resource.

   To do this:

   a. Create a policy domain.

   b. Protect the policy domain with the Web Agent that is protecting the server with the Web Agent Option Pack.

   c. To this policy domain, add a realm, rule, and policy that protects the Authentication URL.

More Information:

Add Entities to an Affiliate Domain (see page 240)
Protect the Authentication URL to Create a SiteMinder Session (SAML 1.x) (see page 263)
Protect the Authentication URL to Create a SiteMinder Session (SAML 2.0) (see page 337)

Install a Web Agent or SPS Federation Gateway (Producing-side)

The Web Agent is a required component in a SiteMinder federation security services network. You can either install a Web Agent on a web server or install an SPS federation gateway, which has an embedded web agent.

At the producing authority, set up the following components:

1. Install one of the following:

   – Web Agent

     For instructions, see *SiteMinder Web Agent Installation Guide*.

   – SPS federation gateway

     For instructions, see *SiteMinder Secure Proxy Server Administration Guide*.

2. For artifact single sign-on only, SSL-enable the web server with the Web Agent installed or the system with the SPS federation gateway, depending on what is installed in your environment.

   If the SAML Affiliate Agent is the consumer, the SSL-enabled web server at the producer must be configured to ignore client certificates. (This is the web server where the Web Agent is installed.) The SAML Affiliate Agent's Affiliate Server component cannot communicate with the Web Agent if the web server is configured to accept client certificates.

Install a Web or Application Server for the Web Agent Option Pack (Producing-side)

If you are implementing Federation Security Services with a Web Agent and Web Agent Option Pack (not with an SPS federation gateway), you have to install the Web Agent Option Pack. To install this component you need a web or application server.

At the producing authority, do the following:

1. Install one of the following servers to run Federation Web Services, the application installed with the Web Agent Option Pack.
   - Web server running ServletExec
   - WebLogic Application Server
   - WebSphere Application Server
2. Deploy Federation Web Services on these systems.
3. For artifact single sign-on, SSL-enable the web server where the Web Agent Option Pack is installed.

More Information:

Deploy Federation Web Services as a Web Application (see page 217)

Install the Producing-side Web Agent Option Pack

The Web Agent Option Pack supplies the Federation Web Services application, which is a required component for SiteMinder federation security services.

At the producing authority, do the following

1. Install the Web Agent Option Pack.

   For instructions, see the *Web Agent Option Pack Guide*.

2. Be sure to install a JDK, which is required by the Web Agent Option Pack.

   For the supported JDK version, log on to the Technical Support site and search for the SiteMinder Platform Support Matrix for the release.

Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

Configure Federation Web Services (Producing-side)

These steps enable you to set up the Federation Web Services application. The Federation Web Services application is installed on the server with the Web Agent Option Pack or the SPS federation gateway.

To configure Federation Web Services at the producing authority

1. Configure one of the following if you are using the Web Agent Option Pack:

   - A web server running ServletExec to run Federation Web Services
   - WebLogic Application Server and deploy Federation Web Services
   - WebSphere Application Server and deploy Federation Web Services

   If you are using the SPS federation gateway, the Federation Web Services is already deployed.

2. Check that the AgentConfigLocation parameter in the AffWebServices.properties file is set to the full path to the WebAgent.conf file. Ensure that the syntax is correct and the path appears on one line in the file.

   The AffWebServices.properties file contains the initialization parameters for Federation Web Services. This file is located in the one of the following directories:

   - *web_agent_home*/affwebservices/WEB-INF/classes
   - *sps_home*/secure-proxy/Tomcat/webapps/affwebservices/WEB-INF/classes

   web_agent_home

   Represents the installed location of the Web Agent

   sps_home

   Represents the installed location of the SPS federation gateway

3. Enable error and trace logging for Federation Web Services application. Logging is enabled in the LoggerConfig.properties file. The logs enable you to see the communication between the producing authority and the consuming authority.

   - Error logging is recorded in the affwebserv.log file, the default error log file.
   - Trace logging is recorded in the FWSTrace.log, the default trace log file.

4. Test Federation Web Services by opening a Web browser and entering the following link:

   http://*fqhn*:*port_number*/affwebservices/assertionretriever

   where *fqhn* is the fully-qualified host name and *port_number* is the port number of the server where the Federation Web Services application is installed.

   For example:

   http://myhost.ca.com:81/affwebservices/assertionretriever

   If Federation Web Services is operating correctly, you should see a message that reads:

   Assertion Retrieval Service has been successfully initialized.
   The requested servlet accepts only HTTP POST requests.

   This message indicates that Federation Web Services is listening for data activity. If Federation Web Services is not operating correctly, you will get a message that the Assertion Retrieval Service has failed. In case of failure, check the Federation Web Services log.

More Information:

Configure ServletExec to Work with Federation Web Services (see page 218)
Configure the AffWebServices.properties File (see page 214)
Set up the LoggerConfig.properties File (see page 215)
Federation Security Services Trace Logging (see page 463)

Protect Federation Web Services (Producing-side)

You need to protect the Federation Web Services application so that only authorized partners have access.

To protect the Federation Web Services application

1. Log in to the FSS Administrative UI at the producing authority.
2. Check the Agent Configuration Object for the Web Agent to ensure the necessary parameters are set.
3. Add the Web Agent that protects Federation Web Services to the Agent group FederationWebServicesAgentGroup. The Web Agent at the producing authority is on the Web server where the Web Agent Option Pack is installed.

   This action binds the Agent to the realms that protect Federation Web Services.

   Select View, Agent Groups to view Agent groups.
4. Specify the consuming authorities who can access the Federation Web Services application:
   a. From the Domains tab, expand FederationWebServicesDomain and select Policies.

      The following policies are displayed in the Policy List:

      - FederationWSAssertionRetrieval
      - FederationWSNotificationService
      - FederationWSSessionServicePolicy
      - SAML2FWSArtifactResolutionServicePolicy

   b. Select one of the policies, and click Edit, Properties of Policy.

      For SAML 1.x, you need to permit access to:

      - FederationWSAssertionRetrieval
      - FederationWSNotificationService
      - FederationWSSessionServicePolicy

For SAML 2.0, you need to permit access to:

- SAML2FWSArtifactResolutionServicePolicy

Note: You do not have to select a policy for WS-Federation.

The SiteMinder Policy dialog box opens.

c. From the Users tab, select the FederationWSCustomUserStore tab for SAML 1.x or the SAML2FederationCustomUserStore tab for SAML 2.0.

The Users/Groups dialog box opens.

The consumers/Service Providers are the "users" included in the listed user stores.

d. Click Add/Remove on the appropriate tab.

e. From the Available Members list, choose the affiliate domains that should have access to Federation Web Services then move them to the Current Members list.

f. Click OK to return to the Policy List.

g. Repeat this procedure for all policies relevant for the SAML version you are using.

Federation Web Services is now protected from unauthorized access.

If you try to access Federation Web Services from a link, such as http://idp-fws.ca.com:81/affwebservices/assertionretriever, you should be challenged. Only an authorized affiliate site should have access to Federation Web Services.

For this link you must enter a fully-qualified host name and port number for the server where the Federation Web Services application is installed.

To respond to the authentication challenge, enter a valid affiliate name and the affiliate password that has been configured at the Policy Server. These will serve as the credentials.

Set up a Key Database for Signing POST Responses

To sign SAML POST responses, which is required by the SAML specification, you have to add a private key and certificate to the SiteMinder key database file, smkeydatabase.

More Information:

Manage the Key Database for Signing and Encryption (see page 471)

Create Links to Target Resources (optional)

Go to one of the following:

- Links for SAML 1.x Single Sign-On (see page 191)
- Links for SAML 2.0 Single Sign-On at the Identity Provider (see page 192)
- Links to Initiate WS-Federation Single Sign-on (see page 193)

Initiate SAML 1.x Single Sign-On at the Producer

At the producer, create pages that contain links which direct the user to the consumer site. Each link represents an intersite transfer URL. The user has to visit the intersite transfer URL, which then sends a request to the producer-side Web Agent before being redirected to a consumer site.

The link that the user selects at the producer must contain certain query parameters. These parameters are supported by an HTTP GET request to the producer Web Agent.

For SAML artifact profile, the syntax for the intersite transfer URL is:

http://*producer_site*/affwebservices/public/intersitetransfer?SMASSERTIONREF=QUERY&NAME=*affiliate_name*&TARGET=http://*consumer_site*/target_url?*query_parameter_name*%3D*query_parameter_value*%26*query_parameter_name*%3D*query_parameter_value*&SMCONSUMERURL=http://*consumer_site*/affwebservices/public/samlcc&AUTHREQUIREMENT=2

producer_site

Specifies the server and port number of the machine hosting the Web Agent Option Pack or the SPS federation gateway, depending on which components are installed in your federation network.

consumer_site

Specifies the server and port number of the machine hosting the Web Agent Option Pack or the SPS federation gateway, depending on which components are installed in your federation network.

For SAML POST profile, the syntax for the intersite transfer URL is:

http://*producer_site*/affwebservices/public/intersitetransfer?SMASSERTIONREF=QUERY&NAME=*affiliate_name*&TARGET=http://*consumer_site/target_url*

producer_site

Specifies the server and port number of the machine hosting the Web Agent Option Pack or the SPS federation gateway, depending on which components are installed in your federation network.

consumer_site

Specifies the server and port number of the machine hosting the Web Agent Option Pack or the SPS federation gateway, depending on which components are installed in your federation network.

Note: The SMCONSUMERURL and AUTHREQUIREMENT parameters are not used by SAML POST profile; however, if you include one of these parameters in the intersite transfer URL, you must also include the other.

More Information:

Create Links to Consumer Resources for Single Sign-on (see page 252)

Initiate SAML 2.0 Single Sign-On at the Identity Provider

If a user visits the Identity Provider before going to the Service Provider (POST or artifact binding), an unsolicited response at the Identity Provider needs to be initiated. To initiate an unsolicited response, the Federation Web Service application and assertion generator accept an HTTP Get request with a query parameter that indicates the Service Provider ID for which the IdP will generate the response.

For SAML 2.0 artifact or post profile, the syntax for the link is:

http://*IdP_server:port*/affwebservices/public/saml2sso?SPID=*SP_ID*

idp_server:port

Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

SP_ID

Service Provider ID value.

You may need to add the ProtocolBinding query parameter (see page 319) to this link depending on which bindings are enabled.

Note: You do not need to HTTP-encode the query parameters.

You can also initiate single sign-on at the Service Provider.

More information:

Set Up Links at the IdP or SP to Initiate Single Sign-on (see page 318)
Unsolicited Response Query Parameters Used by a SiteMinder IdP (see page 319)

Initiate WS-Federation Single Sign-on at the Account Parnter

To initiate WS-Federation single sign-on, a user clicks on a page with hard-coded HTML link that directs the user's browser to the Single Sign-on Service at the Account Partner. The Account Partner then redirects the user to the Resource Partner.

The link that initiates single sign-on can be included at any site, but it must always first direct the user to the Account Partner.

The syntax for the link is:

https://*AP:port*/affwebservices/public/wsfedsso?wa=wsignin1.0&wtrealm=*RP_ID*

ap_server:port

Specifies the server and port number of the system at the Account Partner that is hosting the Web Agent Option Pack or the SPS federation gateway, depending on which component is installed in your federation network.

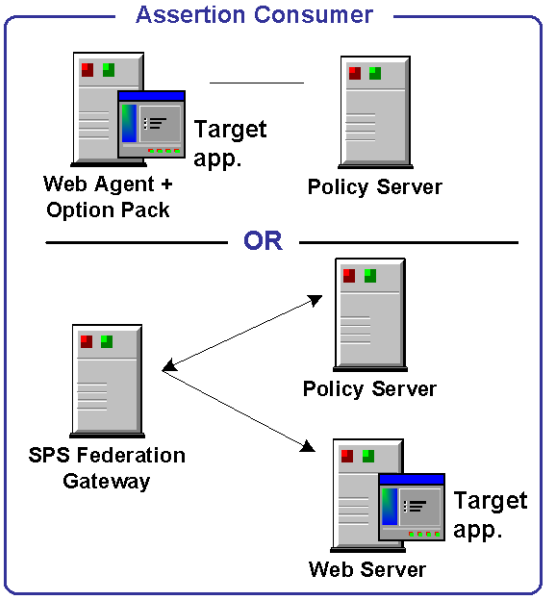
Note: You do not need to HTTP-encode the query parameters.

Set Up Consuming Authority Components

Many of the steps for setting up a Policy Server and Web Agent at the consuming authority are similar to those for the producing authority, with the exception of the following:

- you do not configure consumers, Service Providers, or Resource Partners
- you configure a SAML or WS-Federation authentication scheme at the Policy Server

The following illustration shows the required tasks for the SAML 1.x Consumer, the SAML 2.0 Service Provider, or the WS-Federation Resource Partner.



1. **Install Policy Server**
   See Policy Server Installation Guide
2. **Configure the SAML authentication scheme for each producer/IdP/AP**
3. **Create realms, rules, and policies to protect target resources.**
4. **Install and configure a Web Agent or an SPS Federation Gateway**
   See SiteMinder Web Agent Installation Guide or SPS Administration Guide (Skip steps 6 and 7 if using the SPS)
5. **Install a web or application server for Federation Web Services**
6. **Install the Web Agent Option Pack**
   See the Web Agent Option Pack Guide
7. **Configure Federation Web Services**
8. **Protect Federation Web Services**
9. **For artifact SSO, set up the smkeydatabase.**

Except where noted in the figure, see this guide for configuration instructions.

Note: This procedure assumes that the target resources already exist at the consuming authority Web site.

Install the Consuming-side Policy Server

You must install the Policy Server at the consuming authority site. The Policy Server provides functions such as the federation authentication schemes and the Assertion Generator.

At the consuming authority, do the following:

1. Install the Policy Server.

   See the *SiteMinder Policy Server Installation Guide*.

2. Set up a policy store.

   See the *SiteMinder Policy Server Installation Guide*.

   Important! If you choose to initialize a new policy store, the Policy Server installer will automatically import the affiliate objects contained in the ampolicy.smdif file. These objects are necessary for federation. If you use an existing policy store that you do not initialize, you will have to manually import the affiliate objects.To verify that the import is successful, log in to the FSS Administrative UI and click on Domains in the System tab. You should see the FederationWebServices domain object.

3. Set up a user store and add users permitted to access target resources.

   See the *SiteMinder Policy Server Configuration Guide*.

Configure a SAML or WS-Federation Authentication Scheme

At the consuming authority Policy Server, configure an authentication scheme (artifact, POST profile, SAML 2.0, WS-Federation) for each producing authority.

Important! The name of the partner that you specify for the authentication scheme must match the name of the consuming authority that you specify at the producing authority, as follows:

- For SAML 1.x authentication schemes, the Affiliate Name field of the scheme's configuration must match an Affiliate Name for an affiliate object at the producer site.
- For SAML 2.0, the equivalent field is the SP ID, which must match the SP ID at the Identity Provider.
- For WS-Federation, the Resource Partner ID for the scheme's configuration must match the Resource Partner ID at the Account Partner.

More Information:

Authenticate SAML 1.x Users at a Consumer (see page 269)
Authenticate SAML 2.0 Users at the Service Provider (see page 347)
Authenticate WS-Federation Users at a Resource Partner (see page 421)

Protect Target Resources (Consuming-side)

After creating a SAML or WS-Federation authentication scheme, assign the scheme to a unique realm or a single custom realm. The realm is the collection of target resources at the consuming authority that require an assertion for user access. Target resources are those identified by the TARGET variable in the intersite transfer URLs (SAML 1.x) or the AuthnRequest URL, or authentication scheme (SAML 2.0 and WS-Federation).

After you create a realm and assign a SAML or WS-Federation authentication scheme to it, create a rule for the realm, then add the rule to a policy that protects the resource.

Install a Web Agent or SPS Federation Gateway (Consuming-side)

The Web Agent is a required component in a SiteMinder federation security services network. You can either install a Web Agent on a web server or install an SPS federation gateway, which has an embedded web agent.

At the consuming authority, set up the following components:

1. Install one of the following:
   - Web Agent

     For instructions, see *SiteMinder Web Agent Installation Guide* and *SiteMinder Web Agent Configuration Guide*
   - SPS federation gateway

     For instructions, see *SiteMinder Secure Proxy Server Administration Guide*.
2. Configure the Web Agent or SPS federation gateway.

Install a Web or Application Server for the Web Agent Option Pack (Consuming-side)

If you are implementing Federation Security Services with a Web Agent and Web Agent Option Pack (not with an SPS federation gateway), you have to install the Web Agent Option Pack. To install this component you need a web or application server.

At the consuming authority:

1. Install one of the following servers to run Federation Web Services, the application installed with the Web Agent Option Pack.
   - Web server running ServletExec
   - WebLogic Application Server
   - WebSphere Application Server
2. Deploy Federation Web Services on these systems.

More Information:

Deploy Federation Web Services as a Web Application (see page 217)

Install the Consuming-side Web Agent Option Pack

The Web Agent Option Pack supplies the Federation Web Services application, which is a required component for SiteMinder federation security services.

At the consuming authority, do the following

1. Install the Web Agent Option Pack.

   For instructions, see the *Web Agent Option Pack Guide*.
2. Be sure to install a JDK, which is required by the Web Agent Option Pack.

   To determine the required JDK version, go to the Technical Support site and search for SiteMinder r12 SP1 Platform Matrix.

Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

Configure Federation Web Services (Consuming-side)

These steps enable you to set up the Federation Web Services application. The Federation Web Services application is installed on the server with the Web Agent Option Pack or the SPS federation gateway.

To configure Federation Web Services at the consuming authority

1. Configure one of the following if you are using the Web Agent Option Pack:
   - A web server running ServletExec to run Federation Web Services
   - WebLogic Application Server and deploy Federation Web Services
   - WebSphere Application Server and deploy Federation Web Services

   If you are using the SPS federation gateway, the Federation Web Services application is already deployed.
2. Check that the AgentConfigLocation parameter in the AffWebServices.properties file is set to the full path to the WebAgent.conf file. Ensure that the syntax is correct and the path appears on one line in the file.

   The AffWebServices.properties file contains the initialization parameters for Federation Web Services. This file is located in the one of the following directories:
   - *web_agent_home*/affwebservices/WEB-INF/classes
   - *sps_home*/secure-proxy/Tomcat/webapps/affwebservices/WEB-INF/classes

   web_agent_home

   Represents the installed location of the Web Agent

   sps_home

   Represents the installed location of the SPS federation gateway
3. Enable error and trace logging for Federation Web Services application. Logging is enabled in the LoggerConfig.properties file. The logs enable you to see the communication between the producing authority and the consuming authority.
   - Error logging is recorded in the affwebserv.log file, the default error log file.
   - Trace logging is recorded in the FWSTrace.log, the default trace log file.

4. Test Federation Web Services by opening a Web browser and entering the following link:

   http://*fqhn*:*port_number*/affwebservices/assertionretriever

   where *fqhn* is the fully-qualified host name and *port_number* is the port number of the server where the Federation Web Services application is installed.

   For example:

   http://myhost.ca.com:81/affwebservices/assertionretriever

   If Federation Web Services is operating correctly, you should see a message that reads:

   Assertion Retrieval Service has been successfully initialized.
   The requested servlet accepts only HTTP POST requests.

   This message indicates that Federation Web Services is listening for data activity. If Federation Web Services is not operating correctly, you will get a message that the Assertion Retrieval Service has failed. In case of failure, check the Federation Web Services log.

More Information:

Configure Federation Web Services (Producing-side) (see page 187)
Set Up the Federation Web Services Application (see page 211)

Protect Federation Web Services (Consuming-side)

The procedure for protecting the Federation Web Services application is the same at the consuming authority as it is for the producing authority.

More Information:

Protect Federation Web Services (Producing-side) (see page 189)
Set Up the Federation Web Services Application (see page 211)

Set-up the smkeydatabase for Artifact Single Sign-on (optional)

The smkeydatabase is a local flat-file key database that stores keys and certificates needed for PKI specific operations such as encryption, decryption, signing, verification and client authentication.

If you are implementing artifact single sign-on, smkeydatabase at the producing authority holds the certificate authority's certificate for establishing an SSL connection from the consuming authority to the web server at a producing authority. This secures the back channel that the assertion is sent across for artifact single sign-on.

A set of common root CAs are shipped in the default smkeydatabase. To use root CAs for web servers that are *not* in smkeydatabase, import these root CAs into the file.

To modify smkeydatabase, use the smkeytool utility.

More Information:

Manage the Key Database for Signing and Encryption (see page 471)

Create Links to Initiate Single Sign-on (optional)

For SAML 2.0 and WS-Federation, if a user visits the consuming authority before visiting the producing authority, you have to establish hard-coded links that redirect the user to the producing authority site to fetch the authentication context, which consists of the characteristics that enable the consuming authority to understand how the user was authenticated.

More Information:

Initiate SAML 2.0 Single Sign-on at the SP (optional) (see page 200)
Initiate WS-Federation Single Sign-on at the Resource Partner (see page 201)

Initiate SAML 2.0 Single Sign-on at the SP (optional)

If a user visits the Service Provider first (POST or artifact binding) before visiting the Identity Provider, you have to create an HTML page at the Service Provider that contains hard-coded links to the Service Provider's AuthnRequest Service, which in turn redirects the user to the Identity Provider to fetch the authentication context. The page with the HTML link to the Identity Provider has to reside in an unprotected realm.

The hard-coded link that the user clicks at the Service Provider must contain certain query parameters. These parameters are supported by an HTTP GET request to the AuthnRequest service at the Service Provider's Policy Server.

For SAML 2.0 (artifact or profile), the syntax for the link is:

http://*SP_site*/affwebservices/public/saml2authnrequest?ProviderID=*IdP_ID*

sp_server:port

Specifies the server and port number at the Service Provider that is hosting the Web Agent Option Pack or the SPS federation gateway.

IdP_ID

Specifies the identity assigned to the Identity Provider

You may need to add the ProtocolBinding query parameter to this link depending on which bindings are enabled. For details on configuring links at the Service Provider and a sample link, see Set Up Links at the IdP or SP to Initiate Single Sign-on (see page 318).

Note: You do not need to HTTP-encode the query parameters.

You can also create links at the Identity Provider.

More Information:

Set Up Links at the IdP or SP to Initiate Single Sign-on (see page 318)

Initiate WS-Federation Single Sign-on at the Resource Partner

If a user visits the Resource Partner before visiting the Account Partner, you have to create an HTML page, such as a site selection page that contains a list of the Account Partners with which to authenticate. Upon selecting a link, the user is directed to the Single Sign-on Service at the Account Partner. The site selection page has to reside in an unprotected realm.

The hard-coded link that the user clicks on at the Resource Partner must contain certain query parameters. These parameters are supported by an HTTP GET request to the Single Sign-on Service at the Account Partner's Policy Server.

The syntax for the link is:

https://*host:port*/affwebservices/public/wsfedsso?wa=wsignin1.0&wtrealm=*RP_ID*

host:port

Indicates the server and port number where the Single Sign-on service resides

RP_ID

Specifies the Resource Partner identity

Note: You do not need to HTTP-encode the query parameters.

Chapter 5: Setup the SAML 1.x Assertion Generator File

This section contains the following topics:

SAML 1.x Assertion Generator Properties File

The Policy Server installed at the producer, includes a component called the assertion generator. The assertion generator creates SAML assertions, which are XML documents that contain authentication information about a user.

For the SAML artifact profile, after an assertion is generated, it is stored by the session server until it is requested by the consumer.

The AMAssertionGenerator.properties file (SAML 1.x only) is required for operation of the Assertion Generator. It contains parameters that the Assertion Generator uses to generate SAML 1.x assertions. This file contains commented instructions, which you can read for more information about the settings in the file.

The installed location of this file is:

policy_server_home/config/properties

The assertion generator works without modifying the settings in this file; however, the file contains SiteMinder default values that are used in the assertions, so you should change these for your network.

More Information:

Configure the SAML 1.x AMAssertionGenerator.properties File (see page 203)
The JVMOptions.txt File (see page 205)

Configure the SAML 1.x AMAssertionGenerator.properties File

To configure the AMAssertionGenerator.properties file:

1. Go to the following location: *policy_server_home*/config/properties
2. Open the AMAssertionGenerator.properties file in a text editor.

3. Modify the following parameters:

   AssertionIssuerID

   Specifies the URL that identifies the site issuing the assertion.

   This URL must be the same value as the Issuer field that you complete for a SAML authentication scheme.

   Note: It is essential that this value be properly set so that SAML 1.x assertions are meaningful.

   SecurityDomain

   Identifies the producer's domain, such as example.com

   SourceID

   Specifies for the SAML 1.x artifact profile only, a unique ID in the artifact that identifies the producer. For more information, see the SAML specification at the OASIS web site.

The values you enter in this file should match the values for the equivalent settings at the consumer site, whether the consumer is a SAML Affiliate Agent or a 1.x consumer.

Note: If you make any changes to the AmAssertionGenerator.properties file, the changes will not be picked up by the Policy Server until it is restarted.

Chapter 6: Review the JVMOptions File Used to Create a JVM

This section contains the following topics:

The JVMOptions.txt File

The JVMOptions.txt file contains the settings that the Policy Server uses when creating the Java Virtual Machine that is used to support Federation Web Services. This file is used by SAML 1.x, SAML 2.0, and WS-Federation.

Note: In most situations, you will not need to change this file.

The installed location of this file is:

policy_server_home/config/

Important! If you make changes to the JVMOptions.txt file, you must restart the Policy Server for the changes to take affect. Restart the server from the command line or from the Policy Server Management Console.

To stop and start the Policy Server, use the Policy Server Management Console.

Notes:

- In some environments, when you log off from a system where the SiteMinder Policy Server service is running, the Policy Server service fails because of a JVM issue. To prevent this issue from occurring, add the -Xrs command to its own command line in the JVMOptions.txt file. This java command reduces usage of operating system signals by the Java virtual machine.

  This command is case-sensitive so be sure to capitalize the X.

- If you encounter errors relating to missing classes, you may need to modify the classpath directive in this file. For complete information about the settings contained in the JVMOptions.txt file, see your Java documentation. The Java compiler directive java.endorsed.dirs is used in the JVMOptions.txt file to control class loading.

Chapter 7: Storing User Session, Assertion, and Expiry Data

This section contains the following topics:

Federation Data Stored in the Session Server

The Session Server stores data for the following federation features:

- SAML artifact authentication--when artifact authentication is used (SAML 1.x or 2.0), the assertion generator produces a SAML assertion along with an associated artifact that identifies the generated assertion. The artifact is returned to the consumer/Service Provider, while the assertion is stored by the Session Server until the artifact is used to retrieve the assertion.

  Note: SAML POST profile authentication does not store assertions in the Session Server.

- Single logout--with SAML 2.0 single logout enabled, information about the user's session is stored in the Session Server by the assertion generator and the authentication scheme. When a single logout request is completed, the user's session information is removed from the session store.

- Sign-out --with WS-Federation sign-out enabled, the WS-Federation authentication scheme puts some context information into the Session Server so that a Sign-Out request can be generated. When a signout request is completed, the user's session information is removed from the session store.

- Single use policy--A single use policy is enabled for SAML 2.0 and for WS-Federation by a storage mechanism called expiry data, which is time-based data about the assertion stored by the authentication scheme in the Session Server. Expiry data storage ensures that a SAML 2.0 POST or WS-Federation assertion is only used a single time.

Configure and Enable the Session Server

You enable the Session Server from the Policy Server Management Console.

The session server database is where the Policy Server Session Server stores persistent session data.

To configure a database for the session server

1. Choose Session Server from the Database drop-down list.
2. Choose an available storage type from the Storage drop-down list.
3. Set the Enable Session Server option.

   You should only enable the Session Server if you are going to use persistent sessions in one or more realms; when enabled, the Session Server impacts Policy Server performance.

   Note: The Use Policy Store database check box is disabled. For performance reasons, the session server cannot be run on the same database as the policy store.
4. Specify Storage Options appropriate for the chosen storage type.
5. Click OK to save the settings and exit the Console.
6. Stop and restart the Policy Server.

Environments that Require a Shared Session Store

SiteMinder's implementation of the following features requires a session store to store SAML assertions and user session information:

- HTTP-Artifact single sign-on (SAML 1.x or 2.x)

  The assertion is stored in the session store until it is retrieved by the consumer (Producer/Identity Provider). A persistent session is required for this to work.
- HTTP-POST single use policy (SAML 2.0 and WS-Federation)

  The single use policy feature prevents SAML 2.0 assertions that arrive via the POST binding from being re-used at a Service Provider to establish a second session. Time-based data about the assertion, known as expiry data, is stored by the authentication scheme in the session store at the Service Provider/Resource Partner. This data ensures that a SAML 2.0 POST or WS-Federation assertion is only used a single time. Although a session store is required at the Service Provider/Resource Partner, a persistent session is not required.

- Single logout (SAML 2.0)

  For single logout, the status of the user's session in the session store must be changed to invalidate the session. A persistent session is required at the Identity Provider and Service Provider.

- Signout (WS-Federation)

  For WS-Federation signout, the status of the user's session in the session store must be changed to invalidate the session. A persistent session is required at the Account Partner and Resource Partner.

To implement these features across a clustered Policy Server environment, you must set up the environment as follows:

- Log-in realm must be configured for persistent sessions for all features *except* for a HTTP-POST single use policy

  Persistent sessions are part of the realm configuration.

- For HTTP-Artifact single sign-on, the session store must be shared at the Producer/Identity Provider site across all Policy Servers in the cluster.

  Sharing the session store ensures that all Policy Servers have access to assertions when each one receives a request for an assertion.

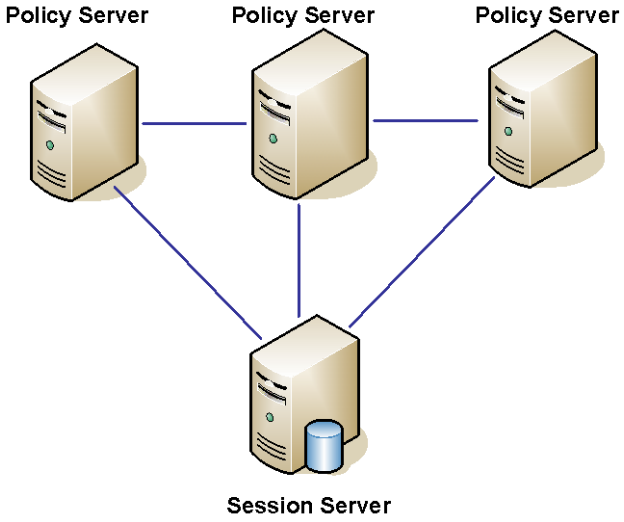
- For SAML 2.0 single logout, and WS-Federation signout, the session store must be shared at the Identity Provider/Account Partner site and the Service Provider/Resource Partner site across all Policy Servers in the cluster.

  Sharing the session store ensures that all Policy Servers have access to user session data when each one receives a request for a session logout.

- For the HTTP-POST and WS-Federation single use policy feature, the session store must be shared at the consumer site (Service Provider/Resource Partner) across all Policy Servers in the cluster.

Note: All Policy Servers that can generate or consume assertions or process a persistent SMSESSION cookie need to be able to contact the common session store. For example, if a user logs into example.com and gets a persistent session cookie for that domain, every single Policy Server that is handling requests for example.com must be able to check that the session is still valid.

The following figure shows a Policy Server cluster communicating with one session server:



To share a session store, use one of the following methods:

- Point all Policy Servers to one session server

  In the Policy Server Management Console, configure the Policy Server to use the designated session server.

- Replicate the session store across many session servers

  For instructions on replicating a database, use the documentation for your database.

Chapter 8: Set Up the Federation Web Services Application

This section contains the following topics:

Federation Web Services Application Overview

Federation Web Services, a component of Federation Security Services, is a collection of servlets packaged as a Web application in accordance with the Java Servlet API 2.3 specification. It is installed with the Web Agent Option Pack or deployed inside the Tomcat web server, which is embedded in the SPS federation gateway.

The web application is rooted at a specific URL within the web server. For example, the application could be located at http://www.myserver.com/affwebservices/ and the assertion retrieval service (part of the application) could be registered to listen on http://www.myserver.com/affwebservices/assertionretrieval. All requests that start with this URL prefix are routed to the assertion retrieval servlet.

A web application exists as a structured hierarchy of directories. The root of the hierarchy serves as a document root for serving files that are part of this context.

A special directory, WEB-INF, exists within the application directory hierarchy, located at one of the following locations:

- *web_agent_home*/affwebservices/WEB-INF (Web Agent/Web Agent Option Pack)
- *sps_home*/secure-proxy/Tomcat/webapps/affwebservices/WEB-INF (SPS federation gateway)

web_agent_home

Indicates the installed location of the Web Agent

sps_home

Indicates the installed location of the Secure Proxy Server

This directory contains everything related to the application that is not in the document root of the application. That is, the WEB-INF directory is not part of the public document tree of the application, and no file contained in the WEB-INF directory may be served directly to the client.

The contents of the WEB-INF directory are:

- /WEB-INF/classes/: Properties files, such as LoggerConfig.properties.
- /WEB-INF/lib/: Directory for Java archive files containing servlets, beans, and other utility classes that are useful to the application.
- Web.xml: lists the servlets and URL mappings.

The Federation Web Services application provides these services:

- Assertion Retrieval Service (SAML 1.x)
- SAML credential collector to consume assertions for single sign-on (SAML 1.x)
- Intersite Transfer Service (SAML 1.x)
- Artifact Resolution Service (SAML 2.0)
- Assertion Consumer Service for single sign-on (SAML 2.0)
- Security Token Consumer Service for single sign-on (WS-Federation)
- AuthnRequest service (SAML 2.0)
- Single Sign-on service for cross-domain single sign-on (SAML 2.0 and WS-Federation)
- Single Logout Service (SAML 2.0)
- Signout Service (WS-Federation)

- Session Synchronization -- ValidateSession & Logout calls--a value-added service, supported by a standards-based SOAP RPC mechanism (used by the SAML Affiliate Agent only).
- Notification Alert--a value-added service, supported by a standards-based SOAP RPC mechanism (used by the SAML Affiliate Agent only)

Note: The Session Synchronization and Notification Alert services can only be used when the Web Agent/Web Agent Option Pack is at the producing site and the SAML Affiliate Agent is at the consuming site. These services are not supported with the SPS federation gateway.

Federation Web Services Deployment Descriptors

There are two deployment descriptor files used by Federation Web Services:

- DeployedServices.ds--this binary file lists all the services that are exposed. This file is used by the SOAP toolkit. You should not have to change this file.
- Web.xml--lists the servlets and URL mappings. You should not need to change this file, but you can modify the URL mappings.

More Information:

Federation Web Services URLs Used in SiteMinder Configuration (see page 503)

Configure the Federation Web Services Properties Files

The Federation Web Services application relies on the AffWebServices.properties file for its initialization parameters. You need to familiarize yourself with this file and configure some of its parameters.

Configure the AffWebServices.properties File

The AffWebServices.properties file contains all the initialization parameters for Federation Web Services.

The installed location of the AffWebServices.properties file is in one of two locations:

- For a Web Agent:

  web_agent_home/affwebservices/WEB-INF/classes

- For the SPS federation gateway:

  sps_home/secure-proxy/Tomcat/webapps/affwebservices/WEB-INF/classes

web_agent_home

Represents the installed location of the Web Agent

sps_home

Represents the installed location of the Secure Proxy Server

To configure the AffWebServices.properties file

1. Set the AgentConfigLocation parameter to the location of the WebAgent.conf file at the consumer and producer sites.
   - Windows example for the Web Agent:

     C:\\Program Files\\ca\\webagent\\bin\\IIS\\WebAgent.conf

     Note: Federation Web Services is a Java component, so the Windows paths must contain double back-slashes. This does not apply for UNIX platforms.

   - UNIX example for the Web Agent:

     SunJavaSystem_server/servers/https-hostname/config/WebAgent.conf

   - Windows example for SPS federation gateway

     sps_home\\proxy-engine\\conf\\defaultagent\\WebAgent.conf

   - UNIX example for SPS federation gateway

     sps_home/proxy-engine/conf/defaultagent/WebAgent.conf

   Repeat this procedure for each application server installed with the Web Agent Option Pack.

2. For the rest of the settings, you can accept the default values or modify as needed.

AffWebServices.properties Settings	Value
NotificationLibraryType	Specifies the library type the Web Agent uses for notification alerts. **Note:** Not supported by the SPS federation gateway.
NotificationLibraryDetails	Indicates the Java classname or the C library and function name. **Note:** Not supported by the SPS federation gateway.
SMserverPort	Determines which Policy Server service at the producer processes the notification tunnel calls.
AgentConfigLocation	Indicates the location of the WebAgent.conf file. If you are using a 4.x IIS or Sun ONE Web Agent, this field can be left blank.

Set up the LoggerConfig.properties File

The LoggerConfig.properties file lets you enable logging so the Federation Web Services application can record assertion retrieval, session management, notification alert information, and trace messages related to Federation Web Services.

The log file may show activity at the producing authority and the consuming authority, depending on how your site is configured.

The installed location of the LoggerConfig.properties file is:

- For the Web Agent, the location is

  web_agent_home/affwebservices/WEB-INF/classes

- For the SPS federation gateway:

  sps_home/secure-proxy/Tomcat/webapps/affwebservices/WEB-INF/classes

web_agent_home

Indicates the installed location of the Web Agent

sps_home

Indicates the installed location of the Secure Proxy Server

Modify the settings as needed. If a value is not specified, the default value for the default locale is used.

The following table shows the settings in the LoggerConfig.properties file.

LoggerConfig.properties Settings	Description
EnableDNSLookup	Instructs the FWS application whether or not to do a DNS or reverse DNS lookup when processing an incoming SAML request at the consuming site. Select Y or N. When an incoming SAML request is received at a consumer site, FWS logs the details of the request, including the requesting host name. The host name is collected by the DNS look up call. The default behavior is to do the DNS lookup. If you select N for this heading, the DNS call is not made and the IP address is logged instead.
LoggingOn (required)	Enables log output. Select Y or N.
LocalFileName (required)	Names the file to use for log output
LogLocalTime	Enables use of local time for log messages. Select Y or N.
LogRollover	Defines the type of rollover functionality. Select Y or N then define the LogSize or LogCount parameter.

LoggerConfig.properties Settings	Description
LogSize	Specifies the maximum file size, in megabytes, when rolling over log files by size.
LogCount	Specifies how many log output files to leave when rollover is enabled.
TracingOn	Enables trace log output. Select Y or N.
TraceFileName	Names the file to use for trace log output.
TraceConfig	Specifies the trace configuration file. For more information, see Federation Security Services Trace Logging (see page 463).
TraceRollover	Defines the type of rollover functionality for tracing. Select Y or N and then specify a TraceSize or TraceCount value.
TraceSize	Specifies the maximum file size, in megabytes, when rolling over trace log files by size.
TraceCount	Specifies how many trace log output files to leave when rollover is enabled.
TraceFormat	Specifies the trace output file format (default, fixed width fields, delimited format, XML)
TraceDelim	Defines the character to use as a delimiter when using fixed width fields as the trace format.

Deploy Federation Web Services as a Web Application

If you are using the Web Agent Option Pack, you have to deploy the Federation Web Services application into operation.

Use one of the following methods:

- Deploy the application on a ServletExec servlet engine
- Deploy the application on a WebLogic Application Server

- Deploy the application on a WebSphere Application Server
- Deploy the application on a JBOSS Application Server

If you are using the SPS federation gateway, Federation Web Services is already deployed on the embedded Tomcat server.

Configure ServletExec to Work with Federation Web Services

For the Federation Web Services application to work with ServletExec, you need to specify Federation Web Services as a Web application for ServletExec and add several JVM options for both the producing authority and the consuming authority.

Note: You should have received a ServletExec license key file called licensekey50.txt from CA Support. From this license file, copy the license key and enter it in the ServletExec License dialog of the ServletExec Administration Console. For instructions on licensing ServletExec, see ServletExec documentation, available at the New Atlanta Communication http://www.newatlanta.com web site.

Remember, ServletExec and the Web Agent Option Pack must be installed on the same web server where you installed the Web Agent.

Important! Be sure to apply the most current hot fixes for ServletExec. Without the hot fixes, Federation Web Services will not work with ServletExec. To obtain the hot fixes, go to the New Atlanta Communication web site.

To set up ServletExec to work with FWS

1. Open the ServletExec Administration Console.
2. Under Web Applications, select manage.

   The Manage Web Applications dialog opens.
3. Click Add a Web Applications.
4. Enter the following information:
   a. Application Name: affwebservices
   b. URL Context Path: /affwebservices/
   c. Location: *affwebservices_home*

      Example:

      C:\program files\ca\webagent\affwebservices
5. Click Submit.

6. (Optional) For better performance, add the following Virtual Machine options:
   a. Under Virtual Machine, select options.

      The Java Virtual Machine (VM) Options dialog opens.

   b. Add the following Java VM Options. If there is not sufficient space to add all four options together, add then submit each option separately.

      ```
      -Djavax.xml.parsers.SAXParserFactory=org.apache.xerces.
       jaxp.SAXParserFactoryImpl

      -Dorg.apache.xerces.xni.parser.XMLParserConfiguration=org.apache.xerces.
       parsers.XML11Configuration

      -Dorg.xml.sax.driver=org.apache.xerces.parsers.SAXParser

      -Djavax.xml.parsers.DocumentBuilderFactory=org.apache.xerces.
       jaxp.DocumentBuilderFactoryImpl
      ```

   c. Click Submit after you have added all four entries.
7. Exit the ServletExec Console.

Set the ServletExec Library Path Variable

You need to set the library path to deploy FWS on a ServletExec server. Set this path in the in the StartServletExec.bat file (Windows) or StartServletExec shell script (UNIX) for the appropriate ServletExec instance.

The variable name for the library path differs depending on the operating system:

- Solaris: LD_LIBRARY_PATH
- HP-UX: SHLIB_PATH
- LINUX: LD_LIBRARY_PATH
- AIX: LIBPATH

To set the library path on Machine 2 and Machine 5

1. Open a command window.
2. Open the appropriate file in an editor.
3. Set the variable.

   Example: LD_LIBRARY_PATH=/*webagent_option_pack_home*/bin

Modify the AffWebServices.properties File for ServletExec

The AffWebServices.properties file contains all the initialization parameters for FWS. When deploying FWS, be sure you have modified the AgentConfigLocation setting (see page 214) to point to the WebAgent.conf file.

Enable ServletExec to Write to the IIS File System

The IIS Web server does not allow a plug-in to write to its file system unless it is configured with a user account that has proper rights to do so. Therefore, for ServletExec to write to the federation log files, the anonymous user account that you associate with ServletExec must have permissions to write to file system.

To enable the user account used by ServletExec to write to the IIS file system

1. Open the IIS Internet Information Services Manager on the system where ServletExec is installed.
2. Navigate to Web Sites, Default Web Site.

   The set of applications is displayed in the right pane.
3. Select ServletExec and right-click Properties.
4. Select the Directory Security tab in the Properties dialog.
5. Click Edit in the Authentication and access control group box.

   The Authentication Methods dialog opens.
6. Set the controls as follows.
   a. Select Enable Anonymous Access.

      For anonymous access, enter a name and password of a user account that has the permissions to right to the Windows file system. Refer to Windows documentation to grant this right to a user account. For example, you might use the IUSR Internet Guest account for anonymous access.

   b. Deselect Basic authentication.

   c. Deselect Integrated Windows authentication.
7. If prompted, apply the security changes to all child components of the Web server.
8. Restart the Web server.

The user account associated with ServletExec can now write to the IIS file system.

Additionally, you must give the anonymous user the right to act as part of the operating system.

To give the anonymous user account the right to act as part of the operating system

1. Open Control Panel, Administrative Tools, Local Security Policy, Local Policies, User Rights Assignment.

   The Local Security Settings dialog displays.

2. Double-click Act as part of the operating system.

   The Act as part of the operating system Properties dialog opens.

3. Add the anonymous user account to the Local Security Setting dialog.

4. Click OK.

5. Exit from the control panel.

Although it is optional, we strongly recommend that you, look at the Agent Configuration Object for the Web Agent protecting the IIS Web server and ensure that the SetRemoteUser parameter is set to yes to make sure that the anonymous user can write to the file system.

Ensure the IIS Default Web Site Exists

The Web Agent requires the IIS Web server to have a Default Web Site for proper installation. The Default Web Site is automatically installed with the IIS Web server. If this Web site does not exist, or you wish to install the SiteMinder virtual directories to a different Web site on IIS, you need to edit the Metabase.

A technical note on the site describes the Technical Support site changes that are needed. To find the note:

1. Go to the main Support page.

2. Select Literature,Tech Notes.

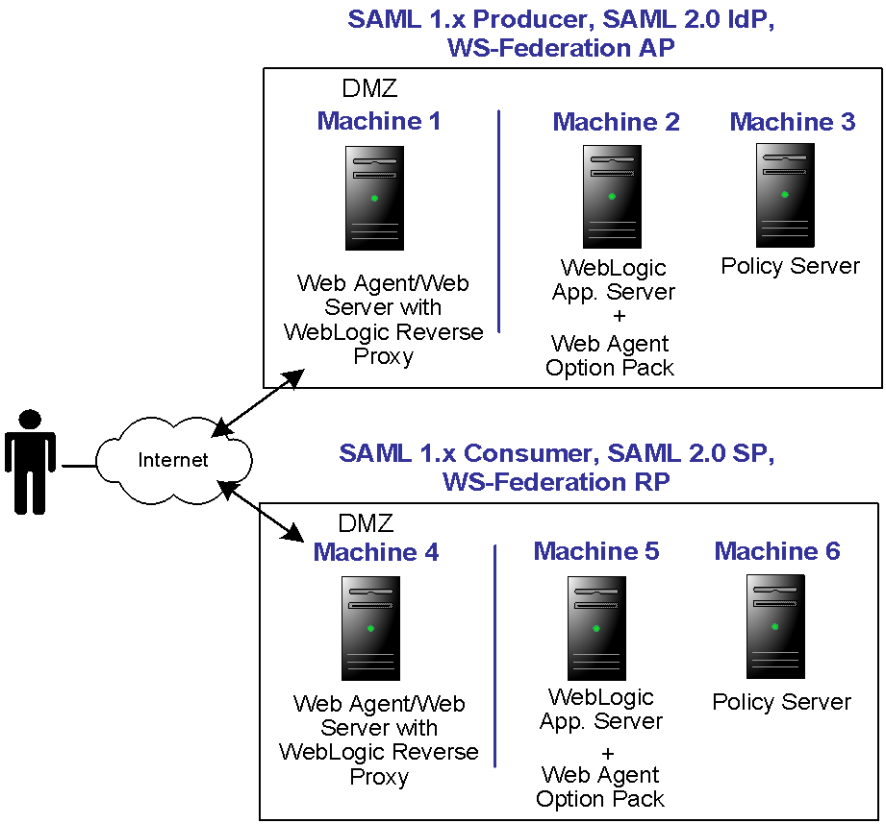
3. Select the document titled METABASE -3 Error.

   The documents are listed in alphabetical order.

Configure WebLogic to Work with Federation Web Services

To enable Federation Web Services (FWS) for a SiteMinder/WebLogic configuration, deploy the FWS application.

The following illustration shows a SiteMinder and WebLogic sample configuration. It provides an example of how to use FWS in a sample federated environment.



In this environment, deploy the FWS application on Machine 2 and Machine 5.

Important: Complete the deployment procedure for the Web Agent at the producing authority site and the consuming authority site.

After installing the software components on the machines shown in the previous illustration, deploy the FWS application on Machine 2 for the producing authority site and on Machine 5 for the consuming authority by site by following this procedure:

1. Set the LD_LIBRARY_PATH Variable
2. Create a SmHost.conf File

3. Create a WebAgent.conf File
4. Modify the AffWebServices.properties File
5. Configure the WebLogic Reverse Proxy Plug-in
6. Deploy the FWS Application on WebLogic

Important! For the FWS application to work with WebLogic Server 8.1.4, check the weblogic.xml file in the WEB-INF directory and make sure the prefer-web-inf-classes parameter is set to true. The weblogic.xml file is located in the following directory:

webagent\affwebservices\WEB-INF

The following code excerpt shows how the prefer-web-inf-classes parameter should be set:

```
<weblogic-web-app>
<container-descriptor>
  <prefer-web-inf-classes>true</prefer-web-inf-classes>
</container-descriptor>
</weblogic-web-app>
```

If prefer-web-inf-classes is set to false, change the value to true.

Set the WebLogic Library Path Variable

You need to set the library path to deploy FWS on a WebLogic server. Set this path in the startWebLogic.cmd file (Windows) or the startWebLogic.sh file (UNIX) systems.

The variable name for the library path differs depending on the operating system:

- Solaris: LD_LIBRARY_PATH
- HP-UX: SHLIB_PATH
- LINUX: LD_LIBRARY_PATH
- AIX: LIBPATH

To set the library path on Machine 2 and Machine 5

1. Open a command window.
2. Open the appropriate file in an editor.
3. Set the variable.

   Example: LD_LIBRARY_PATH=/*webagent_option_pack_home*/bin

Create an SmHost.conf File

The FWS application requires an SmHost.conf file; however, the Web Agent Option Pack does not install this file so you need to create it.

To create an SmHost.conf

1. Go to the directory */webagent_option_pack_home*/bin
2. Run the smreghost.exe.

   For instructions on running smreghost.exe, see the *SiteMinder Web Agent Installation Guide*.
3. Put the SmHost.conf file in the following directory on Machines 2 and 5:

   /webagent_option_pack_home/config

Create a WebAgent.conf File

The FWS application requires the WebAgent.conf file; however, the Web Agent Option Pack does not install this file so you need to create it.

To create a WebAgent.conf file:

1. Copy the WebAgent.conf file from Machine 1 to the following directory on Machine 2 and Machine 5:

   /webagent_option_pack_home/config

   where *webagent_option_pack_home* is the installed location of the Web Agent Option Pack on Machine 2 or Machine 5.
2. Modify the WebAgent.conf file by:
   a. Setting the EnableWebAgent parameter to YES.
   b. Modifying other configuration parameters to suit FWS.

The following is a sample of a WebAgent.conf file for the FWS application:

```
# WebAgent.conf - configuration file for the Federation Web Services Application
#agentname="<agent_name>, <IP_address>"
HostConfigFile="/<webagent_option_pack>/config/SmHost.conf"
AgentConfigObject="<agent_config_object_Name>"
EnableWebAgent="YES"
```

Modify the AffWebServices.properties File for WebLogic

The AffWebServices.properties file contains all the initialization parameters for FWS. When deploying FWS, be sure you have modified the AgentConfigLocation setting (see page 214) to point to the WebAgent.conf file.

Configure the WebLogic Reverse Proxy Plug-in

To set up the WebLogic Reverse Proxy plug-in:

1. On Machine 1, configure the WebLogic reverse proxy plug-in on the Apache Web Server.

   For more information, see WebLogic's documentation.

2. Add the following aliases to the Web server's configuration file.

   This example uses the Apache httpd.conf file.

   ```
   <IfModule mod_weblogic.c>
   WebLogicHost <WebLogic_Machine_IP Address>
   WebLogicPort <WebLogic_Machine_Port_Number>
   </IfModule>

   <Location /affwebservices>
   SetHandler weblogic-handler
   Debug ALL
   </Location>
   ```

Deploy the FWS Application on WebLogic

To deploy the FWS application on Machine 2 and Machine 5:

1. Use the WebLogic Server Console and deploy FWS. The FWS application is installed in:

   /webagent_option_pack/affwebservices/

   For information about deploying a Web application, see WebLogic's documentation.

2. Test that the Federation Web Services application is working. Open a Web browser and enter:

   http://*fqhn*:*port_number*/affwebservices/assertionretriever

   where *fqhn* is the fully-qualified host name and *port_number* is the port number of the server where the Federation Web Services application is installed.

   For example:

   http://myhost.ca.com:81/affwebservices/assertionretriever

   If Federation Web Services is operating correctly, you should see a message that reads:

   ```
   Assertion Retrieval Service has been successfully initialized.
   The requested servlet accepts only HTTP POST requests.
   ```

   This message indicates that Federation Web Services is listening for data activity. The FWS application is now deployed for the WebLogic server.

If Federation Web Services is not operating correctly, you will get a message that the Assertion Retrieval Service has failed. In case of failure, check the Federation Web Services log.

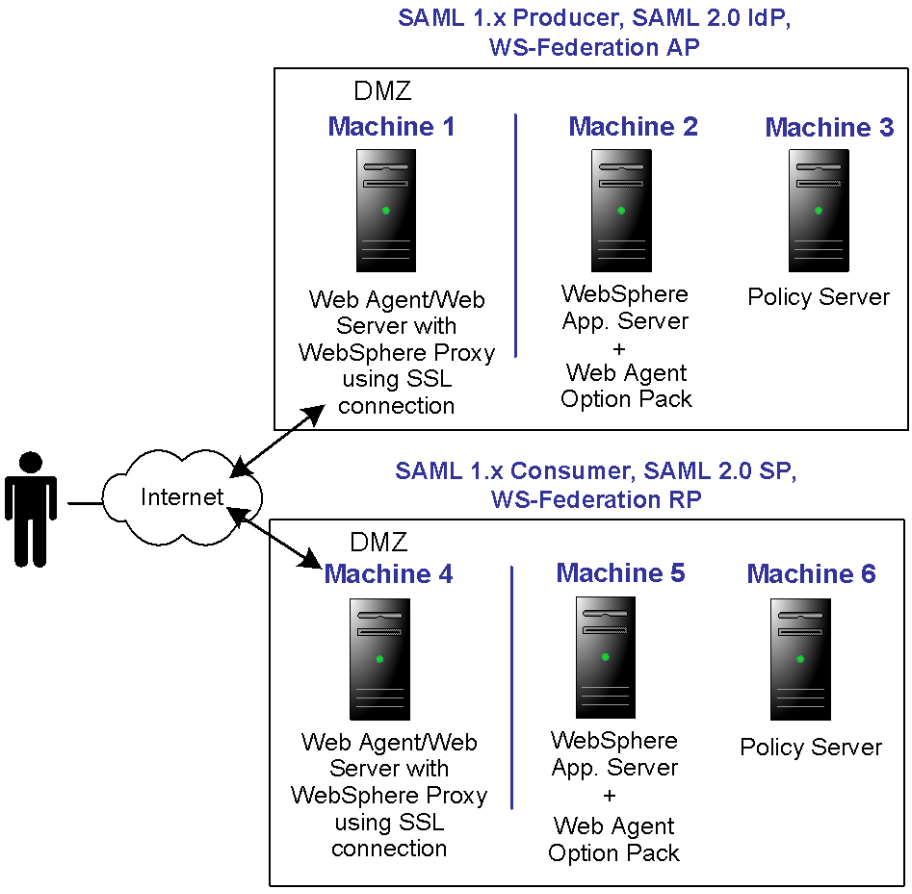
Note: For instructions on enabling trace logging for the FWS application, see Federation Security Services Trace Logging (see page 463).

Configure WebSphere to Work with Federation Web Services

To enable FWS in a federated environment for a SiteMinder/WebSphere Application Server (WAS) configuration, deploy the FWS application.

On Machines 2 and 5, deploy FWS. These machines must also have WAS and the associated WAS Fix Pack, if applicable. On Machines 1 and 4, install the Web Agent and the WAS Proxy Plug-in. Enable SSL between the Proxy and the WAS.

The following illustration shows a SiteMinder and WebSphere sample configuration.



Prerequisites:

- WAS must be installed on systems that have the WebSphere Application Server installed for Federation Web Services to work.
- Complete the deployment procedure for the Web Agent at the producer/IdP site and the consumer/SP site.

After installing the software components on the machines listed in the previous illustration, deploy this application on Machine 2 and Machine 5 by following these steps:

Step 1: Set the WebSphere LD_LIBRARY_PATH Variable

Step 2: Create a SmHost.conf File

Step 3: Create a WebAgent.conf File

Step 4: Modify the AffWebServices.properties File

Step 5: Copy Option Pack Library Files to WebSphere

Step 6: Deploy a Federation Web Services WAR File in WebSphere

Set the WebSphere Library Path Variable

You need to set the library path to deploy FWS on WebSphere. Set this path in the startServer.bat file (Windows) or the startServer.sh file (UNIX) systems.

The variable name for the library path differs depending on the operating system:

- Solaris: LD_LIBRARY_PATH
- HP-UX: SHLIB_PATH
- LINUX: LD_LIBRARY_PATH
- AIX: LIBPATH

To set the library path on Machine 2 and Machine 5

1. Open a command window.
2. Open the appropriate file in an editor.
3. Set the library path variable.

   Example: LD_LIBRARY_PATH=/*webagent_option_pack_home*/bin

Create an SmHost.conf File

The FWS application requires the SmHost.conf file; however, the Web Agent Option Pack does not install this file so you need to create it.

To create an SmHost.conf file

1. Create an SmHost.conf file by running smreghost.exe, which is located in

   /webagent_option_pack_home/bin

   For instructions on running smreghost.exe, see the *SiteMinder Web Agent Installation Guide*.

2. Put the SmHost.conf file in the following directory on Machine 2 and Machine 5:

   /webagent_option_pack_home/config

Create a WebAgent.conf File

The FWS application requires the WebAgent.conf file; however, the Web Agent Option Pack does not install this file so you need to create it.

To create a WebAgent.conf file:

1. Copy the WebAgent.conf file from Machine 1 to the following directory on Machine 2 and Machine 5:

   /webagent_option_pack_home/config

   where *webagent_option_pack_home* is the installed location of the Web Agent Option Pack on Machine 2 and Machine 5.

2. Modify the WebAgent.conf file by:

   a. Setting the EnableWebAgent parameter to YES.

   b. Modifying any other configuration parameters to suit the environment for the FWS application.

The following is a sample of a WebAgent.conf file for the FWS application:

```
# WebAgent.conf - configuration file for the Federation Web Services Application
#agentname="<agent_name>, <IP_address>"
HostConfigFile="/<webagent_option_pack>/config/SmHost.conf"
AgentConfigObject="<agent_config_object_name>"
EnableWebAgent="YES"
```

Modify the AffWebServices.properties File for WebSphere

The AffWebServices.properties file contains all the initialization parameters for FWS. When deploying FWS, be sure you have modified the AgentConfigLocation setting (see page 214) to point to the WebAgent.conf file.

Copy Web Agent Option Pack Libraries to WebSphere

To copy the Web Agent Option Pack library files on Machine 2 and Machine 5:

1. Copy the following files from the directory *webagent_option_pack*\bin
   - smcommonutil.dll
   - smerrlog.dll
   - smfedclientcomponent.dll
   - smjavaagentapi.dll
2. Place the copied libraries in:

   WebSphere_home\AppServer\bin

Deploy a Federation Web Services WAR File in WebSphere

To deploy a FWS WAR file on Machine 2 and Machine 5:

1. Create a WAR file of the Federation Web Services application. The application is installed in:

   webagent_option_pack\affwebservices\

   For instructions on creating a WAR file, see WebSphere's documentation.
2. Deploy the WAR file using WebSphere Administrator's Console.

   For instructions, see WebSphere's documentation.

   Important! Any subsequent changes made to any of the properties files in the affwebservices directory requires you to re-create a WAR file and re-deploy this file in the application server.
3. From the WebSphere Administrator's Console, go to Applications, Enterprise Applications.
4. Select the name of the web services WAR file, such as affwebservices_war.
5. On the Configuration tab:
   a. Set the Classloader Mode to PARENT_FIRST.
   b. Set WAR Classloader Policy to Application.
   c. Save the settings.
6. Test that the Federation Web Services application is working by opening a Web browser and entering:

   http://*fqhn*:*port_number*/affwebservices/assertionretriever

   where *fqhn* is the fully-qualified host name and *port_number* is the port number of the server where the Federation Web Services application is installed.

For example:

http://myhost.ca.com:81/affwebservices/assertionretriever

If Federation Web Services is operating correctly, you should see a message that reads:

Assertion Retrieval Service has been successfully initialized.
The requested servlet accepts only HTTP POST requests.

This message indicates that Federation Web Services is listening for data activity. If Federation Web Services is not operating correctly, you will get a message that the Assertion Retrieval Service has failed. In case of failure, check the Federation Web Services log.

Note: For instructions on enabling trace logging for the FWS application, see Federation Security Services Trace Logging (see page 463).

Configure JBOSS to Work with Federation Web Services

To enable FWS in a federated environment for a SiteMinder/JBoss Application Server (WAS) configuration, deploy the FWS application.

Create an SmHost.conf File

The FWS application requires the SmHost.conf file; however, the Web Agent Option Pack does not install this file so you need to create it.

1. Create an SmHost.conf file by running smreghost.exe, which is located in

   /webagent_option_pack/bin

   For instructions on running smreghost.exe, see the *SiteMinder Web Agent Installation Guide*.

2. Put the SmHost.conf file in the following directory on Machine 2 and Machine 5:

   /webagent_option_pack/config

Create a WebAgent.conf File

The FWS application requires the WebAgent.conf file; however, the Web Agent Option Pack does not install this file so you need to create it.

1. Copy the WebAgent.conf file from Machine 1 to the following directory on Machine 2 and Machine 5:

   /webagent_option_pack/config

   where *webagent_option_pack* is the installed location of the Web Agent Option Pack on Machine 2 and Machine 5.

2. Modify the WebAgent.conf file by:

   a. Setting the EnableWebAgent parameter to YES.

   b. Modifying any other configuration parameters to suit the environment for the FWS application.

The following is a sample of a WebAgent.conf file for the FWS application:

```
# WebAgent.conf - configuration file for the Federation Web Services Application
#agentname="<agent_name>, <IP_address>"
HostConfigFile="/<web_agent_home>/config/SmHost.conf"
AgentConfigObject="<agent_config_object_name>"
EnableWebAgent="YES"
```

Modify the AffWebServices.properties File for JBOSS

The AffWebServices.properties file contains all the initialization parameters for FWS. When deploying FWS, be sure you have modified the AgentConfigLocation setting (see page 214) to point to the WebAgent.conf file.

Deploy a Federation Web Services WAR File in JBoss

To deploy the FWS application (affwebservices) on Machine 2 and Machine 5:

1. Open a command window and go to the location of the affwebservices application:

   /webagent_option_pack/affwebservices/.

2. Create a WAR file by entering the command:

   jar cvf affwebservices.war *

   For information about deploying a Web application, see JBoss documentation.

3. Copy the affwebservices.war file to the JBOSS server location:

   JBOSS_home/server/default/deploy/

   JBOSS_home is the installed location of the JBOSS application server.

4. Restart the JBoss server.

5. After the server has restarted, access the JBOSS Administrative Console. You should see all the services supported by affwebservices displayed on the main Console page.

6. Test that the Federation Web Services application is working. Open a Web browser and enter:

   http://*fqhn*:*port_number*/affwebservices/assertionretriever

   fqhn

   Represents the fully-qualified host name and

   port_number

   Specifies the port number of the server where the Federation Web Services application is installed.

   For example:

   http://myhost.ca.com:81/affwebservices/assertionretriever

   If Federation Web Services is operating correctly, you should see a message that reads:

   Assertion Retrieval Service has been successfully initialized.
   The requested servlet accepts only HTTP POST requests.

   This message indicates that Federation Web Services is listening for data activity. The FWS application is now deployed for the JBOSS server.

   If Federation Web Services is not operating correctly, you will get a message that the Assertion Retrieval Service has failed. In case of failure, check the Federation Web Services log.

Note: For instructions on enabling trace logging for the FWS application, see Federation Security Services Trace Logging (see page 463).

Protect the Federation Web Services Application

When you install the Policy Server, policies for each service that comprises the Federation Web Services application are automatically created. You must enforce the protection of the Federation Web Services application using SiteMinder policies.

Optionally, you may have to protect the Assertion Retrieval Service (SAML 1.x) or the Artifact Resolution Service (SAML 2.0) for artifact authentication. These services are components of Federation Web Services.

More Information:

Enforce Policies that Protect Federation Web Services (see page 233)
Protect the Assertion Retrieval or Artifact Resolution Service (optional) (see page 234)

Enforce Policies that Protect Federation Web Services

The Federation Web Services (FWS) application is protected by SiteMinder policies.

When you install the Policy Server, these policies and the related policy objects are automatically created by the ampolicy.smdif file. There is one policy for each service that makes up the Federation Web Services application.

The following table lists the objects and policies that protect FWS.

Object Type	Object Name
Domain	FederationWebServicesDomain
Realm	FederationWebServicesRealm public
Agent Group	FederationWebServicesAgentGroup
Rule	FederationWSAssertionRetrievalServiceRule FederationWSNotificationServiceRule FederationWSSessionServiceRule SAML2FWSArtifactResolutionRule
Policy	FederationWSAssertionRetrievalServicePolicy FederationWSNotificationServicePolicy SAML2FWSArtifactResolutionServicePolicy
User Context Variable	AllowNotification
User Context Variable	AllowSessionSync
User Directory	FederationWSCustomUserStore SAML2FederationCustomUserStore

You must enforce protection of the Federation Web Services policies by adding the Web Agent protecting these services to an Agent group. All other aspects of configuring the policies, such as the Basic authentication scheme, realms and rules are set up automatically. Additionally, you must specify the affiliates/Service Providers who can access the Federation Web Services application. Additionally, you need to permit the affiliates access to the Federation Web Services application.

To enforce policies for the Federation Web Services application

1. Add the Web Agent that protects the Federation Web Services application to the Agent group FederationWebServicesAgentGroup.

   For ServletExec, this Agent is on the Web server where the Web Agent Option Pack is installed. For any application server, such as WebLogic or JBOSS, this is the Web Agent installed where the application server proxy is installed. The Web Agent Option Pack may be on a different system.

2. Specify the affiliates who are permitted to access the Federation Web Services application. This requires adding affiliates, Services Providers, or Resource Partners as users to the appropriate policies in the FederationWebServicesDomain.

   Note: You have to establish affiliate domains and add affiliates to the domains prior to giving the affiliates permission.

More Information:

Identify Consumers at a SAML 1.x Producer (see page 243)
Identify Service Providers for a SAML 2.0 Identity Provider (see page 297)
Identify WS-Federation Resource Partners at the Account Partner (see page 397)

Protect the Assertion Retrieval or Artifact Resolution Service (optional)

If you configure an artifact authentication scheme at a consumer/Service Provider, the Assertion Retrieval Service (SAML 1.x) and the Artifact Resolution Service (SAML 2.0) are the mechanisms that retrieve the assertion from the Policy Server at the producer/Identity Provider.

We strongly recommend that you protect the Assertion Retrieval Service (SAML 1.x) and the Artifact Resolution Service (SAML 2.0) against unauthorized access.

To protect these services, you specify an authentication scheme for the realm that contains the service at the producer/Identity Provider. The authentication scheme dictates the type of credentials that the SAML credential collector (SAML 1.x) or the Assertion Consumer Service (SAML 2.0) must provide to access the relevant service.

You can select one of the following authentication schemes:

- Basic over SSL
- X.509 client certificate

Use Basic over SSL Scheme to Protect the Assertion Retrieval Service

To use a Basic over SSL scheme to protect the Assertion Retrieval Service (SAML 1.x) and the Artifact Resolution Service (SAML 2.0), no additional configuration is required at the producer/Identity Provider. A set of default policies are already configured when you install the Policy Server.

At the consumer/Service Provider, there is also no configuration required, provided you can use one of the default root Certificate Authorities (CAs) already in the smkeydatabase, which is used to establish an SSL connections between the consumer/Service Provider and the producer/Identity Provider. If you want to use your own root CA instead of a default CA, you have to import the CA certificate into the smkeydatabase.

More Information:

Enforce Policies that Protect Federation Web Services (see page 233)

Use a Client Cert. to Protect the Assertion Retrieval or Artifact Resolution Service

To use a client certificate authentication scheme, you:

1. Create a policy at the producer/Identity Provider to protect the relevant service. This policy will use the client certificate authentication scheme.
2. Enable client certificate authentication at the consumer/Service Provider.

How to Use Client Cert. Authentication with an IIS 5.0 Web Server

Client certificate authentication is not supported for IIS 5.0 Web servers at the producer/Identity Provider. However, it can be used on an IIS 5.0 Web server at the consumer/Service Provider to communicate with a non-SiteMinder producer/Identity Provider.

To work around this issue, use the IIS 5.0 Web server's client certificate functionality at the producer/Identity Provider and do not configure SiteMinder's client certificate functionality. If you apply this workaround, be aware that the CN portion of the certificate's DN value must contain the affiliate name value.

More Information:

Protect the Artifact Resolution Service with Client Certificate Authentication (optional) (see page 339)
Protect the Assertion Retrieval Service with Client Certificate Authentication (optional) (see page 265)
Configure the Client Certificate Option at the Consumer (see page 295)

Flush Federation Web Services Cache for Trace Logs

If you modify any part of the federation configuration at the producing authority or the consuming authority, for example, you enable or disable POST binding, you need to flush the Federation Web Services cache for the changes to appear in the trace logs.

To flush the cache

1. Log on to the FSS Administrative UI.
2. Select Tools, Manage Cache

   The Cache Management dialog opens.
3. Click Flush All in the All Caches group box.
4. Click OK.

All caches will now be cleared.

Chapter 9: Creating Affiliate Domains

This section contains the following topics:

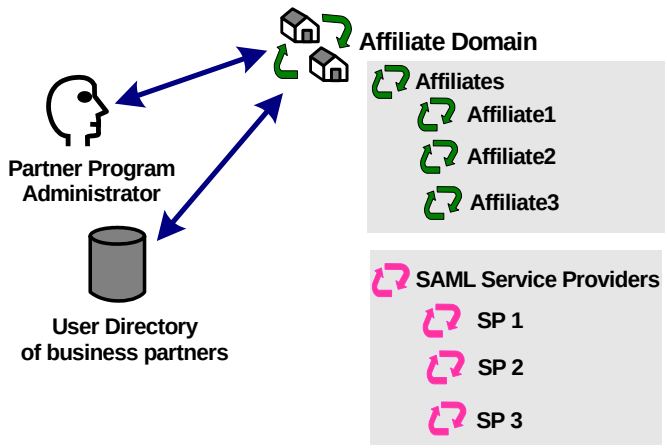
Affiliate Domain Overview

An affiliate domain is a logical grouping of federated entities associated with one or more user directories.

The affiliate domain not only contains federated entities but it also defines which user directories are associated with the domain. To authenticate a user, SiteMinder must have access to the user directory where a user record is defined. The Policy Server locates a user record by querying the user directories specified in the affiliate domain's search order.

The search order is defined when you add user directory connections to an affiliate domain. You have the option of shifting the order of directories.

The following illustration shows a partner program administrator for the affiliate domain that can manage properties for each consumer. The marketing administrator does not have these privileges.



Affiliate domains require one or more administrator accounts that can modify the objects in the domain. System-level administrators can manage all objects in any domain; they have the privilege Manage Affiliates. A system administrator that can grant control over a policy domain to other administrators has the privilege Manage System and Domain Objects.

More Information:

Assign User Directories (see page 239)

Configure an Affiliate Domain

An affiliate domain contains entities associated with one or more user directories. Affiliate domains require an association with one or more administrator accounts that can make changes to the objects in the domain.

To configure an affiliate domain and add entities to the domain:

1. Add a Domain Object (see page 238)
2. Assign User Directories (see page 239)
3. Assign an Administrator (see page 240)
4. Add Entities to an Affiliate Domain (see page 240)

Add a Domain Object

To configure an affiliate domain

1. Log into the FSS Administrative UI.
2. From the menu bar of the SiteMinder Administration window, select Edit, System Configuration, Create Domain.

   The SiteMinder Domain dialog box opens.
3. In the Domain Type group box, select the Affiliate Domain radio button.

   The tabs in the dialog box allow you to enter information for an affiliate domain.
4. In the Name field, enter a name for the affiliate domain.
5. In the Description field, enter a brief description of the affiliate domain.

Assign User Directories

Select users that should have access to resources at the consumer, Service Provider, or Resource Partner.

In the User Directories tab of the Domain Properties dialog box, specify the user directories that contain the users who should be authenticated and authorized for access to the affiliate resources.

To assign user directories to an affiliate domain:

1. Select the User Directories tab.
2. From the drop-down list box at the bottom of the tab, select a user directory you want to include in the affiliate domain.
3. Click the Add button.

   The FSS Administrative UI adds the directory to the list displayed in the User Directories tab.

   For user directories that serve as the authentication directory in a directory mapping, the list displays the authorization directory and the method of directory mapping.
4. Repeat steps 2 and 3 for all user directories you want to associate with the domain.

   Note: The order in which you add directories to the domain is the order in which SiteMinder searches to find user records, starting from the top of the list. You can use the arrow buttons to the right of the list of directories to change the order of directories.
5. Optionally, you can create a user directory from this dialog box by clicking Create toward the bottom of the tab.

   The User Directory dialog box opens. Create the user directory. When you save the new User Directory and close the User Directory dialog box, the directory you created appears in the User Directories tab in the Domain Properties dialog box.
6. Click OK to save your changes.

Assign an Administrator

When you create an affiliate domain, you can assign administrators to the domain. These administrators may create, edit, and delete entities within the domain.

To assign an Administrator to an affiliate domain

1. Select the Administrators tab.
2. From the drop-down list box at the bottom of the tab, select an administrator.
3. Click Add.

   The administrator is added to the list in the top portion of the Administrators tab. When you save the affiliate domain, administrators included in the list can manage objects within the affiliate domain.

   Note: Adding an administrator in the Administrators tab is equivalent to adding the affiliate domain to an administrator with a Scope of Some Domains and a task of Manage Domain Objects.
4. Optionally, create an administrator by clicking Create at the bottom of the tab.

   The Administrator dialog box opens. When you save the new administrator and close the Administrator Properties dialog box, the FSS Administrative UI displays the administrator in the Administrators tab.
5. Click OK to save your changes.

Add Entities to an Affiliate Domain

You can add the following consuming authorities to an affiliate domain:

- SAML 1.x Affiliates
- SAML 2.0 Service Providers
- WS-Federation Resource Partners

Note: These entities must be given permission to access Federation Web Services at the producing authority when you protect the Federation Web Services application (see page 233).

For instructions on adding consuming authorities to an affiliate domain, see one of the following:

- To add a SAML 1.x consumer, review the instructions for identifying consumers for a SAML 1.x producer.
- To add a SAML 2.0 Service Provider, review the instructions for identifying Service Providers for a SAML 2.0 Identity Provider.
- To add a WS-Federation Resource Partner, review the instructions for identifying Resource Partners at the Account Partner.

More information:

Identify Consumers at a SAML 1.x Producer (see page 243)
Identify Service Providers for a SAML 2.0 Identity Provider (see page 297)
Identify WS-Federation Resource Partners at the Account Partner (see page 397)

Chapter 10: Identify Consumers at a SAML 1.x Producer

This section contains the following topics:

Prerequisites for Producing SAML 1.x Assertions

To produce SAML 1.x assertions for consumers, the following conditions must be met:

- The Policy Server must be installed. (The Policy Server installs the Assertion Generator and SAML authentication schemes).
- The session server, a component of the Policy Server must be enabled. For SAML artifact authentication, the session server is where assertions are stored before they are forwarded to the Federation Web Services application at the consumer.

- Install one of the following options:
  - The Web Agent and the Web Agent Option Pack on a Web server. You need a Web Agent to authenticate a user and establish a SiteMinder session. You need the Option Pack to install the Federation Web Services application.
  - The SPS federation gateway, which has an embedded Web Agent and has the Federation Web Services application deployed on the embedded Tomcat web server.
- A SAML consumer must be set up within the federated network. The SAML assertions generated at the Policy Server must be forwarded to an application that can receive and interpret the assertions. The SAML Affiliate Agent and the SAML Credential Collector (installed with the Web Agent Option Pack) can both act as SAML consumers (1.0 and 1.x respectively).

Configuration Checklist for 1.x Producer

At the producer-side Policy Server, you add consumers to an affiliate domain and define aspects of the consumers' configuration so the producer can issue assertions to each one.

See the following:

- Required Configuration Tasks (see page 245)
- Optional Configuration Tasks (see page 245)

Tips:

- Certain parameter values at the producer and consumer must match for the configuration to work. A list of those parameters can be found in Configuration Settings that Must Use the Same Values (see page 497).
- To ensure you are using the correct URLs for the Federation Web Services servlets. The URLs are listed in Federation Web Services URLs Used in SiteMinder Configuration (see page 503).

Note: If you installed a SAML Affiliate Agent as part of the SiteMinder Federation Services solution, the SAML Affiliate Agent configuration takes place only at the consumer site, not at the producer-side Policy Server. The SAML Affiliate Agent is a separately-licensed product.

Required Configuration Tasks at a 1.x Producer

The tasks required to identity a consumer to the producer are in the following table.

Check Here	Required Task
	To define consumers, you must first establish an affiliate domain that to contain the consumers.
	Add a consumer to the affiliate domain. These consumers must have permission to access Federation Web Services at the producer.
	Select users for which assertions will be generated.
	Configure assertions.

More Information:

Add a Consumer to an Affiliate Domain (see page 246)
Select Users for Which Assertions Will Be Generated (see page 247)
Configure SAML 1.x Assertions to Authenticate Users (see page 250)
Create Links to Consumer Resources for Single Sign-on (see page 252)

Optional Configuration Tasks at a 1.x Producer

The following tasks for identifying a consumer at the producer site are as follows:

Check Here	Optional Task
	If the SAML Affiliate Agent is acting as the consumer, configure session management.
	Configure attributes for inclusion in assertions.
	Set IP address restrictions to limit the addresses used to access consumers.
	Configure time restrictions for consumer operation.
	Configure the Assertion Generator plug-in to customize assertion content.

More Information:

Set Up Sessions for a SAML Affiliate Agent Consumer (optional) (see page 255)
Configure Attributes to Include in Assertions (optional) (see page 257)
Configure IP Address Restrictions for 1.x Consumers (optional) (see page 261)
Configure Time Restrictions for 1.x Consumers (optional) (see page 261)
Customize SAML 1.x Assertion Content (optional) (see page 261)

Add a Consumer to an Affiliate Domain

Entities that consume SAML 1.x assertions are called consumers in the Federation Security Services documentation. However, in the Policy Server User Interface, the term affiliate is used to represent the consumer. When used in the Policy Server User Interface, the term affiliate is synonymous with consumer.

To add a consumer to an affiliate domain

1. Log into the FSS Administrative UI.
2. Display the list of domains.
3. Expand the affiliate domain where you want to add a consumer.
4. Click on the Affiliates icon.
5. From the menu bar, select Edit, Create Affiliate.

   The Affiliate dialog box opens.
6. Complete the following required fields.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   - Name
   - Password and Confirm Password (For SAML artifact only)
   - Authentication URL

     This URL must point to the redirect.jsp file -- for example,

     http://myserver.mysite.com/siteminderagent/redirectjsp/redirect.jsp

     myserver

     Identifies the web server with the Web Agent Option Pack or the SPS federation gateway.

     Note: You will need to create a policy to protect the AuthenticationURL.

7. Select the Enabled check box to activate the affiliate object.

   This check box must be marked for the Policy Server and Federation Web Services to support authentication for the consumer resources.

8. Optionally, check the Use Secure URL check box.

   The Use Secure URL feature instructs the SSO Service to encrypt the SMPORTALURL query parameter that it appends to the Authentication URL prior to redirecting the user to establish a SiteMinder session. Encrypting the SMPORTALURL protects it from being modified by a malicious user.

   Note: If you select this checkbox, set the Authentication URL field to the following URL:

   http(s)://*idp_server:port*/affwebservices/secure/secureredirect.

   Click Help for more details about this field.

9. Optionally, if the SAML Affiliate Agent is acting as the SAML consumer, select the Allow Notification check box to provide event notification services for the consumer.

   The notification feature allows the producer to track user activity at the consumer. If this check box is selected, the producer can receive event notifications from the consumer about which resources a user has accessed. When the user accesses specific URLs at the consumer, the consumer may notify the producer. The producer can log this activity and use the information for auditing or reporting purposes.

   Important! The Notification service is not supported with the SAML credential collector acting as a consumer.

More Information:

Protect the Authentication URL to Create a SiteMinder Session (SAML 1.x) (see page 263)

Select Users for Which Assertions Will Be Generated

The next step in defining a consumer for the producer is to include a list of users and groups for which the assertion generator will generate assertions. The users need assertions to authenticate at the consumer site. You may only add users and groups from directories included in an affiliate domain..

Adding Users and Groups for Access to a Consumer

You define which users and groups the assertion generator creates assertions for and include those users as part of the consumer's configuration.

To specify which users can obtain assertions

1. In the SiteMinder Affiliate dialog box, click on the Users tab.

   If the associated affiliate domain contains more than one user directory, the directories appear as tabs on the Users tab.

2. Click the Add/Remove button.

   The Users/Groups dialog box opens.

3. To add users, select an entry from the Available Members list and click the Left Arrow button, which points to the Current Members list.

   The opposite procedure removes users from the Current Members list.

   You can select multiple entries by holding the CTRL or SHIFT key and clicking entries in one of the Members lists. When you select multiple entries and click one of the Arrow buttons, the FSS Administrative UI moves all of the selected entries.

   Individual users are not displayed automatically. However, you can use the Search utility to find a specific user in one of the listed groups. Different types of user directories must be searched differently.

4. Click OK to save your changes.

Excluding a User or Group from Access to a Consumer

You can exclude users or groups of users from obtaining an assertion. This is useful if you have a large user group that should have access to a consumer, but you there is a small subset of this group that you want to exclude.

To exclude a user or group from gaining access to a consumer's resources:

1. In the Users/Groups dialog box, select a user or group from the Current Members list.

2. Click Exclude to exclude the selected user or group.

   The symbol to the left of the user or group in the Current Members list changes to indicate that the user or group is excluded from the consumer.

   When you exclude a group from resource access, the assertion generator will not create an assertion for anyone who is a member of the excluded group.

3. Click OK to save your changes.

Allowing Nested Groups Access to Consumers

LDAP user directories may contain groups that contain sub-groups. In complex directories, groups nesting in a hierarchy of other groups is one way to organize tremendous amounts of user information.

If you enable a search for users in nested groups, any nested group is searched for the requested user record. If you do not enable nested groups, the Policy Server only searches the group you specify, regardless if any nested groups exist.

To allow nested groups from within an LDAP directory

1. In the Affiliate Properties dialog box, click on the Users tab.

   If the associated affiliate domain contains more than one user directory, the directories appear as tabs on the User tab.

2. Select the Allow Nested Groups check box to enable nested groups searching for the consumer.

Adding Users by Manual Entry

From the Users/Groups dialog box, you can use the Manual Entry option to add users who should have access to a consumer.

To add a user by manual entry

1. In the Manual Entry group box, do one of the following:

   - For LDAP directories, enter a valid DN in the Entry field. For each DN specified in the Entry field, you can select an action from the Action drop down list, as follows:

     Search Users--the LDAP search is limited to matches in user entries.

     Search Groups--the LDAP search is limited to matches in group entries.

     Search Organizations--the LDAP search is limited to matches in organization entries.

     Search Any Entry--the LDAP search is limited to matches in user, group, and organization entries.

     Validate DN--the LDAP search locates this DN in the directory.

- For Microsoft SQL Server, Oracle and WinNT directories, enter a user name in the Manual Entry field.

  For an Microsoft SQL Server or Oracle, you can enter a SQL query, instead. For example:

  SELECT NAME FROM EMPLOYEE WHERE JOB ='MGR';

  The Policy Server performs the query as the database user specified in the Username field of the Credentials and Connection tab for the user directory. When constructing the SQL statement for the Manual Entry field, you need to be familiar with the database schema for the user directory. For example, if you are using the SmSampleUsers schema and want to add specific users, you could select from the SmUser table.

  Note: For an LDAP directory, you can enter all in the Manual Entry field to add all directory entries to the consumer.

2. Click Add to Current Members.

   The FSS Administrative UI adds the user or query to the Current Members list.

3. Click OK to save your changes and return to the SiteMinder Affiliate dialog.

Configure SAML 1.x Assertions to Authenticate Users

Administrators at a producer site determine how the Policy Server packages SAML assertions for delivery to a consumer. The assertion document contains user and session information that serves as a user's credentials for authentication purposes.

An assertion is a XML document that contains the following information:

- Information about the consumer
- Session information
- User attributes

For complete information about SAML assertions, refer to the SAML specification at the OASIS web site.

For details on how an assertion is consumed when a SAML credential collector is installed at the consumer, see the single sign-on diagrams for SAML 1.x in Federation Security Services Process Flow (see page 81).

Note: For assertion retrieval when a SAML Affiliate Agent is the consumer, see the *SiteMinder SAML Affiliate Agent Guide*.

A Security Issue Regarding SAML 1.x Assertions

The SAML assertion generator creates an assertion based on a session for a user that has been authenticated at any authentication scheme protection level. This presents a security issue--you can control which users an assertion is generated for, but not based on the protection level at which they authenticated.

You may have resources that should be accessed only by users who have authenticated at a particular protection level. If your site's resources are secured at different protection levels, ensure that when users authenticate to establish a session, they do so with the desired protection level to ensure the federated environment's security.

Configuring a SAML 1.x Assertion

The Assertions tab lets you define how assertions are sent to the consumer. The assertion is used to authentication the user at the consumer site.

To configure a SAML 1.x assertion

1. Log into the FSS Administrative UI.
2. Click on the Domains tab and select the affiliate domain.
3. Select Affiliates to display the list of consumers, and double-click the consumer you want to configure.

   The Affiliate Properties dialog box opens.
4. Click the Assertions tab.
5. Complete the following fields.
   - SAML Profile (select artifact or profile)
   - Assertion Consumer URL field (SAML POST profile only)

     The default URL is:

     https://<*consumer_server:port*>/affwebservices/public/samlcc

   consumer_server:port

   Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.
   - Validity Duration Seconds
   - Skew Time Seconds
6. Optionally, fill in the Audience field.
7. Optionally, for artifact profile, check the Sign Assertion box.
8. Click OK to save your changes.

More Information:

Setting the Validity Interval for Single Sign-on (see page 252)

Setting the Validity Interval for Single Sign-on

Based on the values of the Validity Duration and Skew Time, the assertion generator calculates the total time that the assertion is valid. In the assertion document, the beginning and end of the validity interval is represented by the NotBefore and NotOnOrAfter values.

To determine the beginning of the validity interval, the assertion generator takes the system time when the assertion is generated and sets the IssueInstant value in the assertion according to this time. It then subtracts the Skew Time value from the IssueInstant value. The resulting time becomes the NotBefore value.

To determine the end of the validity interval, the assertion generator adds the Validity Duration value and the Skew Time together. The resulting time becomes the NotOnOrAfter value.

For example, an assertion is generated at the producer at 1:00 GMT. The skew time is 30 seconds and the validity duration is 60 seconds, making the assertion validity interval between 12:59:30 GMT and 1:01:30 GMT. This interval begins 30 seconds prior to the time the assertion was generated and ends 90 seconds afterward.

Note: Times are relative to GMT.

Create Links to Consumer Resources for Single Sign-on

At the producer, create pages that contain links that direct the user to the consumer site. Each link represents an intersite transfer URL. The user has to visit the intersite transfer URL, which makes a request to the producer-side Web Agent before the user is redirected to the consumer site.

For SAML artifact profile, the syntax for the intersite transfer URL is:

http://<*producer_site*>/affwebservices/public/intersitetransfer?SMASSERTIONREF=QUERY&NAME=<*affiliate_name*>&TARGET=http://<*consumer_site*>/<*target_url*?*query_parameter_name*%3D*query_parameter_value*%26*query_parameter_name*%3D*query_parameter_value*>&SMCONSUMERURL=http://<*consumer_site*>/affwebservices/public/samlcc&AUTHREQUIREMENT=2

For SAML POST profile, the syntax for the intersite transfer URL is:

http://<*producer_site*>/affwebservices/public/intersitetransfer?SMASSERTIONREF=QUERY&NAME=
<*affiliate_name*>&TARGET=http://<*consumer_site*>/<*target_url*>

The variables in the intersite transfer URLs are as follows:

producer_site

Specifies the web site where the user is authenticated

affiliate_name

Indicates the name of an affiliate configured in an affiliate domain.

consumer_site

Indicates the site the user wants to visit from the producer site.

target_url

Target page at the consumer site.

The intersite transfer URLs that the user selects must contain the query parameters listed in the table that follows. These parameters are supported by an HTTP GET request to the producer Web Agent.

Note: Query parameters for the SAML artifact profile must use HTTP-encoding.

Query Parameter	Meaning
SMASSERTIONREF (required)	For internal use. The value will always be QUERY. Do not change this value.
NAME (required)	Name of an affiliate configured in an affiliate domain.
TARGET (required)	The target URL at the consumer site.
SMCONSUMERURL (required only for artifact profile)	The URL at the consumer site processes the assertion and authenticates the user.
AUTHREQUIREMENT=2 (required only for artifact profile)	For internal use. The value will always be 2. Do not change this value.

Note: The SMCONSUMERURL and AUTHREQUIREMENT parameters are not used by SAML POST profile; however, if you include one of these parameters in the intersite transfer URL you must also include the other.

Example of an intersite transfer URL for the artifact profile:

http://www.smartway.com/affwebservices/public/intersitetransfer?SMASSERTIONREF=QUERY&NAME=ahealthco&TARGET=http://www.ahealthco.com:85/smartway/index.jsp&SMCONSUMERURL=http://www.ahealthco.com:85/affwebservices/public/samlcc&AUTHREQUIREMENT=2

Example of an intersite transfer URL for the POST profile:

http://www.smartway.com/affwebservices/public/intersitetransfer?SMASSERTIONREF=QUERY&NAME=ahealthco&TARGET=http://www.ahealthco.com/index.html

Choosing Whether or Not to Protect the Intersite Transfer URL

The Web pages that include the intersite transfer URL links can be part of a realm that is protected by SiteMinder and configured for persistent sessions. When an user selects one of the links on a protected page, SiteMinder presents the user with an authentication challenge. After the user logs in, a persistent session can be established, which is required to store a SAML assertion.

If you choose not to protect these pages, an affiliate user without a SiteMinder session will be directed to an authentication URL that will require the user to log in to receive a SiteMinder session. This URL is defined when you configure an affiliate in the FSS Administrative UI.

Note: To setup persistent sessions, you have to configure the session server. Set up a session server using the Policy Server Management Console.

Allow Access to the Federation Web Services Application

After you add affiliates to an affiliate domain, the affiliates need permission to access the Federation Web Services application. When you install the Policy Server, the FederationWebServicesDomain is installed by default. This domain includes the following policies:

- FederationWSAssertionRetrieval
- FederationWSNotificationService
- FederationWSSessionServicePolicy
- SAML2FWSArtifactResolutionServicePolicy

To specify permission to the Federation Web Services application

1. From the Domains tab, expand FederationWebServicesDomain and select Policies.
2. Select one of the policies, and click Edit, Properties of Policy.

   For SAML 1.x, you need to permit access to:

   - FederationWSAssertionRetrieval
   - FederationWSNotificationService
   - FederationWSSessionServicePolicy

   For SAML 2.0, you need to permit access to SAML2FWSArtifactResolutionServicePolicy

   The SiteMinder Policy dialog opens.
3. From the Users tab, select one of the following:

   - FederationWSCustomUserStore tab for SAML 1.x
   - SAML2FederationCustomUserStore tab for SAML 2.0.

   The Users/Groups dialog opens.

   The consumers, Service Providers, and Resource Partners are the "users" included in the listed user stores.
4. Click Add/Remove on the appropriate tab.
5. From the Available Members list, choose the affiliate domains that should have access to Federation Web Services then move them to the Current Members list.
6. Click OK to return to the Policy List.
7. Repeat this procedure for all policies relevant for the SAML version you are using.

Set Up Sessions for a SAML Affiliate Agent Consumer (optional)

To configure sessions for a site using the SAML Affiliate Agent as the consumer, be aware of the following:

- Session management should be configured only if the SAML Affiliate Agent is acting as a SAML consumer. The SAML credential collector does not support this feature.
- The SAML Affiliate Agent does not support SAML POST profile. Sessions can only be used with SAML artifact profile.

Session management between a producer and a SAML Affiliate Agent may be handled in one of three ways:

- Default--Producer and SAML Affiliate Agent maintain separate sessions

  Both the producer and the SAML Affiliate Agent establish sessions for the user. If a user idles out or reaches a timeout at the producer, the SAML Affiliate Agent is not notified. The same is true for a session that expires at the SAML Affiliate Agent.

- Active--An active session is required at the producer

  Both the producer and SAML Affiliate Agent establish sessions. An active session is required at the producer for the SAML Affiliate Agent session to stay active. Producer sessions can remain active after a SAML Affiliate Agent session is terminated.

- Shared--Producer and SAML Affiliate Agent maintain shared sessions

  If the SAML Affiliate Agent has implemented a shared sessioning model, the producer and the SAML Affiliate Agent can maintain a shared session. Sessions at the producer and the SAML Affiliate Agent are terminated if the producer session expires or the user logs out at either site.

Note: For more information about session management, see the *SiteMinder SAML Affiliate Agent Guide*.

Configure a Default or Active Session Model

For the Default and Active session models, no specific configuration is required at the producer. The configuration takes place at the SAML Affiliate Agent.

Configure a Shared Session Model

For shared sessioning, there are a few steps to complete. You configure shared sessioning on the Session tab of the Affiliate Properties dialog box.

To enable shared sessioning

1. Select the Shared Sessioning checkbox.

   If a SAML Affiliate Agent implements a shared session solution, this check box enables the sharing of session information between the producer and the SAML Affiliate Agent.

2. Enter a value in the Sync Interval field, in seconds.
3. Click OK to save your changes.

More Information:

Set the Sync Interval for Shared Sessions (see page 257)

Set the Sync Interval for Shared Sessions

The *sync interval* defines the frequency, while the user is active at the consumer, at which the SAML Affiliate Agent contacts the producer to validate session status. (The SAML Affiliate Agent learns the value of the sync interval from the assertion sent by the producer.)

The sync interval ensures that the information at the producer's session server and the information in the SAML Affiliate Agent cookies is synchronized. For example, if the sync interval is 2 minutes and the user logs out at the producer at 4:00PM, the consumer session cookies do not become invalid until 4:02PM.

Note: The SAML Affiliate Agent does not automatically contact the producer based only on the value of the sync interval; the user has to be active at the consumer--that is, the user is requesting consumer resources.

Two considerations affect the value of Sync Interval:

- If the value of Sync Interval is too small, the SAML Affiliate Agent keeps calling the session server, which slows down SiteMinder's performance when processing requests.
- The value must not be larger than 1/2 the lowest Idle Timeout Enabled value that is set for the realm where the user logs in at the producer before going to the SAML Affiliate Agent. The Idle Timeout Enabled field is part of a realm's session configuration parameters.

Note: If the user visits the SAML Affiliate Agent *before* logging in at the producer, the user is redirected to a URL at the producer. This URL is referred to as the PortalQueryURL.

Configure Attributes to Include in Assertions (optional)

Attributes can be included in assertions for use by servlets, Web or custom applications to display customized content for a user or enable other custom features. User attributes, DN attributes, or static data can all be passed from the producer to the consumer in an assertion. When used with Web applications, attributes can offer fine-grained access control by limiting what a user can do at the consumer. For example, you can send an attribute called Authorized Amount and set it to a maximum dollar amount that the user can spend at the consumer.

Attributes take the form of name/value pairs and include information, such as the user's mail address or business title, or an approved spending limit for transactions at the consumer. When the consumer receives the assertion, it takes the attributes and makes them available to applications as HTTP header variables or HTTP cookie variables.

Federated Services attributes that applications at consumer sites can interpret and pass on to other applications. The Federated Services response attributes are:

- Affiliate-HTTP-Header-Variable
- Affiliate-HTTP-Cookie-Variable

You configure attributes in the Attributes tab of the Affiliates dialog box.

Attribute Types

Attributes identify the information that the Policy Server passes to the consumer. There are several types of attributes that you can use in an attribute. The types of attributes determine where the Policy Server finds the proper attribute values.

You can specify the following types of attributes:

- Static--Returns data that remains constant.

  Use a static attribute to return a string as part of a SiteMinder response. This type of response can be used to provide information to a Web application. For example, if a group of users has specific customized content on a Web site, the static response attribute, show_button = yes, could be passed to the application.

- User Attribute--Returns profile information from a user's entry in a user directory.

  This type of response attribute returns information associated with a user in a directory. A user attribute can be retrieved from an LDAP, WinNT, or ODBC user directory.

  Note: For the Policy Server to return response attributes that contain values from user directory attributes, the user directories must be configured in the SiteMinder User Directory dialog box.

- DN Attribute--Returns profile information from a directory object in an LDAP or ODBC user directory.

  This type of attribute is used to return information associated with directory objects to which the user is related. Groups to which a user belongs, and Organizational Units (OUs) that are part of a user DN, are examples of directory objects whose attributes can be treated as DN attributes.

  For example, you can use a DN attribute to return a company division for a user, based on the user's membership in a division.

  Note: For the Policy Server to return response attributes using values from DN attributes, the user directories must be configured in the SiteMinder User Directory dialog box.

When you configure a response attribute, the correct Value Type for the response attribute is displayed in the upper right corner of the SiteMinder Response Attribute Editor dialog box.

Configure Attributes for SAML 1.x Assertions

To configure an attribute for an assertion:

1. In the Affiliate Properties dialog box, click on the Attributes tab.
2. Click Create.

   The Affiliate Attribute Editor dialog opens.
3. From the Attribute drop down list, select whether you want to configure a header or cookie variable.
4. From the Attribute Setup tab, select one of the following radio buttons in the Attribute Kind group box:

   - Static
   - User Attribute
   - DN Attribute

   If you select the DN Attribute radio button, you may also select the Allow Nested Groups check box. Selecting this check box allows SiteMinder to return an attribute from a group that is nested in another group specified by a policy. Nested groups often occur in complex LDAP deployments.

   Your selection from the Attribute drop-down list and the response attribute type radio button you select determine the available fields in the Attribute Fields group box.

5. Follow the instructions in the table:

If you selected...	Complete the following fields...
Static	Variable Name--enter the name for the attribute SiteMinder will return to the affiliate. Variable Value--enter the static text as the value for the name/value pair. For example, to return the name/value pair show_content=yes, enter show_content as the variable name and yes as the variable value.
User Attribute	Variable Name--enter the name for the attribute SiteMinder will return to the consumer. Attribute Name--enter the attribute in the user directory for the name/value pair. For example, to return the user's email to the consumer, enter email_address as the Variable Name, and email as the Attribute Name.
DN Attribute	Variable Name--enter the name for the attribute SiteMinder will return to the consumer. DN Spec--enter the distinguished name of the user group from which SiteMinder retrieves the user attribute. The DN must be related to the users for whom you want to return values to the consumer. If you do not know the DN, click Lookup. Use the SiteMinder User Lookup dialog box to locate the user group and select a DN. Attribute Name--enter the attribute in the user directory for this attribute for the name/value pair.

Note: If you selected Affiliate-HTTP-Cookie-Variable from the Attribute menu, the Variable Name field label changes to Cookie Name.

6. Optionally, if the response attribute will be retrieved from an LDAP user directory that contains nested groups (groups that contain other groups), and you want the Policy Server to retrieve DN attributes from the nested groups, select the Allow Nested Groups check box in the Attribute Kind group box.
7. Click OK to save your changes

Use a Script to Create A New Response Attribute

The Advanced tab of the Affiliate Attribute dialog box contains the Script field. This field displays the script that SiteMinder generates based on your entries in the Attribute Setup tab. You can copy the contents of this field and paste them into the Script field for another response attribute.

Note: If you copy and paste the contents of the Script field for another attribute, you must select the appropriate radio button in the Attribute Kind group box of the Attribute Setup tab.

Configure IP Address Restrictions for 1.x Consumers (optional)

The FSS Administrative UI allows you to specify a single IP address (by address or host name), a range of IP addresses, or a subnet mask that users must use to access an consumer site. If IP addresses have been specified for an consumer, only users who access the consumer site from the appropriate IP addresses will be accepted by the consumer.

The procedure for specifying IP address restrictions for a consumer is the same as configuring IP restrictions for a policy in a policy domain.

Configure Time Restrictions for 1.x Consumers (optional)

The FSS Administrative UI allows you to add time restrictions for accessing consumer resources. When you specify a time restriction, the consumer functions only during the period specified in the time restriction. If a user attempts to access an consumer resource outside of the period specified by the time restriction, the producer does not generate SAML assertions.

The procedure for specifying time restrictions for a consumer is the same as specifying them for a policy in a policy domain.

Customize SAML 1.x Assertion Content (optional)

The SiteMinder Assertion Generator produces SAML assertions to authenticate users in a federation environment. You can customize the content of the SAML assertion generated by the Assertion Generator by configuring an Assertion Generator plug-in. Using this plug-in, you can modify the assertion content for your business agreements between partners and vendors.

To use the Assertion Generator plug-in:

1. Implement the plug-in class.

   A sample class, AssertionSample.java, can be found in sdk/samples/assertiongeneratorplugin.

2. Configure the Assertion Generator plug-in from the Advanced tab of the Affiliate Properties dialog box.

   Note: Specify an Assertion Generator plug-in for each consumer.

   a. In the Full Java Class Name field, enter the Java class name of the plug-in.

      For example, com.mycompany.assertiongenerator.AssertionSample

      A sample plug-in is included in the SDK. You can view a sample assertion plug-in at sdk/samples/assertiongeneratorplugin.

   b. Optionally, in the Parameters field, enter the string that gets passed to the plug-in as a parameter at run time.

      The string can contain any value; there is no specific syntax to follow.

For reference information about the Assertion Generator plug-in (method signatures, parameters, return values, data types), and also the new constructor for UserContext class, see the AssertionGeneratorPlugin interface in the *Javadoc Reference*. For overview and conceptual information, see the *SiteMinder Programming Guide for Java*.

Integrate the Assertion Generator Plug-in with SiteMinder (SAML 1.x)

After writing an assertion generator plug-in, you have to integrate the plug-in with SiteMinder.

The instructions for compiling the SAML 1.x assertion plug-in Java file are in the AssertionSample.java file, in sdk/samples/assertiongeneratorplugin.

To integrate the assertion generator plug-in with SiteMinder:

1. Compile the assertion plug-in Java file.

   This file requires the following .jar files installed with the Policy Server:

   - *policy_server_home*/bin/jars/SmJavaApi.jar
   - *policy_server_home*/bin/thirdparty/xercesImpl.jar
   - *policy_server_home*/bin/endorsed/xalan.jar

2. In the JVMOptions.txt file, modify the -Djava.class.path value so it includes the classpath for the plug-in. This enables the plug-in to be loaded.

   Note: Do not modify the classpath for xercesImpl.jar, xalan.jar, or SMJavaApi.jar.

3. Restart the Policy Server.

   Restarting ensures that the latest version of the assertion plug-in is picked up after being recompiled.

Instead of specifying the assertion plug-in class and its parameters via the FSS Administrative UI you can use the Policy Management API (C or Perl). For instructions, see the *SiteMinder Programming Guide for C* or the *Javadoc Reference*, which is part of the *SiteMinder Programming Guide for Java*.

Protect the Authentication URL to Create a SiteMinder Session (SAML 1.x)

When you add a consumer to an affiliate domain, one of the parameters you are required to set is the AuthenticationURL parameter.

The file that the AuthenticationURL points to is the redirect.jsp file. This file is installed at the producer site where you install the Web Agent Option Pack or the SPS federation gateway. The redirect.jsp file must be protected by a SiteMinder policy so that the Web Agent presents an authentication challenge to users who request a protected consumer resource but do not have a SiteMinder session.

A SiteMinder session is required for the following features:

- For users requesting a protected Service Provider resource

  If you configure single sign-on using an HTTP artifact profile, a persistent session is needed to store SAML assertions in the session server.

- For single sign-on using an HTTP POST profile

  A user must have a session, but it does not have to be a persistent session because assertions are delivered directly to the consumer site through the user's browser. The assertions do not have to be stored in the session server.

After a user is authenticated and successfully accesses the redirect.jsp file, a session is established. The redirect.jsp file redirects the user back to the producer Web Agent so that the Agent can process the request and generate the SAML assertion for the user.

The procedure for protecting the Authentication URL is the same regardless of the following set-ups:

- Web Agent Option Pack installed on the same system as the Web Agent
- Application server with a Web Agent installed on a Web server proxy
- Application server protected by an Application Server Agent
- SPS federation gateway installed at the Identity Provider

Create a Policy to Protect the Authentication URL

To create a policy to protect the AuthenticationURL

1. Open the FSS Administrative UI.
2. From the System tab, create Web Agents to bind to the realms that you define for the producer-side Web Server. You can assign unique Agent names for the Web Server and the Federation Web Services or use the same Agent name for both.
3. Create a policy domain for the users who should be challenged when they try to access a consumer resource.
4. From the Users tab, select the users that should have access to the resources that are part of the policy domain.
5. Define a realm for the policy domain with the following values:
   a. Agent: select the Agent for the producer Web Server
   b. Resource Filter:

      Web Agents v5.x QMR 4 and later, and SPS federation gateway enter:

      /siteminderagent/redirectjsp/

      Web Agents v5.x QMR 1, 2, or 3, enter:

      /affwebservices/redirectjsp/

      The resource filter /siteminderagent/redirectjsp/ is an alias, set up automatically by FWS. It is a reference to the following:

      - For a Web Agent:

        web_agent_home/affwebservices/redirectjsp

      - For the SPS federation gateway:

        sps_home/secure-proxy/Tomcat/webapps/affwebservices/redirectjsp

   c. For the remaining settings, accept the defaults or modify as needed.

6. For SAML artifact only, select the Session tab and check the Persistent Session check box.

   To enable single sign-on using the SAML artifact profile from a realm at the producer to a realm at the consumer, configure a persistent session for the producer realm. If you do not configure a persistent session, the user cannot access consumer resources.

7. Click OK to save the realm.
8. Create a rule for the realm. In the Resource field, accept the default value, the asterisk (*), to protect all resources for the realm.
9. Create a policy for the producer Web Server that includes the rule created in the previous step.
10. Complete the task in Select Users for Which Assertions Will Be Generated (see page 247).

Protect the Assertion Retrieval Service with Client Certificate Authentication (optional)

By default, there is a pre-configured policy that uses the Basic over SSL authentication scheme to protect the Assertion Retrieval Service. When you configure the policy for the client certificate authentication scheme, you create this policy for a different realm than the realm that uses the Basic over SSL scheme.

Generally, the administrator at the Identity Provider should create two policies to protect the Assertion Retrieval Service by Basic over SSL and to protect it with client certificate authentication.

To protect the Assertion Retrieval Service using a client certificate authentication scheme, you:

- Create a policy at the producer that uses an X.509 client certificate authentication scheme.
- Enable client certificate authentication at the consumer.

More Information:

Create the Assertion Retrieval Service Policy (see page 266)
Access the Assertion Retrieval Service with a Client Certificate (optional) (see page 294)

Use of Client Cert. Auth. with an IIS 5.0 Web Server

Client certificate authentication is not supported for IIS 5.0 Web servers at the producer/Identity Provider. However, it can be used on an IIS 5.0 Web server at the consumer/Service Provider to communicate with a non-SiteMinder producer/Identity Provider.

To work around this issue, use the IIS 5.0 Web server's client certificate functionality at the producer/Identity Provider and do not configure SiteMinder's client certificate functionality. If you apply this workaround, be aware that the CN portion of the certificate's DN value must contain the affiliate name value.

Create the Assertion Retrieval Service Policy

To create a policy that protects the Assertion Retrieval Service

1. For each affiliate, add an entry to a user directory. You can create a new user store or use an existing directory.

   Create a separate user record for each affiliate site that retrieving assertions from the producer site.

   An attribute of the user record should have the same value that is specified in the Name field of the Affiliate Properties dialog box.

   For example, if you identified the affiliate as Company A in the Name field, the user directory entry should be:

   uid=CompanyA, ou=Development,o=CA

   The Policy Server will map the subject DN value of the affiliate's client certificate to this directory entry.

2. Add the configured user directory to the FederationWebServicesDomain.

3. Create a certificate mapping entry.

   The value for the Attribute Name field in the Certificate Mapping Properties dialog box should be mapped to the user directory entry for the affiliate. The attribute represents the subject DN entry in the affiliate's certificate. For example, you may select CN as the Attribute Name, and this represents the affiliate named cn=CompanyA,ou=Development,o=CA

4. Configure an X509 Client Certificate authentication scheme.

5. Create a realm under the FederationWebServicesDomain containing the following entries:
   - Name: <*any_name*>

     Example: cert assertion retrieval
   - Agent: FederationWebServicesAgentGroup
   - Resource Filter: /affwebservices/certassertionretriever
   - Authentication Scheme: client cert authentication scheme created in the previous step.
6. Create a rule under the cert assertion retriever realm containing the following:
   - Name: <*any_name*>

     Example: cert assertion retrieval rule
   - Resource: *
   - Web Agent Actions: GET, POST, PUT
7. Create a Web Agent response header under the FederationWebServicesDomain.

   The Assertion Retrieval Service uses this HTTP header to make sure that the affiliate site for which the SAML assertion was generated is the site actually retrieving the assertion.

   Create a response with the following values:
   - Name: <*any_name*>
   - Attribute: WebAgent-HTTP-Header-Variable
   - Attribute Kind: User Attribute
   - Variable Name: consumer_name
   - Attribute Name: enter the use directory attribute that contains the affiliate name value. For example, the entry could be uid=CompanyA.

   Based on the following entries, the Web Agent will return a response named HTTP_CONSUMER_NAME.

8. Create a policy under the FederationWebServicesDomain containing the following values:
   - Name: <*any_name*>
   - User: Add the users from the user directory created in previously in this procedure
   - Rule: <*rule_created_earlier_in_this_procedure*>
   - Response: <*response_created_earlier_in_this_procedure*>
9. Complete the configuration steps at the Service Provider to use client certificate authentication, if they are not completed already.

   Instructions can be found in Access the Assertion Retrieval Service with a Client Certificate (optional) (see page 294).

Chapter 11: Authenticate SAML 1.x Users at a Consumer

This section contains the following topics:

SAML 1.x Authentication Schemes

If you purchased the Policy Server, any SiteMinder site can consume SAML 1.x assertions and use these assertions to authenticate and authorize users. If you have sites in your federated network that have user stores, you may want to use SAML authentication.

There are two SAML 1.x authentication methods available for configuration with SiteMinder:

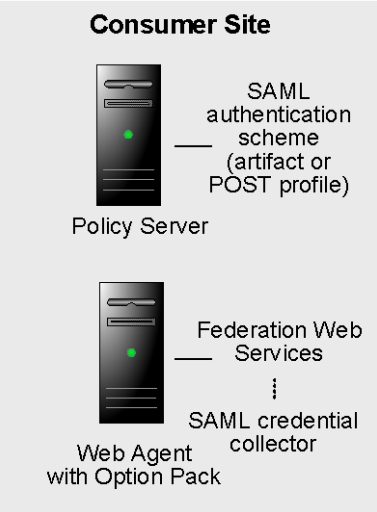
- SAML Artifact profile
- SAML POST profile

The SAML-based authentication schemes let a consumer site in a federated network authenticate a user. It enables cross-domain single sign-on by consuming a SAML assertion and establishing a SiteMinder session. After the user is identified, the consumer site can authorize the user for specific resources.

A consumer is a site that uses a SAML 1.x assertion to authenticate a user. A producer is a site that generates SAML 1.x assertions.

Note: A site may be both a SAML producer and a SAML consumer.

The following illustration shows the major components for authentication at the consumer site.



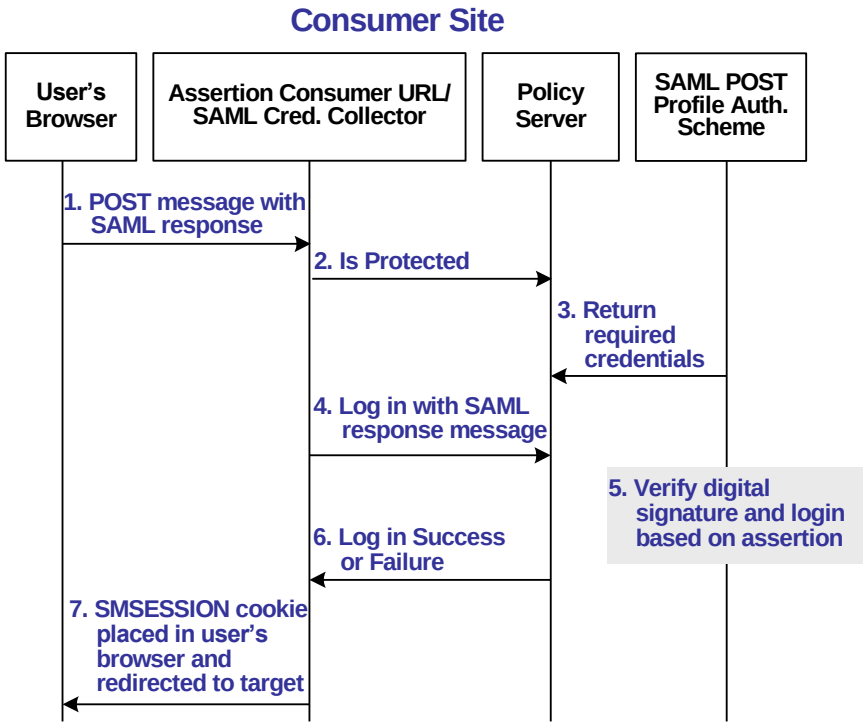
Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The SAML 1.x authentication scheme is configured at the consumer-side Policy Server and is invoked by the SAML credential collector. The SAML credential collector is a component of the Federation Web Services application and is installed on the consumer-side Web Agent or SPS federation gateway. The credential collector obtains information from the SAML authentication scheme at the Policy Server, then uses that information to access a SAML assertion.

The SAML assertion becomes the user's credentials to login to the Policy Server at the consumer site. The user is authenticated and authorized, and if authorization is successful, the user is redirected to the target resource.

SAML 1.x POST Profile Authentication Scheme Overview

The following illustration shows how the SAML POST profile authentication scheme processes requests.



Note: The SPS federation gateway or the Web Agent Option Pack can provide the Assertion Consumer Service and SAML Credential Collector functionality necessary for the authentication process.

Unless otherwise stated, the following process takes place at the consumer site:

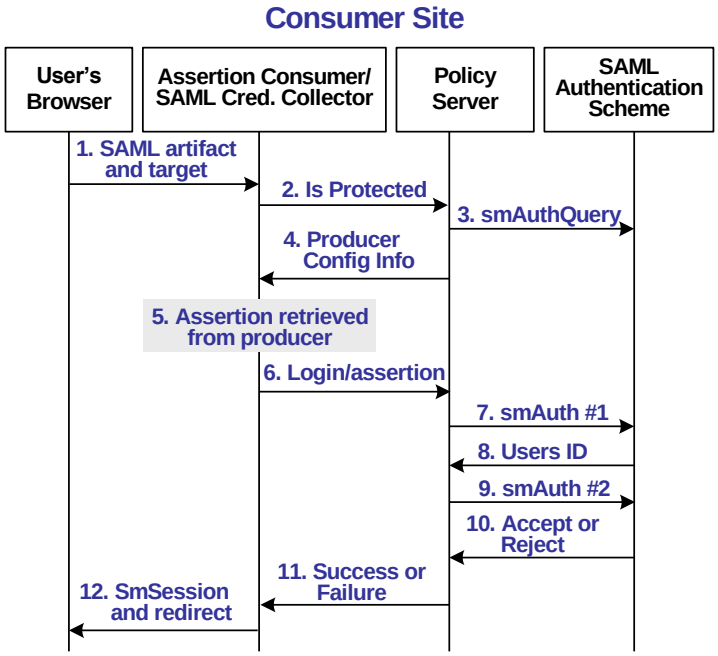
1. A user's browser POSTs an HTML form to the Assertion Consumer URL (which is the URL for the SAML credential collector). This form contains a SAML response message and target URL originally generated at the producer.
2. The SAML credential collector makes a call to the Policy Server to determine if the target resource is protected.
3. The Policy Server replies that the target URL is protected by the SAML POST profile authentication scheme. This indicates to Federation Web Services application that a signed response from the POSTed form is the expected credential for the login call.
4. The SAML credential collector makes a login call to the Policy Server, passing the digitally signed SAML response as credentials.

5. The SAML POST profile authentication scheme verifies the signature and other fields of the response and the assertion.
6. If the checks succeed and the user is found in the directory, then authentication succeeds. If any of the checks fail, authentication fails.
7. Assuming login succeeds, the SAML credential collector sets an SMSESSION cookie, which it puts in the user's browser, and then redirects the user to the target resource. If the login fails, the credential collector redirects the user to the configured No Access URL.

SAML 1.x Artifact Authentication Scheme Overview

The following illustration shows how the SAML 1.x artifact authentication scheme processes requests.

This illustration shows the SAML 1.x artifact authentication functional model.



Note: The SPS federation gateway or the Web Agent and Web Agent Option Pack can provide the Agent and SAML Credential Collector functionality necessary for the authentication process.

Unless otherwise stated, all activity in this process occurs at the consumer site:

1. A user is redirected to the SAML credential collector with a SAML artifact and a target URL.

   The artifact and target is originally generated from the SiteMinder Web Agent at the producer site.

2. The SAML credential collector calls the Policy Server to check if the requested resource is protected. This resource is protected by the SAML artifact authentication scheme.

3. The Policy Server passes the necessary data to the SAML artifact authentication scheme, which extracts the producer configuration information, such as the affiliate name and password.

4. The Policy Server returns the producer configuration information to the SAML credential collector. This information enables the credential collector servlet to call a producer site and retrieve a SAML assertion.

5. The SAML credential collector takes the data from the Policy Server and uses it to retrieve the SAML assertion stored at the producer Policy Server.

6. Once an assertion is returned, the credential collector uses the assertion as credentials, and logs in to the Policy Server.

7. The Policy Server makes the initial user disambiguation call to the SAML authentication scheme.

8. Using the authentication scheme data and the assertion, the scheme locates the user and returns a unique identifier for the user to the credential collector.

9. The Policy Server makes the second user authentication call to the authentication scheme.

   Note: The two-step authentication process is the standard authentication process as dictated by the SiteMinder Authentication API. For more information, see the *SiteMinder Programming Guide for C* or the *SiteMinder Programming Guide for Java*.

10. The scheme validates the SAML assertion and returns an accept or reject message to the Policy Server.

11. The Policy Server sends the accept or reject message to the credential collector.

12. If the login to the Policy Server succeeds, the SAML credential collector creates a session cookie and places it in the user's browser then redirects the user to the target resource. If the login fails, the credential collector servlet redirects the user to a No Access URL.

SAML 1.x Authentication Scheme Prerequisites

There are several prerequisites you must fulfill before configuration a SAML authentication scheme.

Install the Policy Server for the SAML Auth Scheme

The Policy Server provides the SAML authentication scheme at the consumer. It also provides the SAML assertion generator used by a producing site.

Install the Policy Server at the producing and consuming sites.

For installation instructions, refer to the *SiteMinder Policy Server Installation Guide*

Install Federation Web Services at the Producer and Consumer

Federation Web Services (FWS) is a web application. FWS provides the SAML credential collector servlet, which consumes assertions and other services for federated network configurations.

To use the FWS application features, install the Web Agent and Web Agent Option Pack or the SPS federation gateway, which has FWS embedded at the producer and consumer sites.

For installation and configuration instructions, refer to the following:

- *SiteMinder Web Agent Option Pack Guide*
- *CA SiteMInder Secure Proxy Server Administration Guide*

Important! If you install a Web Agent, you must define a value for the Web Agent configuration parameter DefaultAgentName for all consumer Web Agents. This value specifies a Web Agent identity. Additionally, the specified Agent identity must be included in the Resource Filter of the realm that protects the target resource. You configure the DefaultAgentName parameter in the Agent Configuration Object or the local Agent configuration file. Omitting the DefaultAgentName parameter or using the value specified in the AgentName parameter in the realm resource filter causes SAML 1.x authentication to fail, regardless of the single sign-on profile.

Set Up a Key Database to Sign and Verify SAML POST Responses

To use the SAML POST profile for passing assertions, the assertion generator at the producer site needs to sign the SAML response that contains the assertion. The assertion consumer at the consumer site needs to verify that signature.

To accomplish these tasks, you must set up a key database for each Policy Server that is responsible for signing, verification or both. The key database is a flat-file key and certificate database that lets you manage and retrieve keys and certificates required to sign and validate SAML responses used with SAML POST profile authentication.

More Information:

Manage the Key Database for Signing and Encryption (see page 471)

Configure SAML 1.x Artifact Authentication

Before you can assign a SAML artifact authentication scheme to a realm, you must configure the scheme.

To configure the SAML artifact authentication scheme:

1. Check the SAML 1.x Authentication Scheme Prerequisites (see page 274).
2. Log into the FSS Administrative UI.
3. From the menu bar, select Edit, System Configuration, Create Authentication Scheme.

   The Authentication Scheme Properties dialog box opens.
4. Fill in the fields for the:
   - Scheme Common Setup group box
   - Scheme Setup tab
   - The Advanced tab (optional)

Configure the SAML 1.x Artifact Scheme Setup

The configuration of the SAML 1.x artifact authentication scheme lets you enter information about the producer site that provides the SAML assertion to the consumer.

After configuring an authentication scheme, associate the scheme with a realm that contains the resource you want to protect.

To configure the SAML 1.x artifact authentication scheme

1. From the Authentication Scheme Type drop-down list, select SAML Artifact Template.

   The contents of the SiteMinder Authentication Scheme dialog box change to support the SAML artifact scheme.

2. Configure the scheme setup by configuring the fields on the tab.

   Important! The Affiliate Name, Password, and Verify Password fields must match other values in your federation network. For details, go to Configuration Settings that Must Use the Same Values (see page 497).

   For the SAML artifact profile, the assertion is sent by the producer over a protected backchannel to the consumer. If you are using basic authentication to protect the backchannel, the value of the Affiliate Name field is the name of the consumer. If you are using client certificate authentication for the backchannel, the value of the Affiliate Name field should be the alias of the client certificate stored in the smkeydatabase.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

More Information:

How To Protect a Resource with a SAML 1.x Authentication Scheme (see page 288)
Access the Assertion Retrieval Service with a Client Certificate (optional) (see page 294)
Modify the Key Database Using smkeytool (see page 480)

Create a Custom SAML Artifact Authentication Scheme (Optional)

The Advanced tab of the Authentication Scheme dialog box lets you use a custom SAML artifact scheme written with the SiteMinder Authentication API.

Complete the following fields:

- Library
- Parameter

Configure SAML 1.x POST Profile Authentication

To configure the SAML POST profile authentication scheme

1. Check the SAML 1.x Authentication Scheme Prerequisites (see page 274).
2. Log into the FSS Administrative UI.

3. From the menu bar, select Edit, System Configuration, Create Authentication Scheme.

   The Authentication Scheme Properties dialog box opens.

4. Fill in the fields for the:
   - Scheme Common Setup group box
   - Scheme Setup tab
   - The Advanced tab (optional)

More Information:

Create the SAML 1.x POST Common Setup and Scheme Setup (see page 277)
Configure a Custom SAML 1.x POST Authentication Scheme (see page 278)

Create the SAML 1.x POST Common Setup and Scheme Setup

Before you can assign a SAML POST profile authentication scheme to a realm, you must configure the scheme. The Scheme Setup tab is where you enter information about the producer site that provides the SAML assertion to the consumer.

After configuring an authentication scheme, associate the scheme with a realm that contains the resource you want to protect.

To configure the SAML 1.x POST authentication scheme

1. From the Authentication Scheme Type drop-down list, select SAML POST Template.

   The contents of the SiteMinder Authentication Scheme dialog box change to support the SAML POST profile scheme

2. Configure the scheme setup by configuring the fields on the tab.

   Important! The Affiliate Name, Password, and Verify Password fields must match other values in your federation network. For details, go to Configuration Settings that Must Use the Same Values (see page 497).

   Note: You can click Help for a description of fields, controls, and their respective requirements.

3. Click OK to save the scheme.

The SAML 1.x POST authentication scheme is now configured.

More Information:

How To Protect a Resource with a SAML 1.x Authentication Scheme (see page 288)

Configure a Custom SAML 1.x POST Authentication Scheme

The Advanced tab of the Authentication Scheme dialog box lets you use a custom SAML POST scheme written with the SiteMinder Authentication API.

Complete the following fields:

- Library
- Parameter

Customize Assertion Processing with the Message Consumer Plug-in

The Message Consumer Plug-in is SiteMinder's Java program that implements the Message Consumer Extension API. Using this plug-in you can implement your own business logic for processing assertions, such as rejecting an assertion and returning a SiteMinder-defined status code. This additional processing works together with SiteMinder's standard processing of an assertion.

Note: For more information about status codes for authentication and disambiguation, see the *SiteMinder Programming Guide for Java*.

During authentication, SiteMinder first tries to process the assertion by mapping a user to its local user store. If SiteMinder cannot find the user, it calls the postDisambiguateUser method of the Message Consumer Plug-in, if the plug-in is configured. The plug-in then has the opportunity to disambiguate the user, if it knows how.

If the plug-in successfully finds the user, SiteMinder proceeds to the second phase of authentication. If the plug-in cannot map the user to a local user store, the plug-in should return a UserNotFound error, which is documented in the MessageConsumerPlugin interface. The plug-in's use of SiteMinder's redirect URLs feature is optional and is based on the error code returned by the plug-in. If the Message Consumer plug-in is not configured, the redirect URLs are used based on the error generated by the SAML authentication scheme.

During the second phase of authentication, SiteMinder calls the postAuthenticateUser method of the Message Consumer Plug-in, if the plug-in is configured. If the method succeeds, SiteMinder redirects the user to the requested resource. If the method fails, you can configure the plug-in to send the user to a failure page. The failure page can be one of the redirect URLs that you can specify with the authentication scheme configuration, but this is not required.

To integrate the Message Consumer plug-in with SiteMinder, use the parameter values that you specify for the plug-in configuration. The plug-in configuration is part of the SAML 1.x, SAML 2.0 and WS-Federation authentication scheme configuration.

More information:

Specify Redirect URLs for Failed SAML 1.x Authentication (see page 287)
Specify Redirect URLs for Failed SAML 2.0 Authentication (see page 383)
Set Up Redirect URLs for Failed WS-Federation Authentication (see page 439)

Configure the SAML 1.x Message Consumer Plug-in

To configure the message consumer plug-in for artifact or POST authentication

1. From the Authentication Scheme Properties dialog, click Additional Configuration.

   The SAML 1.x. Auth Scheme Properties dialog opens.

2. Implement the plug-in class.

   A sample class, MessageConsumerPluginSample.java, can be found in sdk/samples/messageconsumerplugin.

3. In the Full Java Class Name field, enter the Java class name of the plug-in. This plug-in is invoked by the Message Consumer at run time.

   The plug-in class can parse and modify the assertion, and then return the result to the Message Consumer for final processing.

   Only one plug-in is allowed for each authentication scheme. For example, com.mycompany.messageconsumer.samplecode

   Note: Specify a Message Consumer plug-in for each authentication scheme.

4. Click OK to save the changes.

   You return to the Authentication Scheme Properties dialog.

More Information:

Integrate the Message Consumer Plug-in for SAML 1.x Authentication (see page 280)

Integrate the Message Consumer Plug-in for SAML 1.x Authentication

After writing a message consumer plug-in, integrate the plug-in with the SAML 1.x authentication scheme.

The instructions for compiling the message consumer plug-in Java file are in the MessageConsumerPluginSample.java file located in sdk/samples/messageconsumerplugin as well as the provided build scripts.

To integrate the message consumer plug-in with the authentication scheme

1. Compile the message consumer plug-in Java file.

   The Java file requires the following .jar file installed with the Policy Server:

   policy_server_home/bin/java/SmJavaApi.jar

2. In the JVMOptions.txt file, modify the -Djava.class.path value so it is set to the classpath for the plug-in. This enables the plug-in to be loaded.

   Note: Do not modify the classpath for SMJavaApi.jar.

3. In the FSS Administrative UI, specify the plug-in that SiteMinder should use. Click Additional Configuration in the SAML Auth Scheme Properties dialog and complete the following fields:

   Full Java Class Name

   Specify the Java class name for the plug-in, For example, a sample class included with the SiteMinder SDK is:

   com.ca.messageconsumerplugin.MessageConsumerPluginSample

   Parameter

   Specify a string of parameters to be passed to the plug-in specified in the Full Java Class Name field.

4. Restart the Policy Server.

   Restarting the Policy Server ensures that the latest version of the assertion plug-in is picked up after being recompiled.

Additional information about the message consumer plug-in can be found as follows:

- Reference information (method signatures, parameters, return values, data types) are in the *Java Developer's Reference*. Refer to the MessageConsumerPlugin interface.
- Overview and conceptual information about authentication and authorization APIs, see the *SiteMinder Programming Guide for Java*.

Supply SAML Attributes as HTTP Headers

An assertion response may include attributes in the assertion. These attributes can be supplied as HTTP header variables and used by a client application can use these headers for finer grained access control.

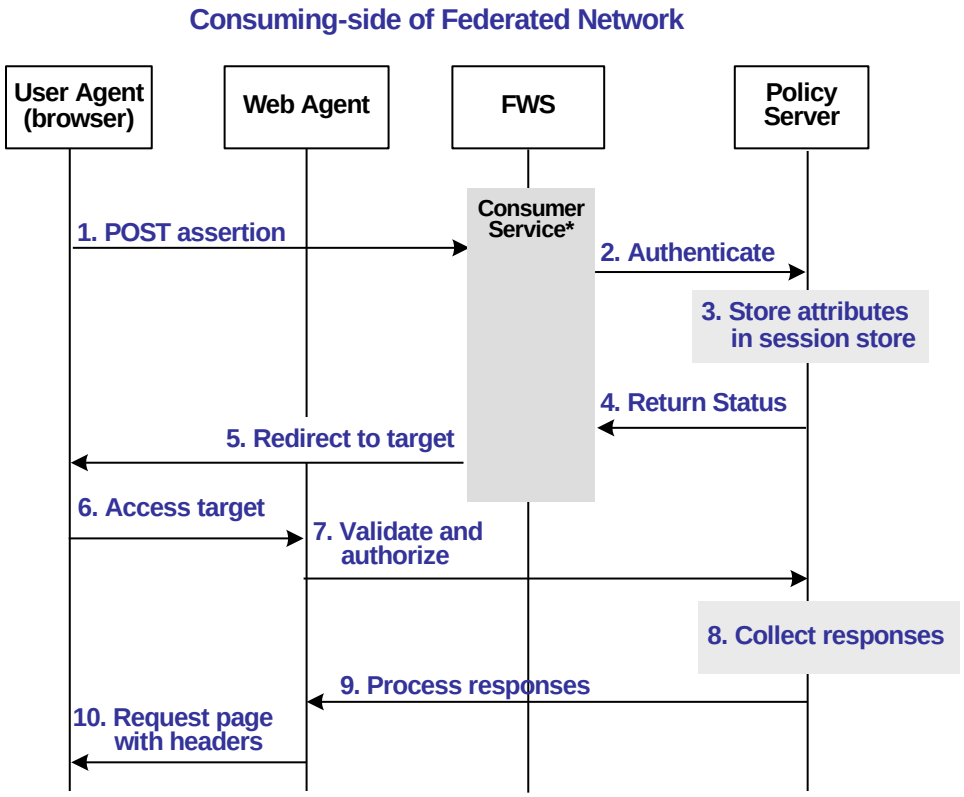
The benefits of including attributes in HTTP headers is as follows:

- HTTP headers are not persistent. They are present only within the request or response that contains them.
- HTTP headers, as supplied by the SiteMinder Web Agent, are not seen by the user's browser, which reduces security concerns.

Use Case for SAML Attributes As HTTP Headers

During authentication, a series of SAML attributes are extracted from an assertion and supplied as HTTP headers. During the authorization process, these headers are returned to the customer's application.

The following flow diagram shows the sequence of events at runtime:



*Consumer service can be one of the following:
–SAML Credential Collector (SAML 1.x)
–Assertion Consumer Service (SAML 2.0)
–Security Token Consumer Service (WS-Federation)

Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. In the flow diagram, the Web Agent block would be the embedded Web Agent in the SPS federation gateway. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

To process the attributes as HTTP headers, the sequence of events is as follows:

1. After the assertion is generated at the producing partner, it sends the assertion to the appropriate consumer service at the consuming partner. The delivery mechanism (POST or Artifact or WS-Fed) is irrelevant.

   Note: The consumer service can be the SAML credential collector (SAML 1.x), the Assertion Consumer Service (SAML 2.0), or Security Token Consumer Service (WS-Federation).

2. The consumer service calls its local Policy Server to use the configured authentication scheme to authenticate the user with the assertion.
3. If the authentication scheme's redirect mode parameter is set to PersistAttributes, the Policy Server caches the attributes in the session store as session variables.
4. The result of the authentication is returned to the consumer service.
5. The consumer service redirects the browser to the protected target resource.
6. The browser tries to access the target resource.
7. The Web Agent calls the Policy Server to validate the user's session and to ensure the user is authorized to access the target resource.
8. The Policy Server retrieves the attributes by a configured response.
9. The Policy Server processes the responses and sends the attributes to the Web Agent.
10. The Web Agent sets the HTTP headers as necessary.

Configuration Overview to Supply Attributes as HTTP Headers

There are several configuration steps required to retrieve the SAML attributes cached in the session store and provide them as HTTP headers.

The components you must configure are as follows

1. Select PersistAttributes as the redirect mode for the SAML authentication scheme. This enables the SAML Attributes to be returned as HTTP headers.
2. Configure an authorization rule for the the realm that contains the target resource.
3. Configure a response that uses the active response type for each SAML attribute to be supplied as a header.
4. Create a policy that binds the authorization rule and active response to implement the user of attributes as HTTP headers.

Set the Redirect Mode to Store SAML Attributes

After the consuming partner authenticates the user with the SAML assertion, the SAML attributes are written to the session store. The browser is then redirected to the target resource.

To redirect the browser with the attribute data

1. Log in to the FSS Administrative UI.
2. Access the SAML authentication scheme properties dialog.

   The properties dialog opens.
3. Set the Redirect Mode parameter to PersistAttributes.

   For SAML 1.x, the Redirect Mode is on the Scheme Setup tab. For SAML 2.0 and WS-Federation, the Redirect Mode is on the SSO tab accessed from the authentication scheme properties dialog.
4. Click OK to save your changes.

The redirect mode is now set to pass on the attribute data.

Create an Authorization Rule to Validate Users

For the realm containing the protected target resource, you need to create a rule that is triggered during the authorization process to retrieve the SAML attributes from the session store.

The rule is based on an authorization event (onAccessAccept) because the user has already been authenticated by the FWS application, therefore the Web Agent cannot re-authenticate the user and pass on the HTTP headers. So, the retrieval of the attributes must happen during the authorization stage.

To create an OnAccessAccept Rule for the realm

1. Log on to the FSS Administrative UI.
2. From the Domains tab, navigate to the realm which protects the target resource.
3. Select the realm with the target resource and choose Create Rule under Realm.

   The Rule Properties dialog opens.
4. Enter a name in the Name field that describes the rules purpose as an authorization rule.
5. Choose the realm protecting the target resource for the Realm field.
6. Enter an asterisk (*) in the Resource field.

7. Select Authorization events and OnAccessAccept in the Action group box..
8. Ensure that Enabled is checked in the Allow/Deny and Enable/Disable group box.
9. Click OK to save the rule.

The authorization rule is now defined for the realm with the protected resource.

Configure a Response to Send Attributes as HTTP Headers

You must configure a response that sends the SAML attributes as HTTP headers to the Web Agent. The Web Agent will process the response and make the header variables available to the client application.

To create a response to send the attributes as headers

1. Log on to the FSS Administrative UI.
2. From the Domains tab, select the domain that contains the target resource.
3. In the domain,select the Responses object and create a new response.

   The Response Properties dialog opens.
4. Click Create.

   The Response Attribute dialog opens.
5. Select WebAgent-HTTP-Header-Variable in the Attribute field.
6. Select Active Response in the Attribute Kind group box.
7. Complete the fields in the Attribute Fields group box as follows:

   Variable Name

   Specify the name you want for the header variable. You assign this name.

   Library Name

   smfedattrresponse

   This must be the entry for this field.

Function Name

getAttributeValue

This must be the entry for this field.

Parameters

Specify the name of the attribute as it appears in the assertion.

An agreement between you and your federated partner determines the attributes that will be in the assertion.

8. Click on OK to save the attribute.
9. Repeat the procedure for each attribute that should become an HTTP header variable. You can configure many attributes for a single response.

The response will send the attributes on to the Web Agent to become HTTP headers.

Create a Policy to Implement Attributes as HTTP Headers

To implement the use of SAML attributes as HTTP headers, you must group together the authorization event rule and active response in a policy.

To create the policy to generate HTTP Headers from SAML attributes

1. Log on to the FSS Administrative UI.
2. From the Domains tab, select the domain that contains the target resource.
3. In the domain, select the Policies object and create a new policy.

   The Policy Properties dialog opens.
4. Enter a descriptive name in the Name field.
5. Select the users that should have access to the protected resource in the Users tab.
6. Add the authorization rule you created previously on the Rules tab.
7. Select the authorization rule and click Set Response.

   The Available Responses dialog opens.
8. Select the active response you created previously and click OK.

   You return to the Rules tab. The response appears with the authentication rule.
9. Click OK to save the policy.

The policy that enables SAML attributes to be used as HTTP headers is complete.

Specify Redirect URLs for Failed SAML 1.x Authentication

For single sign-on processing, you can configure several optional redirect URLs if authentication at the consumer fails. The redirect URLs allow finer control over where a user is redirected if the assertion is not valid. For example, if a user cannot be located in a user store, you can fill in a User Not Found redirect URL and send the user to a registration page.

Note: These URLs are not required.

If you do not configure redirect URLs, standard SiteMinder processing takes place. How a failed authentication is handled depends on the configuration of the authentication scheme.

To configure optional redirect URLs

1. From the Authentication Scheme Properties dialog, click Additional Configuration.

   The SAML 1.x Auth Scheme Properties dialog opens.

2. Fill in a URL for one or more of the following fields:

   - Redirect URL for the User Not Found status
   - Redirect URL for the invalid SSO Message status
   - Redirect URL for the Unaccepted User Credential (SSO Message) status

   If you enter a value for the Redirect URL, you must also choose a mode.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Federation Web Services handles the errors by mapping the authentication reason into one of the configured redirect URLs, then the user can be redirected to that URL to report the error.

Note: These redirect URLs can be used in conjunction with the SiteMinder Message Consumer Plug-in for further assertion processing. If authentication fails, the plug-in can send the user to one of the redirect URLs you specify.

How To Protect a Resource with a SAML 1.x Authentication Scheme

At the consumer, you must configure a SAML 1.x artifact or POST profile authentication scheme for each producer that generates assertions. After that authentication scheme is created, you can use it to protect federation resources.

To protect a federation resource with a SAML authentication scheme:

1. Create a realm that uses the SAML authentication scheme. The realm is the collection of target resources being requested by users.

   There are two ways to set-up a realm that includes a SAML authentication scheme:

   - You can create a unique realm for each authentication scheme already configured.
   - You can configure a single target realm that uses a custom authentication scheme to dispatch requests to the corresponding SAML authentication schemes. Configuring one realm with a single target for all producers simplifies configuration of realms for SAML authentication.

2. After configuring a realm, configure an associated rule and optionally, a response.
3. Group the realm, rule, and response into a policy that protects the target resource.

Important! Each target URL in the realm is also identified in an intersite transfer URL. An intersite transfer URL redirects a user from the producer to the consumer, and the target URL is specified in the URL's TARGET variable. At the producer site, an administrator needs to include this URL in a link so that this link the user gets redirected to the consumer.

Configure a Unique Realm for Each SAML Authentication Scheme

The procedure for configuring a unique realm for each SAML authentication scheme (artifact or profile) follows the standard instructions for creating realms in the FSS Administrative UI.

To create a realm for each SAML authentication scheme

1. Log on to the FSS Administrative UI.
2. Click the System tab.
3. Click Edit, System Configuration, Create Domain.

   The Domain dialog opens.

4. Create a policy domain that will contain the realm with the target resources.
5. Create a realm under the policy domain you created in the previous step, noting the following:
   a. Select the Web Agent protecting the web server where the target federation resources reside for the Agent field.
   b. Select the SAML authentication scheme for the Authentication Scheme field. This is the SAML scheme that should protect the realm.
6. Create a rule for the realm.

   As part of the rule you select a Web Agent action (Get, Post, or Put), which allows you to control processing when users authenticate to gain access to a resource.

Note: You can click Help for a description of fields, controls, and their respective requirements.

The realm is now configured.

Form the Policy to Protect the Target Resource

After creating the realm, you add it to a policy that protects target federation resources.

Note: The following procedure assumes that a user directory has already been created.

To create a policy for the target federation resources

1. Log on to the FSS Administrative UI.
2. Expand the domain with the target realm.
3. Select the Policies object.

   The Policy Properties dialog opens.
4. Configure the policy, using the realm you previously created for federation resources.
5. Save the policy.
6. Exit the FSS Administrative UI.

For detailed information about creating policies, see the *Policy Server Configuration Guide*.

Configure a Single Target Realm for All SAML Authentication Schemes

To simplify configuration of realms for SAML authentication schemes, you can create a single target realm for multiple producing authorities.

To do this, set-up:

- A single custom authentication scheme

  This custom scheme forwards requests to the corresponding SAML authentication schemes, which should already be configured for each producing authority.

- A single realm with one target URL

More information:

Create the Custom Authentication Scheme (see page 290)
Configure the Single Target Realm (see page 292)

Create SAML Authentication Schemes for the Single Target Realm

Configure the necessary SAML authentication schemes that will be referenced by the custom authentication scheme associated with the single target realm. When you define the custom authentication scheme, you define a parameter that instructs the Policy Server which SAML authentication schemes the custom scheme can apply to resource requests.

To create the SAML authentication scheme

1. Log on to the FSS Administrative UI.
2. Create SAML authentication schemes according to the procedures in this guide for the SAML protocol you are using.
3. Exit the FSS Administrative UI.

More information:

SAML 1.x Authentication Schemes (see page 269)
SAML 2.0 Authentication Scheme Overview (see page 347)

Create the Custom Authentication Scheme

A single target realm relies on a specific custom authentication scheme to work properly.

To configure a custom authentication scheme for a single target realm

1. Log on to the FSS Administrative UI.
2. Select the System tab.

3. Select Edit, System Configuration, Create Authentication Scheme.

   The Authentication Scheme Properties dialog opens.

4. Complete the fields as follows:

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Name

   Enter a descriptive name to indicate this is a custom auth scheme, such as SAML Custom Auth Scheme.

5. Complete the following field in the Scheme Common Setup group box:

   Authentication Scheme Type

   Custom Template

6. Complete the following fields in the Scheme Setup tab

   Library

   smauthsinglefed

   Secret and Confirm Secret

   Leave this field blank.

   Confirm Secret

   Leave this field blank

   Parameter

   Specify one of the following:

   - SCHEMESET=LIST; <*saml-scheme1*>;<*saml_scheme2*>

     Specifies the list of SAML authentication scheme names to use. If you configured an artifact scheme called artifact_producer1 and POST profile scheme called samlpost_producer2, you will enter these schemes. For example:

     SCHEMESET=LIST;artifact_producer1;samlpost_producer2

   - SCHEMESET=SAML_ALL;

     Specifies all the schemes you have configured. The custom authentication scheme will enumerate all the SAML authentication schemes and find the one with the correct Provider Source ID for the request.

- SCHEMESET=SAML_POST;

  Specifies all the SAML POST Profile schemes you have configured. The custom authentication scheme will enumerate the POST Profile schemes and find the one with the correct Provider Source ID for the request.

- SCHEMESET=SAML_ART;

  Specifies all the SAML artifact schemes you have configured. The custom authentication scheme will enumerate the artifact schemes and find the one with the correct Provider Source ID for the request.

Enable this scheme for SiteMinder Administrators

Leave unchecked.

7. Click OK to save your changes.

Configure the Single Target Realm

After configuring the authentication schemes, including the custom authentication scheme, you can configure a single target realm for federation resources.

To create the single target realm

1. Log in to the FSS Administrative UI.
2. Select the Domains tab.
3. Select the policy domain you previously created for the single target realm.
4. Select the Realms object and select Edit, Create Realm.

   The Realm Properties dialog opens.

5. Enter the following values to create the single target realm:

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Name

   Enter a name for this single target realm.

6. Complete the following field in the Resource group box:

   Agent

   Select the SiteMinder Web Agent protecting the web server with the target resources.

Resource Filter

Specify the location of the target resources. This is the location where any user requesting a federated resource should be redirected.

For example, /FederatedResources.

7. Select the Protected radio button in the Default Resource Protection group box.
8. Select the previously configured custom authentication scheme in the Authentication Scheme group box. This is the custom authentication using the smauthsinglefed library.

   For example, if the custom scheme was named Fed Custom Auth Scheme, this is the scheme you would select.
9. Click OK.

The single target realm task is complete.

Configure the Rule for the Single Target Realm

Under the single target realm, configure a rule to protect the resources.

1. Select the single target realm.
2. Select Edit, *single target realm*, Create Rule under Realm.

   The Rule Properties dialog displays.
3. Enter values for the fields in the dialog.

   Note: You can click Help for a description of fields, controls, and their respective requirements.
4. Click OK.

The rule for the single target realm configuration is created. It can now be used in a policy.

Create a Policy Using the Single Target Realm

Create a policy that references the single target realm. Remember that the single target realm uses the custom authentication scheme that directs requests to the appropriate SAML/WS-Fed authentication scheme.

Note: This procedure assumes you have already configured the domain, custom authentication scheme, single target realm and associated rule.

To create a policy and add it to an existing domain

1. Log on to the FSS Administrative UI.
2. From the Domains tab, select the Policies object.

3. Click Edit, Create Policy.

   The Policy Properties dialog opens.

4. Enter a name and a description of the policy in the General group box.
5. Add users to the policy from the Users tab.
6. Add the rule you created for the single target realm from the Rules tab.

   The remaining tabs are optional.

7. Click OK.

The policy task is complete.

Access the Assertion Retrieval Service with a Client Certificate (optional)

This procedure is for single sign-on only with the artifact profile.

If you have configured single sign-on with the artifact profile, you can select client certificate authentication to protect the Assertion Retrieval Service at the producer. This service retrieves the assertion and sends it to the consumer.

Note: Client certificate authentication is optional; you can also use Basic authentication.

The SAML Artifact authentication scheme is invoked by the SAML credential collector, which collects information from the scheme to retrieve the SAML assertion from the producer. You are required to specify the authentication method for the realm that contains the Assertion Retrieval Service. This tells the SAML credential collector what type of credentials to provide to retrieve the assertion.

If the Assertion Retrieval Service is part of a realm using a client certificate authentication scheme, there are some configuration tasks at the consumer and the producer that you need to complete, as follows:

- At the consumer, select the client certificate option to indicate that a certificate will be presented as credentials.
- At the producer, create a policy to protect the Assertion Retrieval Service.

More Information:

Configure the Client Certificate Option at the Consumer (see page 295)
Protect the Assertion Retrieval Service at the Producer (see page 296)

Configure the Client Certificate Option at the Consumer

Do the following to enable client certificate authentication:

1. Select the Client Cert Option for Authentication (see page 295)
2. Add a Client Certificate to the Smkeydatabase (see page 295)

Select the Client Cert Option for Authentication

For the consumer to present a certificate as credentials when trying to access the Assertion Retrieval Service at the producer, select the client certificate option.

To select the client certificate option:

1. Go to the Scheme Setup tab of the SAML Artifact Authentication scheme dialog box.
2. Select Client Cert for the Authentication field.

Add a Client Certificate to smkeydatabase

To create and store a client certificate in the smkeydatabase file at the consumer:

1. Open a command window.
2. If necessary, create a key database by entering:

   smkeytool -createDB -password fedDB

3. Generate a key-pair combination.

   For example, to create a private key using the PKCS8 format enter:

   smkeytool -addPrivKey -alias CompanyA -keyfile idp1pkey.pkcs8 -certfile idp1.crt -password smdb

   This example assumes you are running smkeytool from the directory where the certificate and key are located, so there are no file paths necessary.

The certificate is now added to the smkeydatabase.

Notes on Creating a Private Key

- When you create a private key, the dname value, which specifies the consumer name, can be any attribute from the consumer's subject DN because the Policy Server at the producer site can use its certificate mapping functionality to map the consumer to a local user directory entry. This means that in the Certificate Mapping Properties dialog box of the FSS Administrative UI, you can use any of the values listed for the Attribute Name field in the Mapping information. In this example, CN is used; however, you can use other attributes, such as OU, O, UID.
- The value for alias associated with the private key should be same as the value of the Affiliate Name field specified in the Scheme Setup dialog for the SAML Artifact Authentication scheme. The attribute of the consumer's subject DN, represented in the example by the CN value, should also reflect the Affiliate Name value.

  For example, if you entered CompanyA as the Affiliate Name, then alias would be Company A, and the attribute could be CN=CompanyA, OU=Development, O=CA, L=Waltham, ST=MA, C=US
- To refer to the existing key store entry, subsequent keytool commands must use the same alias.
- The value for password should be same as the value of the Password field specified in the Scheme Setup dialog for the SAML Artifact Authentication Scheme.

Protect the Assertion Retrieval Service at the Producer

At the producer-side Policy Server, configure a policy to protect the Assertion Retrieval Service. The realm for this policy must use an X.509 client certificate authentication scheme.

More Information:

Protect the Artifact Resolution Service with Client Certificate Authentication (optional) (see page 339)

Chapter 12: Identify Service Providers for a SAML 2.0 Identity Provider

This section contains the following topics:

Configuration Checklist at the Identity Provider

Identifying a Service Provider to an Identity Provider is a task you complete at the SAML 2.0 Identity Provider because the Identity Provider needs information about the Service Provider to generate an assertion for that entity. Therefore, you identify the Service Provider to the Identity Provider and define how the two entities will communicate to pass assertions and to satisfy profiles, such as Web single sign-on or single logout.

- Required Configuration Tasks (see page 298)
- Optional Configuration Tasks (see page 299)

Tips:

- Certain parameter values at the Identity Provider and Service Provider must match for the configuration to work. A list of those parameters can be found in Configuration Settings that Must Use the Same Values (see page 497).
- To ensure you are using the correct URLs for the Federation Web Services servlets, a list of URLs can be found in Federation Web Services URLs Used in SiteMinder Configuration (see page 503).

Required Configuration Tasks to Identify a Service Provider

The tasks required to identity a Service Provider are in the following table.

Check Here	Required Task
	Create an affiliate domain
	Add a Service Provider to the affiliate domain and: ■ Specify the name of the Service Provider ■ Specify and protect the Authentication URL ■ Select users from a user store for which assertions will be generated ■ Specify the Name ID on the Name IDs tab ■ Specify the SP ID and the IdP ID on the General tab ■ Complete the Audience and Assertion Consumer Service fields on the SSO tab ■ Configure a single sign-on (SSO) profile

Note: You can save a Service Provider entity without configuring a complete SSO profile; however, you cannot pass an assertion to the Service Provider without configuring SSO.

Optional Configuration Tasks for Identifying a Service Provider

The following table lists option tasks for identifying a Service Provider.

Check Here	Optional Task
	Configure single sign-on restrictions: ■ Set IP address restrictions to limit the addresses used to access Service Providers. ■ Configure time restrictions for Service Provider operations.
	Enable enhanced client or proxy profile
	Configure attributes for inclusion in assertions
	Configure single logout (SLO)
	Configure the Identity Provider Discovery profile
	Encrypt the Name ID in the assertion and/or the entire assertion
	Sign the assertion and/or the entire assertion response. Customize a SAML response using the Assertion Generator plug-in

Add a SAML 2.0 Service Provider to an Affiliate Domain

To identify a Service Provider as a available consumer of SiteMinder-generated assertions, add the Service Provider to an affiliate domain configured at the Identity Provider's Policy Server. You then define the Service Provider's configuration so that the Identity Provider can issue assertions for it.

To add a Service Provider to an affiliate domain

1. Log into the FSS Administrative UI.
2. Display the list of domains.
3. Expand the AffiliateDomain object to reveal the SAML Service Providers object.
4. Select SAML Service Providers.
5. From the menu bar, select Edit, Create Service Provider.

   The SAML Service Provider Properties dialog opens.

6. Fill in the following fields at the top of the dialog:
   - Name
   - Description
   - Authentication URL
   - Use Secure URL
   - Application URL

   Note: You can click Help for a description of fields, controls, and their respective requirements.
7. Check Enabled to enable the Identity Provider to recognize the Service Provider you have identified.

More Information:

Protect the Authentication URL to Create a SiteMinder Session (SAML 2.0) (see page 337)
Integrate the Assertion Generator Plug-in with SiteMinder (SAML 2.0/WS-Federation) (see page 335)

Select Users For Which Assertions Will Be Generated

When you configure a Service Provider, you include a list of users and groups for which the Assertion Generator will generate SAML assertions. You may only add users and groups from directories that are in an affiliate domain.

To specify users and groups that have access to Service Provider resources

1. Log into the FSS Administrative UI.
2. Access the SAML Service Provider Properties dialog box and select the Users tab.

   If the associated affiliate domain contains more than one user directory, the directories appear as subordinate tabs on the Users tab.
3. Click the Add/Remove button.

   The Users/Groups dialog box opens.

4. To add users, select an entry from the Available Members list and click the Left Arrow button, which points to the Current Members list.

   The opposite procedure removes users from the Current Members list.

   You can select multiple entries by holding the CTRL or SHIFT key and clicking entries in one of the Members lists. When you select multiple entries and click one of the Arrow buttons, the FSS Administrative UI moves all of the selected entries.

   Individual users are not displayed automatically. However, you can use the Search utility to find a specific user within one of the listed groups. Different types of user directories must be searched differently.

5. Click OK to save your changes.

Exclude a User or Group from Service Provider Access

You can exclude users or groups of users from obtaining an assertion. This is useful if you have a large user group that should have access to a Service Provider, but you there is a small subset of this group that you want to exclude.

To exclude a user or group from access to an Service Provider's resources

1. In the Users/Groups dialog box, select a user or group from the Current Members list.
2. To exclude the selected user or group, click Exclude.

   The symbol to the left of the user or group in the Current Members list changes to indicate that the user or group is excluded from the Service Provider.

3. Click OK.

Allow Nested LDAP Groups Service Provider Access

LDAP user directories may contain groups nested in other groups. In complex directories, large amounts of user information may be organized in a nested hierarchy.

If you enable a Service Provider to search for users in nested groups, any subset group from a larger group that you add to a policy is searched by the Policy Server. If you do not enable nested groups, the Policy Server only searches the single group you specify for the Service Provider.

To allow the Service Provider to search nested groups in an LDAP user directory:

1. From the Users tab, select the Allow Nested Groups check box to enable nested groups searching for the Service Provider.
2. If the associated affiliate domain contains more than one user directory, the directories appear as tabs on the User tab.

Add Users by Manual Entry for Access to a Service Provider

From the Users/Groups dialog box, you can use the Manual Entry option to add users who can access the Service Provider resources.

To add a user by manual entry:

1. In the Manual Entry group box, do one of the following:
   - For LDAP directories, enter a valid DN in the Entry field.

     For each DN specified in the Entry field, you can select an action from the Action drop down list, as follows:

     Search Users--the LDAP search is limited to matches in user entries.

     Search Groups--the LDAP search is limited to matches in group entries.

     Search Organizations--the LDAP search is limited to matches in organization entries.

     Search Any Entry--the LDAP search is limited to matches in user, group, and organization entries.

     Validate DN--the LDAP search locates this DN in the directory.

   - For Microsoft SQL Server, Oracle and WinNT directories, enter a user name in the Manual Entry field.

     For an Microsoft SQL Server or Oracle, you can enter a SQL query instead. For example:

     SELECT NAME FROM EMPLOYEE WHERE JOB ='MGR';

     The Policy Server performs the query as the database user specified in the Username field of the Credentials and Connection tab for the user directory. When constructing the SQL statement for the Manual Entry field, you need to be familiar with the database schema for the user directory. For example, if you are using the SmSampleUsers schema and want to add specific users, you could select a user entry from the SmUser table.

   Note: For an LDAP directory, you can enter all in the Manual Entry field to add all directory entries to the Service Provider.

2. Click Add to Current Members.

   The FSS Administrative UI adds the user or query to the Current Members list.

3. Click OK to save your changes.

Specify Name Identifiers for SAML 2.0 Assertions

A name ID names a user in an assertion in a unique way. The value you configure in the FSS Administrative UI will be included in the assertion sent to the Service Provider.

The format of the name ID establishes the type of content used for the ID. For example, the format might be the User DN, in which case the content would be a uid.

You can encrypt a Name ID; however, if you are using single sign-on with the artifact binding, encrypting a NameID along with other data in an assertion increases the size of the assertion.

More Information:

Encrypt a NameID and an Assertion (see page 331)
Allow the Identity Provider to Assign a Value for the NameID (see page 314)

Configure a Name ID

To configure a name ID

1. Log in to the FSS Administrative UI and access the Service Provider entry you want to configure.
2. Select the Name IDs tab on the SAML Service Providers dialog box.
3. Select the Name ID Format.

   For a description of each format, see Section 8.3 of the *Assertions and Protocols for the OASIS Security Assertion Markup Language (SAML) V2.0* specification (sstc-saml-core-2.0-cd-04.pdf).

4. Choose the Name ID Type from the following options:
   - Static value
   - User attribute
   - DN attribute (with or without nested groups)

   The contents of the Name ID Fields group box change according to the Name ID Type selected.
5. Complete the fields for the selected Name ID Type.

Note: If you configure Name IDs, do not select an affiliation in the SAML Affiliation field. Name IDs and affiliations are mutually exclusive.

Configure a SAML 2.0 Affiliation (Optional)

If you configure an affiliation, all the Name ID settings are disabled; only the affiliation settings will be relevant.

An affiliation can be a group of Service Providers or Identity Providers. In this case, we are referring to an affiliation of Service Providers. If there is an established federated relationship between an Identity Provider and a Service Provider and that Service Provider is part of an affiliation, then the name identifier for that Service Provider will be the same identifier for all Service Providers in the affiliation.

To select an affiliation, choose an affiliation from the drop-down list for this Service Provider.

Configure Required General Information

Select the General tab to configure required items, such as the ID of the Service Provider and Identity Provider, the SAML version being used for generating assertions.

To configure the general settings:

1. Log in to the FSS Administrative UI.
2. Open the SAML Service Provider Properties dialog box.
3. Select the General tab.
4. Fill-in values for these required fields.
   - SP ID
   - IdP ID
   - Skew Time

More Information:

Set the Skew Time Between the IdP and SP (see page 305)

Set the Skew Time Between the IdP and SP

In the Skew Time field on the General tab, enter the difference, in seconds, between the system clock at the Identity Provider and the system clock at the Service Provider.

Set the Skew Time for Single Sign-on

For Single Sign-on, the values of the SSO Validity Duration (Validity Duration field set on the SSO tab) and Skew Time instruct how the assertion generator calculates the total time that an assertion is valid. In the assertion document, the beginning and end of the validity interval is represented by the NotBefore and NotOnOrAfter values.

Note: The SSO Validity Duration is a different value from the SLO Validity Duration.

To determine the beginning of the validity interval, the assertion generator takes the system time when the assertion is generated and sets the IssueInstant value in the assertion according to this time. It then subtracts the Skew Time value from the IssueInstant value. The resulting time becomes the NotBefore value.

To determine the end of the validity interval, the assertion generator adds the Validity Duration value and the Skew Time together. The resulting time becomes the NotOnOrAfter value. Times are relative to GMT.

For example, an assertion is generated at the Identity Provider at 1:00 GMT. The skew time is 30 seconds and the validity duration is 60 seconds, making the assertion validity interval between 12:59:30 GMT and 1:01:30 GMT. This interval begins 30 seconds prior to the time the assertion was generated and ends 90 seconds afterward.

Set the Skew Time for Single Logout Request Validity

For Single Logout, the values of the SLO validity duration (Validity Duration field on the SLO tab) and Skew Time instruct the Policy Server how to calculate the total time that the single logout request is valid.

Note: The SLO Validity Duration is a different value from the SSO Validity Duration.

The two values that are relevant in calculating when the logout request is valid are referred to as the IssueInstant value and the NotOnOrAfter value. In the SLO response, the single logout request is valid until the NotOnOrAfter value.

When a single logout request is generated, the Policy Server takes its system time. The resulting time becomes the IssueInstant set in the request message.

To determine when the logout request is no longer valid, the Policy Server takes its current system time and adds the Skew Time plus the SLO Validity Duration together. The resulting time becomes the NotOnOrAfter value. Times are relative to GMT.

For example, a log out request is generated at the Identity Provider at 1:00 GMT. The Skew Time is 30 seconds and the SLO Validity Duration is 60 seconds. Therefore, the request is valid between 1:00 GMT and 1:01:30 GMT. The IssueInstant value is 1:00 GMT and the single logout request message is no longer valid 90 seconds afterward.

Set a Password for SAML Artifact Back Channel Authentication

If you use the HTTP-Artifact binding for SAML 2.0 single sign-on, the assertion is sent from the Identity Provider, across a secure back channel, to the Service Provider. You need to configure a password for the Service Provider to be granted access to the Artifact Resolution Service, which will resolve the artifact and retrieve the assertion.

Note: The password is only relevant if you use Basic or Basic over SSL as the authentication method across the back channel; however, you must configure a password regardless of which authentication method you plan to use.

To configure a password for HTTP-Artifact binding:

1. Open the SAML Service Provider Properties dialog.
2. On the General tab, click Configure Backchannel Authentication.

   The Backchannel Properties dialog opens.

   Note: The Configure Backchannel Authentication button is only active if you select HTTP-Artifact on the SSO tab.

3. Enter a value for the following fields:
   - Password
   - Confirm Password
4. Click OK.

   You return to the SAML Service Provider Properties dialog.

WebLogic Configuration Required for Back Channel Authentication

If you installed the Web Agent Option Pack on a WebLogic 9.2.*x* application server at the Identity Provider, you have to set the <enforce-valid-basic-auth-credentials> element to false for Basic authentication across the artifact back channel to work.

In the WebLogic config.xml file for the application domain, set the <enforce-valid-basic-auth-credentials> within the <security-configuration> element as follows:

<enforce-valid-basic-auth-credentials>false</enforce-valid-basic-auth-credentials>

Validate Signed AuthnRequests and SLO Requests/Responses

By default, signature processing is enabled because it is required by the SAML 2.0 specification; therefore, it *must* be enabled in a production environment. SAML 2.0 POST responses and single logout requests are always signed by SiteMinder; signing does not require configuration using the FSS Administrative UI.

For signing, the only setup required is that you have to add the private key and certificate of the authority responsible for signing to the smkeydatabase.

Important! For debugging purposes only, you can temporarily disable all signature processing (both signing and verification of signatures) by checking the Disable Signature Processing option.

To validate signatures of AuthnRequests from a Service Provider, or single logout requests and responses, there are configuration steps in the FSS Administrative UI and the smkeydatabase.

To set-up validation:

1. Add the public key to the Identity Provider's smkeydatabase.

   The public key must correspond to the private key and certificate that the Service Provider used to do the signing.

2. In the FSS Administrative UI, select one or both of the following check boxes:

   - Require Signed AuthnRequests (on the SSO tab)

     If you select this check box, the Identity Provider will require a signed authnrequest and then validate the signature of the request. If the authnrequest is not signed, it will be rejected.

     Important: If you sign AuthnRequests, no unsolicited responses can be sent from the Identity Provider.

   - HTTP-Redirect (on the SLO tab)

     If you select this check box, the Identity Provider will validate the signature of the SLO request and response.

3. Complete the Issuer DN and Serial Number fields on the General tab.

   The Issuer DN and Serial Number fields become active only after the Require Signed AuthnRequests or the HTTP-Redirect check box is selected. The values you enter for these fields should match the public key in the smkeydatabase that corresponds to the private key and certificate of the authority that signed the requests. We recommend you open a command window and enter the command smkeytool -lc to list the certificates and view the DN to ensure that you enter a matching value.

More Information:

Manage the Key Database for Signing and Encryption (see page 471)

Configure Single Sign-on for SAML 2.0

The Service Provider and the Identity Provider exchange user information, session information and Identity Provider information in an assertion document. When you configure single sign-on at SAML 2.0 Identity Provider, you determine how the Identity Provider delivers an assertion to a Service Provider.

To configure single sign-on at the Identity Provider

1. Log on to the FSS Administrative UI.
2. Select a Service Provider entry.
3. Right-click the entry to access the SAML Service Provider Properties dialog for the selected Service Provider.
4. Select the SSO tab.
5. Complete the fields on the SSO tab.

   Refer to the SAML 2.0 Service Provider reference for field descriptions.
6. Click OK to save your changes.

You have now defined the single sign-on settings to at the Identity Provider that will be used to communicate with the Service Provider.

Define Indexed Endpoints for the Assertion Consumer Service

When the single sign-on service extracts an ACS Index value from a Service Provider's AuthnRequest, it compares the index value to its list of index entries and determines the Assertion Consumer Service URL associated with that index value. The single sign-on service then knows where to send the assertion or artifact, depending on the binding associated with the index value.

To configure index entries at the Identity Provider

1. Log in to the FSS Administrative UI.
2. Display the list of domains and from the Affiliate domain, select the Service Provider you want to configure.

   The SAML Service Provider Properties dialog opens.
3. Select the SSO tab.
4. Click the ellipses button at the end of the Assertion Consumer Service field.

   The Assertion Consumer Service dialog opens.
5. Click on Add to define an index entry.

   The Add Assertion Consumer Service dialog opens.

6. Complete the following required fields:
   - Index
   - Binding
   - Assertion Consumer Service URL

   Note: You can use different index values assigned to the same Assertion Consumer Service URL.
7. Click OK to save your changes.

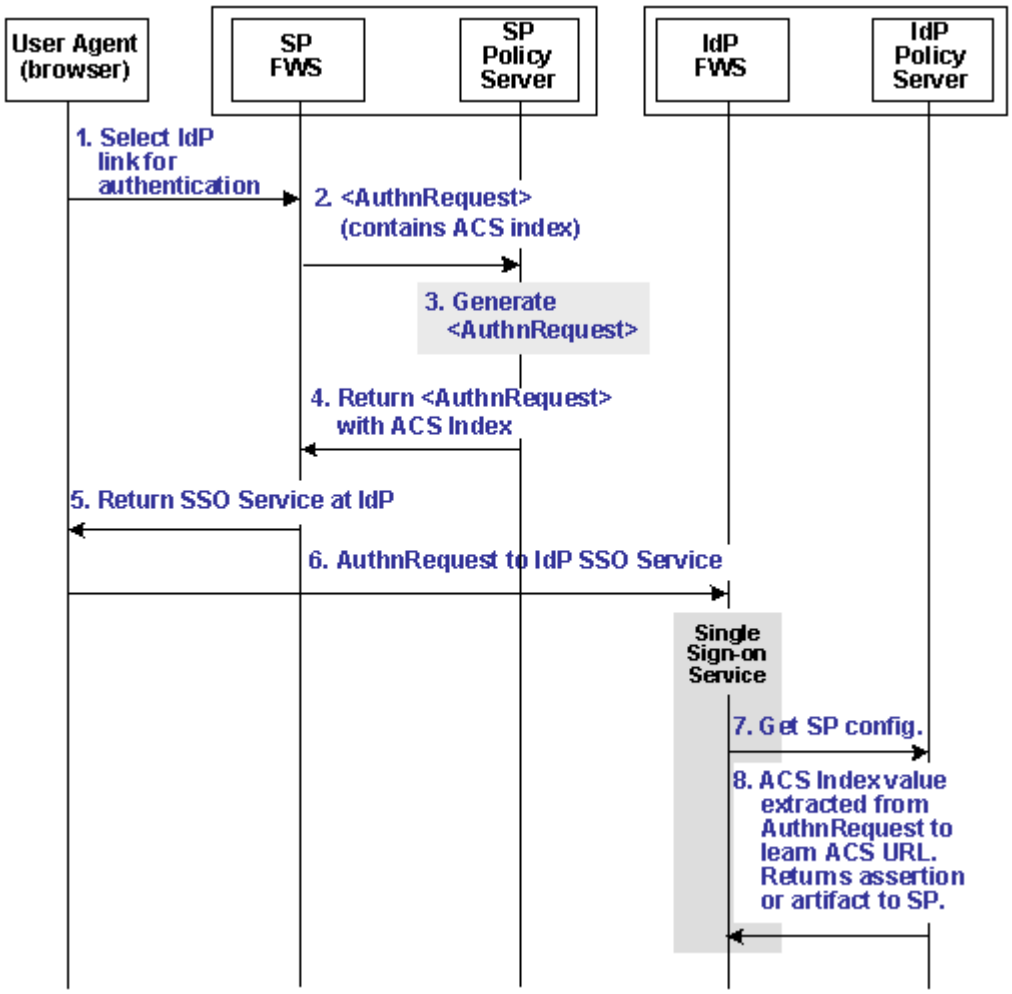
Note: Remember to configure index entries in the SAML 2.0 authentication scheme at the Service Provider.

More Information:

Specify Single Sign-on Bindings at the SP (see page 358)

Indexed Endpoints Flow Diagram

The following diagram shows how single sign-on works using an indexed endpoint.



Note: The Web Agent Option Pack or the SPS federation gateway can provide the FWS functionality.

Using indexed endpoints, the sequence of events is as follows:

1. The user selects a link to authenticate with a specific IdP. The link contains the IdP ID and AssertionConsumerServiceIndex query parameters index as query parameters because the index feature is enabled.
2. The SP Federation Web Services (FWS) application asks for an AuthnRequest from its local Policy Server. In the request it sends, it includes the IdP ID and optionally, the AssertionConsumerServiceIndex and ForceAuthn query parameters.

   Note: A protocol binding is not part of the request because the ACS Index and the Protocol Binding parameters are mutually exclusive. The AssertionConsumerServiceIndex is already associated with a binding so there is no need to specify a Protocol Binding value. If the protocol binding and the AssertionConsumerServiceIndex are passed as query parameters in the AuthnRequest, the local Policy Server responds with an error denying the request.
3. The AuthnRequest service extracts the IdP information from the SP Policy Server and generates the AuthnRequest message, which includes the AssertionConsumerServiceIndex. Because the AssertionConsumerServiceIndex is one of the query parameters, its value is checked against the IdP metadata collected from an IdP descriptor document previously sent from the IdP to the SP.

   The AuthnRequest service reacts as follows:

   - If the index for the artifact binding is set in the IdP metadata, this index is compared to the AssertionConsumerServiceIndex value. If the values match, the index value remains part of the AuthnRequest. If the index values do not match, the IdP metadata is checked to see if the AssertionConsumerServiceIndex corresponds to the POST binding.
   - If the index corresponding to the HTTP-POST binding, this index value is again compared with the AssertionConsumerServiceIndex in the AuthnRequest. If the value of the AssertionConsumerServiceIndex parameter does not match the POST binding, the AuthnRequest service generates an error stating that the AssertionConsumerServiceIndex does not match the index in the IdP metadata.
4. Assuming that the IdP metadata index and AssertionConsumerServiceIndex values match, the SP Policy Server generates the AuthnRequest.
5. The SP Policy Server returns the AuthnRequest in an HTTP-redirect binding.

6. The AuthnRequest is then redirected by the SP FWS application to the single sign-on service at the IdP. The SP knows the URL of the single sign-on service because the URL is part of the configuration information in the AuthnRequest.
7. The browser requests the single sign-on service.
8. The single sign-on service extracts the AssertionConsumerServiceIndex value from the AuthnRequest. The service determines the Assertion Consumer Service URL based on the AssertionConsumerServiceIndex, unless the value of the Index is not found in the SP metadata. If the Index is not found, an error is generated stating that an invalid AssertionConsumerServiceIndex is specified in the AuthnRequest message.

   The Assertion Consumer URL is used by the single sign-on service to send the assertion or artifact to the SP, depending on the binding associated with the SP.

   Note: If the AssertionConsumerServiceIndex parameter is not specified in the incoming AuthnRequest, the value of the Assertion Consumer Service and the corresponding binding are used by default.

Define Indexed Endpoints for Different Single Sign-on Bindings

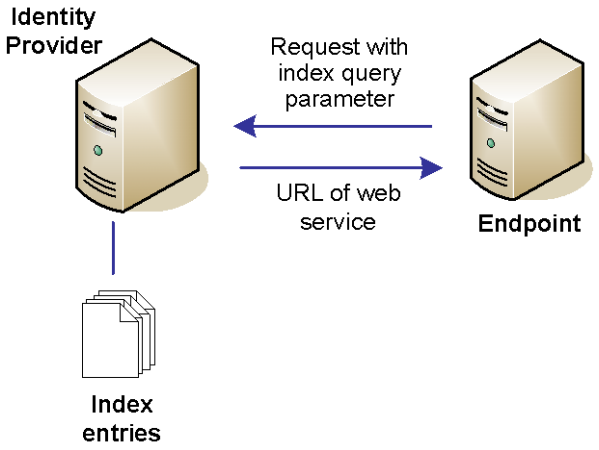
Federation Security Services offers you the ability to configure indexed endpoints. An indexed endpoint is the site where assertions are consumed. In the context of SiteMinder, this endpoint is the Service Provider where the Assertion Consumer Service resides.

Each endpoint you configure is assigned a unique index value, instead of an single, explicit reference to an Assertion Consumer Service URL. The assigned index is added to a Service Provider's request for an assertion that it sends to the Identity Provider.

You can configure indexed endpoints for a SiteMinder Service Provider that has a federated relationship with a third party Identity Provider that supports indexed endpoints. You may also want to configure different protocol bindings (artifact vs. POST) for the Assertion Consumer Service by assigning more than one endpoint to the service.

Note: If your federated network contains a mix of SiteMinder versions, for example, the Service Provider is version 6.0 SP 4 and the Identity Provider is version 6.0 SP 5, you cannot configure indexed endpoints. Simply configure only one Assertion Consumer Service for both HTTP bindings.

The following figure shows a network that benefits from indexed endpoints.



Enforcing the Authentication Scheme Protection Level for SSO

When a user requests a federated resource, they must have a SiteMinder session. If a user does not have a SiteMinder session, the user is redirected to the Authentication URL to establish a session. The authentication scheme protecting the Authentication URL is configured with a particular protection level. This protection level must be the same or greater than the level you configure in the Authentication Level field on the SAML Service Provider Properties dialog.

If the protection level for the Authentication URL is less than the level set in the Authentication Level field, SiteMinder will not generate an assertion.

Allow the Identity Provider to Assign a Value for the NameID

As part of a single sign-on request, a Service Provider may request a particular user attribute to be included the assertion; however, the value of the required attribute may not be available in the user record at the Identity Provider.

If the Service Provider's request includes the Allow/Create attribute and the Identity Provider is configured to create a new identifier, the Policy Server at the Identity Provider will generate a unique value as part of the NameID. This value is then included in the assertion that is sent back to the Service Provider.

When the Service Provider receives the assertion, the SAML 2.0 authentication scheme processes the response, performs a user lookup in its local user store, and assuming the user record is located, the user is granted access.

Enable the Creation of a Name Identifier

To enable the creation of a new name identifier for single sign-on

1. Log in to the FSS Administrative UI.
2. Display the list of domains and from the Affiliate domain, select an existing Service Provider or create a new Service Provider.

   The SAML Service Provider Properties dialog opens.
3. Select the SSO tab.
4. Check the Allow Creation of New Identifier check box.
5. Click OK.

Configure IP Address Restrictions for Service Providers (optional)

The FSS Administrative UI allows you to specify an IP address, range of IP addresses, or a subnet mask of the Web server on which a user's browser must be running for the user to access a Service Provider. If IP addresses have been specified for a Service Provider, only users who access the Service Provider from the appropriate IP addresses will be accepted by the Service Provider.

To specify IP addresses

1. Log in to the FSS Administrative UI and select the Service Provider you want to configure.
2. Open the SAML Service Provider Properties dialog box.
3. Select the SSO tab, then click on Restrictions.
4. Click Add.

   The Add an IP Address dialog box opens.
5. Select one of the following radio buttons to indicate the type of IP address value you are adding:

   Note: If you do not know the IP address, but you have a domain name for the address, you can click on the DNS Lookup button to open the DNS Lookup dialog box. Enter a fully qualified host name in the Host Name field and click OK.

   - Single Host--specifies a single IP address that hosts the user's browser. If you specify a single IP address, the Service Provider can only be accessed by users from the specified IP address.
   - Host Name--specifies a Web server using its host name. If you specify a host name, the Service Provider is only accessible to users who access it from the specified host.

- Subnet Mask--specifies a subnet mask for a Web server. If you specify a subnet mask, the Service Provider is only accessible to users who access the Service Provider resources from the specified subnet mask. If you select this button, the Add An Address and Subnet Mask dialog opens. Use the Left and Right arrow buttons, or click and drag the slider bar to select a subnet mask.
- Range--specifies IP address range. If you specify a range of IP addresses, the Service Provider only permits users who access the Service Provider resources from one of the IP addresses in the range of addresses. You enter a starting (FROM) and ending (TO) addresses to determine the range.

6. Click OK to save your configuration.

Configure Time Restrictions for Service Provider Availability (optional)

You can specify time restrictions that indicate a Service Provider's availability. When you add a time restriction, the Service Provider functions only during the period specified. If a user attempts to access a resource outside of that period, the Identity Provider does not produce SAML assertions.

Note: Time restrictions are based on the system clock of the server on which the Policy Server is installed.

To specify a time restriction:

1. Log in to the FSS Administrative UI and select the Service Provider you want to configure.
2. Open the SAML Service Provider Properties dialog box.
3. Select the SSO tab, then click on Restrictions.
4. In the Time Restrictions group box, click Set.

   The Time dialog box opens. This dialog box is identical to the Time Restrictions dialog box used for rule objects.
5. Click OK.

Allow Access to the Federation Web Services Application

After you add affiliates to an affiliate domain, the affiliates need permission to access the Federation Web Services application. When you install the Policy Server, the FederationWebServicesDomain is installed by default. This domain includes the following policies:

- FederationWSAssertionRetrieval
- FederationWSNotificationService
- FederationWSSessionServicePolicy
- SAML2FWSArtifactResolutionServicePolicy

To specify permission to the Federation Web Services application

1. From the Domains tab, expand FederationWebServicesDomain and select Policies.
2. Select one of the policies, and click Edit, Properties of Policy.

   For SAML 1.x, you need to permit access to:

   - FederationWSAssertionRetrieval
   - FederationWSNotificationService
   - FederationWSSessionServicePolicy

   For SAML 2.0, you need to permit access to SAML2FWSArtifactResolutionServicePolicy

   The SiteMinder Policy dialog opens.
3. From the Users tab, select one of the following:

   - FederationWSCustomUserStore tab for SAML 1.x
   - SAML2FederationCustomUserStore tab for SAML 2.0.

   The Users/Groups dialog opens.

   The consumers, Service Providers, and Resource Partners are the "users" included in the listed user stores.
4. Click Add/Remove on the appropriate tab.
5. From the Available Members list, choose the affiliate domains that should have access to Federation Web Services then move them to the Current Members list.
6. Click OK to return to the Policy List.
7. Repeat this procedure for all policies relevant for the SAML version you are using.

Set Up Links at the IdP or SP to Initiate Single Sign-on

To initiate single sign-on, the user can begin at the Identity Provider or the Service Provider. You need to configure the appropriate links at each site to trigger single sign-on operation.

Identity Provider-initiated SSO (POST or artifact binding)

If a user visits the Identity Provider before going to the Service Provider, an unsolicited response at the Identity Provider needs to be initiated. To initiate an unsolicited response, you need to create a hard-coded link that generates an HTTP Get request that is accepted by the Federation Web Service application and the Assertion Generator. This HTTP Get request must contain a query parameter that provides the Service Provider ID for which the Identity Provider needs to generate the SAML assertion response. A user clicks this link to initiate the unsolicited response.

To specify the use of artifact or POST profile in the unsolicited response, the syntax for the unsolicited response link is:

http://*idp_server:port*/affwebservices/public/saml2sso?SPID=*SP_ID*&
ProtocolBinding=*URI_for_binding*

idp_server:port

Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

SP_ID

Service Provider ID value.

URI_for_binding

Identifies the URI of the POST or Artifact binding for the ProtocolBinding element. This URI is defined by the SAML 2.0 specification.

The binding must also be specified in the SAML Service Provider properties for the unsolicited response to work.

Note the following:

- If you do not include the ProtocolBinding query in the link, and only one binding is configured in the Service Provider properties, that binding is used.
- If artifact and POST are enabled in the Service Provider properties POST is the default. Therefore, if you want to *only* use artifact binding, you must include the ProtocolBinding query parameter in the link.

Important! If you configure indexed endpoint support for Assertion Consumer Services, the binding you choose for the Assertion Consumer Service is overridden by the value of the ProtocolBinding query parameter in the link for an unsolicited response.

More information:

Unsolicited Response Query Parameters Used by a SiteMinder IdP (see page 319)

Unsolicited Response Query Parameters Used by a SiteMinder IdP

An unsolicited response that initiates single sign-on from the IdP can include the following query parameters:

- SPID
- ProtocolBinding
- RelayState

SPID

(Required) Specifies the ID of the Service Provider where the Identity Provider sends the unsolicited response.

ProtocolBinding

Specifies the ProtocolBinding element in the unsolicited response. This element specifies the protocol used when sending the assertion response to the Service Provider. If the Service Provider is not configured to support the specified protocol binding, the request will fail.

Required Use of the ProtocolBinding Query Parameter

Use of the ProtocolBinding query parameter is required *only* if artifact and POST binding are enabled for the Service Provider properties and the user wants to only use artifact binding.

- The URI for the artifact binding, as specified by the SAML 2.0 specification is:

  urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact

- The URI for the POST binding, as specified by the SAML 2.0 specification is:

  urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST

  You do not need to set this parameter for HTTP-POST single sign-on.

Note: You do not need to HTTP-encode the query parameters.

Example: Unsolicited Response with ProtocolBinding

This link redirects the user to the Single Sign-on service. Included in this link is the Service Provider identity, specified by the SPID query parameter and the artifact binding is being used, as specified by the bindings query parameter. After the user clicks this hard coded link, they are redirected to the local Single Sign-on service.

http://idp-ca:82/affwebservices/public/saml2sso?SPID=http%3A%2F%2Ffedsrv.acme.com%2Fsmidp2for90&ProtocolBinding=urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact

Optional Use of the ProtocolBinding Query Parameter

When you *do not* use the ProtocolBinding query parameter the following applies:

- If only one binding is enabled for the Service Provider and the ProtocolBinding is not specified in the unsolicited response, the enabled binding is used.
- If both bindings are enabled for the Service Provider and the ProtocolBinding is not specified in the unsolicited response, the POST binding is used by default.

Example: Unsolicited Response without ProtocolBinding

This link redirects the user to the Single Sign-on service. Included in this link is the Service Provider identity, specified by the SPID query parameter. There is no ProtocolBinding query parameter. After the user clicks this hard coded link, they are redirected to the local Single Sign-on service.

http://fedsrv.fedsite.com:82/affwebservices/public/saml2sso?SPID=http%3A%2F%2Ffedsrv.acme.com%2Fsmidp2for90

RelayState

Specifies the target at the Service Provider. You can use the RelayState query parameter to indicate the target destination; however, this method is optional because there may be a configuration mechanism at the Service Provider itself to indicate the target.

Example

http://ca.sp.com:90/affwebservices/public/saml2authnrequest?ProviderID=http%3A%2F%2Ffedsrv.acme.com%2Fsmidp2for90&RelayState=http%3A%2F%2Fwww.spdemo.com%2Fapps%2Fapp.jsp

Service Provider-initiated SSO (POST or artifact binding)

If a user visits the Service Provider first and then goes to an Identity Provider, you have to create an HTML page at the Service Provider containing hard-coded links to the AuthnRequest service at the Service Provider. These links redirect the user to the Identity Provider to be authenticated as well as determining what is included in the AuthnRequest itself.

The hard-coded link that the user selects must contain specific query parameters. These parameters are supported by an HTTP GET request to the AuthnRequest service at the Service Provider's Policy Server.

Note: The page with these hard-coded links has to reside in an unprotected realm.

To specify the use of artifact or profile binding for the transaction, the syntax for the link is:

http://*SP_server*/affwebservices/public/saml2authnrequest?ProviderID=*IdP_ID*&
ProtocolBinding=*URI_of_binding*

sp_server:port

Specifies the server and port number at the Service Provider that is hosting the Web Agent Option Pack or the SPS federation gateway.

IdP_ID

Specifies the identity assigned to the Identity Provider

URI_for_binding

Identifies the URI of the POST or Artifact binding for the ProtocolBinding element. This URI is defined by the SAML 2.0 specification.

A binding must also be enabled for the SAML authentication scheme for the request to work.

Note the following:

- If you do not include the ProtocolBinding query parameter in the AuthnRequest link, the default binding used is the one defined for the authentication scheme. If you have both bindings defined in the authentication scheme, then no binding is passed in the AuthnRequest. As a result, the default binding defined at the Identity Provider is used.
- If artifact and POST are enabled for the SAML authentication scheme, but you only want to use artifact binding, you must include the ProtocolBinding query parameter in the link..

AuthnRequest Query Parameters Used by a SiteMinder SP

The query parameters a SiteMinder Service Provider can use in the links to the AuthnRequest Service are as follows:

ProviderID (required)

ID of the Identity Provider where the AuthnRequest message is sent by the AuthnRequest Service.

ProtocolBinding

Specifies the ProtocolBinding element in the AuthnRequest message. This element specifies the protocol used to return the SAML response from the Identity Provider. If the specified Identity Provider is not configured to support the specified protocol binding, the request will fail.

If you use this parameter in the AuthnRequest, you cannot include the AssertionConsumerServiceIndex parameter also. They are mutually exclusive.

Required Use of the ProtocolBinding Query Parameter

Use of the ProtocolBinding parameter is required if artifact and POST binding are enabled for an authentication scheme and the user wants to use only the artifact binding.

- The URI for the artifact binding, as specified by the SAML 2.0 specification is:

  urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact

- The URI for the POST binding as specified by the SAML 2.0 specification is:

  urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST

  You do not need to set this parameter for HTTP-POST single sign-on.

Example: AuthnRequest Link with ProtocolBinding

```
http://ca.sp.com:90/affwebservices/public/saml2authnrequest?ProviderID=
http%3A%2F%2Ffedsrv.acme.com%2Fsmidp2for90&ProtocolBinding=urn:oasis:
names:tc:SAML:2.0:bindings:HTTP-Artifact
```

After a user clicks the link at the Service Provider, the Federation Web Services application passes a request for an AuthnRequest message from the local Policy Server.

Optional Use of ProtocolBinding

When you *do not* use the ProtocolBinding query parameter the following applies:

- If only one binding is enabled for the authentication scheme and the ProtocolBinding query parameter is not specified, the enabled binding for the authentication scheme is used.
- If both bindings are enabled and the ProtocolBinding query parameter is not specified, POST binding is used as the default.

Note: You do not need to HTTP-encode the query parameters.

Example: AuthnRequest Link without ProtocolBinding

This sample link goes to the AuthnRequest service. It specifies the Identity Provider in the ProviderID query parameter.

http://ca.sp.com:90/affwebservices/public/saml2authnrequest?ProviderID=
http%3A%2F%2Ffedsrv.acme.com%2Fsmidp2for90

After a user clicks the link at the Service Provider, the Federation Web Services application passes a request for an AuthnRequest message from the local Policy Server.

ForceAuthn

Instructs the Identity Provider that it must authenticate a user directly instead of relying on an existing security context. Use this query parameter when the Identity Provider is not using SiteMinder but using a third-party federation software.

Example

http://www.sp.demo:81/affwebservices/public/saml2authnrequest?ProviderID=idp.demo&ForceAuthn=yes

RelayState

Specifies the target at the Service Provider. You can use the RelayState query parameter to indicate the target destination, but this method is optional. Instead, you can specify the target in the SAML 2.0 authentication scheme configured using the FSS Administrative UI. The authentication scheme also has an option to override the target with the RelayState query parameter if you choose.

Example

http://www.spdemo.com:81/affwebservices/public/saml2authnrequest?ProviderID=
idp.demo&RelayState=http%3A%2F%2Fwww.spdemo.com%2Fapps%2Fapp.jsp

IsPassive

Determines whether or not the Identity Provider can interact with a user. If this query parameter is set to true, the Identity Provider must not interact with the user. Additionally, the IsPassive parameter is included with the AuthnRequest sent to the Identity Provider. If this query parameter is set to false, the Identity Provider may interact with the user.

Example

http://www.spdemo.com:81/affwebservices/public/saml2authnrequest?ProviderID=idp.demo&RelayState=http%3A%2F%2Fwww.spdemo.com%2Fapps%2Fapp.jsp&IsPassive=true

AssertionConsumerServiceIndex

Specifies the index of the endpoint acting as the assertion consumer. It tells the Identity Provider where to send the assertion response.

If you use this parameter in the AuthnRequest, you cannot include the ProtocolBinding parameter also. They are mutually exclusive.

Query Parameter Processing by a SiteMinder IdP

If single sign-on is initiated by a Service Provider, that Service Provider may include a ForceAuthn or IsPassive query parameter in an AuthnRequest message.

When a Service Provider includes ForceAuthn or IsPassive in the AuthnRequest, a SiteMinder Identity Provider handles these query parameters as follows:

ForceAuthn Handling

When a Service Provider includes ForceAuthn=True in the AuthnRequest, a SiteMinder Identity Provider does the following:

- If ForceAuthn=True in the AuthnRequest message, and a SiteMinder session exists, the Identity Provider disregards the existing session and re-challenges the user for credentials. If the user successfully authenticates, a new session is established.
- If ForceAuthn=True in the AuthnRequest message and there is no SiteMinder session, the SiteMinder Identity Provider challenges the user for their credentials. If the user successfully authenticates, a session is established.

IsPassive Handling

When a Service Provider includes IsPassive in the AuthnRequest and it cannot be honored by the Identity Provider, one of the following SAML responses is sent back to the Service Provider:

- If IsPassive=True in the AuthnRequest message and there is no SiteMinder session, a SiteMinder Identity Provider returns a SAML response that includes an error message because SiteMinder requires a session.
- If IsPassive=True in the AuthnRequest message and there is a SiteMinder session, the SiteMinder Identity Provider returns the assertion.
- If IsPassive and ForceAuthn are in the AuthnRequest message and both are set to True, the SiteMinder Identity Provider returns an error because this is an invalid request. IsPassive and ForceAuthn are mutually exclusive.

Configure Attributes for Inclusion in Assertions (optional)

Attributes can provide information about a user requesting access to a Service Provider resource. An attribute statement passes user attributes, DN attributes, or static data from the Identity Provider to the Service Provider in a SAML assertion. Any configured attributes are included in the assertion in one <AttributeStatement> element or the <EncryptedAttribute> element in the assertion.

Note: Attributes statements are not required in an assertion.

Attributes can be used by servlets, Web applications, or other custom applications to display customized content or enable other custom features. When used with Web applications, attributes can implement fine-grained access control by limiting what a user can do at the Service Provider. For example, you can send an attribute variable called Authorized Amount and set it to a maximum dollar amount that the user can spend at the Service Provider.

Attributes take the form of name/value pairs. When the Service Provider receives the assertion, it takes the attribute values and makes them available to applications.

Federated Services are attributes that applications at Service Provider sites can interpret and pass on to other applications.

You configure attributes in the Attributes tab of the Service Provider Properties dialog box. This involves choosing an Attribute Kind then filling in values for the variable name and attribute value.

Attributes that Function for SSO and Attribute Query Requests

When you configure an attribute, you indicate whether the attribute is used as part of a single sign-on request, or to satisfy an attribute query request. The attributes function is determined by the Retrieval Method field in the SAML Service Provider Attribute dialog.

If you want the same attribute to be used for both services, you must create two attribute statements that use the same Attribute name and variable; however, one attribute uses SSO as the retrieval method and one uses Attribute Services as the retrieval method.

Configure Attributes for SSO Assertions

To configure an attribute

1. In the Service Provider Properties dialog box, click on the Attributes tab.
2. Click Create.

   The SAML Service Provider Attribute dialog box opens.
3. From the Attribute drop down list, select the name format identifier, as specified by the <NameFormat> attribute within the <Attribute> element of an assertion attribute statement. This value classifies the attribute name so that the Service Provider can interpret the name.

   The options are:

   unspecified

   Determines how the name is interpreted is left to your implementation

   basic

   Indicates that the name format must use acceptable values from the set of values belonging to the primitive type xs:Name.

   URI

   Indicates that the name format must follow the standards for a URI reference. How the URI is interpreted is specific to the application using the attribute value.

4. From the Attribute Setup tab, select one of the following radio buttons in the Attribute Kind group box. Your selection of the Attribute Kind radio button determines the available fields in the Attribute Fields group box.

   Static

   Returns data that remains constant.

   Use a static attribute to return a string as part of a SiteMinder response. This type of response can be used to provide information to a Web application. For example, if a group of users has specific customized content on a Web site, the static response attribute, show_button = yes, could be passed to the application.

   User Attribute

   Returns profile information from a user's entry in a user directory.

   This type of response attribute returns information associated with a user in a directory. A user attribute can be retrieved from an LDAP, WinNT, or ODBC user directory.

   Note: For the Policy Server to return user directory attributes as response attributes, the user directories must be configured FSS Administrative UI.

   DN Attribute

   Returns profile information from a directory object in an LDAP or ODBC user directory.

   This type of attribute is used to return information associated with directory objects to which the user is related. Groups to which a user belongs, and Organizational Units (OUs) that are part of a user DN, are examples of directory objects whose attributes can be treated as DN attributes.

   For example, you can use a DN attribute to return a company division for a user, based on the user's membership in a division.

   Note: For the Identity Provider to return an attribute containing DN attributes values, the user directories must be configured in the Policy Server User Interface.

   If you select the DN Attribute radio button, you may also select the Allow Nested Groups check box. Selecting this check box allows SiteMinder to return an attribute from a group that is nested in another group specified by a policy. Nested groups often occur in complex LDAP deployments.

5. Optionally, if the attribute is retrieved from an LDAP user directory that contains nested groups (groups that contain other groups), and you want the Policy Server to retrieve DN attributes from the nested groups, select the Allow Nested Groups check box in the Attribute Kind group box.

6. Optionally, if you want the attribute values encrypted, select the Encrypted checkbox.

7. For the Retrieval Method, accept the default value SSO to ensure this attribute is used for single sign-on assertions and not for attribute assertions.
8. Click OK to save the changes.

Using a Script to Create A New Attribute

The Advanced tab of the SAML Service Provider Attribute dialog box contains the Script field. This field displays the script that SiteMinder generates based on your entries in the Attribute Setup tab. You can copy the contents of this field and paste them into the Script field for another response attribute.

Note: If you copy and paste the contents of the Script field for another attribute, you must select the appropriate radio button in the Attribute Kind group box of the Attribute Setup tab.

Configure Single Logout (optional)

The single logout protocol (SLO) results in the simultaneous end of all sessions for a particular user, thereby ensuring security. These session must be associated with the browser that initiated the logout. Single logout does not necessarily end all sessions for a user. For example, if the user has two browsers open, that user can establish two independent sessions. Only the session for the browser that initiates the single logout is terminated at all federated sites for that session. The session in the other browser will still be active. Single logout is triggered by a user-initiated logout.

Note: SiteMinder only supports the HTTP-Redirect binding for the single logout protocol.

By configuring the settings on the SLO tab you are informing the Identity Provider whether the Service Provider supports the single logout protocol, and if so, how single logout is handled.

If you enable single logout, you must also:

- Enable the session server at the Identity Provider using the Policy Server Management Console.
- Configure persistent sessions for the realm containing the protected resources at the Service Provider. Persistent session are configured via the FSS Administrative UI.

To configure single logout

1. Log in to the FSS Administrative UI and access the SAML Service Provider Properties dialog box for the Service Provider you want to configure.
2. From the SAML Service Provider Properties dialog box, select the SLO tab.

3. Select the HTTP-Redirect checkbox to enable single logout.

   The remaining fields become active.

4. Enter values for the remaining fields, noting the following:

   Validity Duration

   Specifies the number of seconds that a single logout request is valid. This property is different from the Validity Duration on the SSO tab, which is for assertions. If the validity duration expires, a single logout response is generated and is sent to the entity who initiated the logout. The validity duration also depends on the skew time (set in the General tab) to calculate single logout message duration.

   SLO Location URL, SLO Response Location URL, and SLO Confirm URL

   Entries for these fields must start with https:// or http://.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

Federation Web Services redirects the user to the logout confirm page after the user's session is completely removed at the Identity Provider and all Service Provider sites.

More Information:

Set the Skew Time for Single Logout Request Validity (see page 306)

Guidelines for the Single Logout Confirmation Page

To support single logout, you should have a logout confirmation page at your site. This page lets the user know they are logged out.

The logout confirmation page must satisfy the following criteria:

- If the single logout is initiated at the Service Provider, the logout confirmation page should be an unprotected local resource at the Service Provider site.
- If single logout is initiated at an Identity Provider site, the logout confirmation page should be an unprotected local resource at the Identity Provider site.
- The page cannot be a resource in a federation partner domain. For example, if the local domain is ca.com, the SLO confirmation page cannot be in the example.com domain.

To receive feedback about a logout failure, the logout confirmation page should also support the following:

- Be able to handle Base 64-encoded data and read cookies.
- The page at the Idp and SP should contain code that looks for a SIGNOUTFAILURE cookie. This cookie is set in the user's browser if single logout fails, and it contains the Partner IDs of the federation sites where logout failed. These IDs are base 64-encoded and if multiple IDs are listed, they are separated by a space character.

  By configuring the logout confirmation page to look for this cookie, the page can inform the user where the logout failed, which is useful in networks where a user is logging out from multiple partner sites.

  Additionally, if the SIGNOUTFAILURE cookie is found, the logout confirmation page should inform users to close the web browser to remove all session data.

Configure Identity Provider Discovery Profile (optional)

The Identity Provider Discovery Profile enables the Service Provider to determine which Identity Provider a principal is using with the Web browser single sign-on profile.

This profile is useful in federated networks that have more than one Identity Provider, and it enables Service Provider to determine which Identity Provider a principal is using. This profile is implemented using a cookie domain that is common to the Identity Provider and the Service Provider and contains a list of Identity Providers.

To enable the Identity Provider Discovery Profile

1. Check the Enable checkbox.

   The fields on the tab become active.

2. Fill-in the fields and click OK.

   Note that the Service URL field should be set to the Identity Provider Discovery Profile servlet, which is:

   https://<*host:port*>/affwebservices/public/saml2ipd

Encrypt a NameID and an Assertion

You can encrypt the Name ID in an assertion and/or the assertion itself. Encryption adds another level of protection when transmitting the assertion.

When you configure encryption, you must specify the partner certificate, which is included in the assertion. When the assertion arrives at the Service Provider, the Service Provider decrypts the encrypted data using the associated private key.

Note: If you have enabled encryption, when the first federation call is made, the memory of the Policy Server may increase substantially to load the encryption libraries and allocate additional memory.

Enabling Encryption

To implement encryption

1. Log in to the FSS Administrative UI and access the SAML Service Provider Properties dialog box for the Service Provider you want to configure.
2. From the SAML Service Provider Properties dialog box, select the Encryption tab.
3. To encrypt only the Name ID, select the Encrypt Name ID checkbox.
4. To encrypt the entire assertion, select the Encrypt Assertion checkbox.

   You can select the Name ID and the assertion; both can be encrypted.
5. Choose an Encryption Block Algorithm and Encryption Key Algorithm. These algorithms are defined by the WC3 XML Syntax and Processing standards.

   After you select an encryption checkbox, the fields in the Encryption Public Key become active.

   Note: To use the aes-256 bit encryption block algorithm, install Sun's Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files. You can download these files from http://java.sun.com/javase/downloads/index.jsp

6. Fill-in the IssuerDN and the Serial Number fields.

   The IssuerDN is the DN of the certificate issuer and its associated serial number. This information locates the certificate of the Service Provider in the key store. The data should be supplied by the Service Provider.

   Additionally, the IssuerDN and Serial Number that you enter here and on the General tab must match an IssuerDN and serial number of a key stored in the Identity Provider's key store database. The key store is created using the SiteMinder keytool utility.

7. Click OK to save your changes.

More Information:

Manage the Key Database for Signing and Encryption (see page 471)

Request Processing with a Proxy Server at the IdP

When SiteMinder receives certain requests at the IdP, it validates the message attributes using the local URL for Federation Web Services application before processing the request.

For example, an AuthnRequest message from an SP may contain the following attribute:

```
Destination="http://idp.domain.com:8080/affwebservices/public/saml2sso"
```

In this example, the destination attribute in the AuthnRequest and the address of the Federation Web Services application are the same. SiteMinder verifies that the destination attribute matches the local URL of the FWS application.

When the SiteMinder federated environment sits behind a proxy server, the local and destination attribute URLs are not the same because the Destination attribute is the URL of the proxy server. For example, the AuthnRequest may include the following Destination attribute:

```
Destination="http://proxy.domain.com:9090/affwebservices/public/saml2sso"
```

The local URL for Federation Web Services, http://idp.domain.com:8080/affwebservices/public/saml2sso, does not match the Destination attribute so the request is denied.

You can specify a proxy configuration to alter how SiteMinder determines the local URL used for verifying the message attribute of a request. When a proxy configuration is set, SiteMinder replaces the *<protocol>://<authority>* portion of the local URL with the proxy server URL, which results in a match between the two URLs.

Configure Request Processing with a Proxy Server

If your federated environment sits behind a proxy server, you must specify a proxy configuration to ensure that SiteMinder finds a match between the URL of a request's message attribute and the local proxy URL. There must be a match for the request to be processed.

When a proxy configuration is set, SiteMinder replaces the *<protocol>://<authority>* portion of the local URL with the proxy server URL, which results in a match between the two URLs.

To support federated environments that use a proxy server at the IdP

1. Log in to the FSS Administrative UI.
2. Access the SAML Service Provider Properties dialog box for the Service Provider you want to configure.

   The SAML Service Provider Properties dialog opens.
3. Select the Advanced tab.
4. Enter a partial URL for the proxy server, of the form *<protocol>://<authority>* in the Server field of the Proxy group box.

   For example, the proxy server configuration would be:

   http://proxy.domain.com:9090

   If your network includes the SPS federation gateway, the Server field must specify the SPS federation gateway host and port, for example,

   http://sps_gateway_server.ca.com:9090
5. Click OK to save your changes.

The value you enter for the Server field affects the URLs for the following services at the IdP:

- Single Sign On Service
- Single Logout Service
- Artifact Resolution Service
- Attribute Service
- Authentication URL – use the proxy server URL. Once authenticated, the user is redirected to the proxy server to get to the Single Sign On Service.

The Server value becomes part of the URL used to verify SAML attributes like the Destination attribute. Essentially, if you are using a proxy server for one URL, you need to use it for all these URLs.

Customize a SAML Response Element (optional)

The Assertion Generator produces SAML assertions to authenticate users in a federated environment. You may want to modify the assertion content based on your business agreements between partners and vendors.

By configuring an Assertion Generator plug-in, you can customize the content of a SAML 2.0 response generated by the Assertion Generator.

To modify a response element using the Assertion Generator plug-in

1. Implement the plug-in class.

   A sample class, AssertionSample.java, can be found in sdk/samples/assertiongeneratorplugin.

2. Configure the Assertion Generator plug-in from the Advanced tab of the SAML Service Provider Properties dialog box.

   Note: Specify an Assertion Generator plug-in for each Service Provider.

   a. In the Full Java Class Name field, enter the Java class name of the plug-in. This plug-in is invoked by the Assertion Generator at run time.

      The plug-in class can parse and modify the assertion, and then return the result to the Assertion Generator for final processing.

      Only one plug-in is allowed for each Service Provider. For example, com.mycompany.assertiongenerator.AssertionSample

      A sample plug-in is included in the SDK. You can view a sample assertion plug-in at sdk/samples/assertiongeneratorplugin.

   b. Optionally, in the Parameters field, enter the string that gets passed to the plug-in as a parameter at run time.

      The string can contain any value; there is no specific syntax to follow.

Additional information about the Assertion Generator plug-in can be found as follows:

- Reference information (method signatures, parameters, return values, data types), and also the new constructor for UserContext class, are in the *Javadoc Reference*. Refer to the AssertionGeneratorPlugin interface in the Javadoc.
- Overview and conceptual information for authentication and authorization APIs is in the *SiteMinder Programming Guide for Java*.

Integrate the Assertion Generator Plug-in with SiteMinder (SAML 2.0/WS-Federation)

If you write an assertion generator plug-in, you have to integrate the plug-in to work with SiteMinder.

To compile the assertion plug-in Java file, see the instructions in the SAML2AssertionSample.java file in the directory:

sdk/samples/assertiongeneratorplugin

To integrate the assertion generator plug-in with SiteMinder

1. Compile the assertion plug-in Java file.

   This file requires the following .jar files installed with the Policy Server:

   - *policy_server_home*/bin/jars/SmJavaApi.jar
   - *policy_server_home*/bin/thirdparty/xercesImpl.jar
   - *policy_server_home*/bin/endorsed/xalan.jar

2. In the JVMOptions.txt file, modify the -Djava.class.path value so it includes the classpath for the plug-in. This enables the plug-in to be loaded.

   Note: Do not modify the classpath for xercesImpl.jar, xalan.jar, or SMJavaApi.jar.

3. In the FSS Administrative UI, specify the plug-in that SiteMinder should use. Access the Advanced tab in the Service Provider Properties or Resource Partner Properties dialog and complete the following fields:

   Full Java Class Name

   Specify a Java class name for an existing plug-in

   Parameter

   Specify a string of parameters to be passed to the plug-in specified in the Full Java Class Name field.

   Note: Instead of specifying the assertion plug-in class and its parameters via the FSS Administrative UI, you can use the Policy Management API (C or Perl) to integrate the plug-in. For instructions, see the *SiteMinder Programming Guide for C* or the *SiteMinder Programming Guide for Java*.

4. Restart the Policy Server.

   Restarting the Policy Server ensures that the latest version of the assertion plug-in is picked up after being recompiled.

To enable the Assertion Generator to include attributes from a web application in an assertion

1. Compile the assertion plug-in Java file.

   This file requires the following .jar files installed with the Policy Server:

   - *policy_server_home*/bin/java/SmJavaApi.jar
   - *policy_server_home*/bin/thirdparty/xercesImpl.jar
   - *policy_server_home*/bin/endorsed/xalan.jar

2. In the JVMOptions.txt file, modify the -Djava.class.path value so it includes the classpath for the plug-in. This enables the plug-in to be loaded.

   Note: Do not modify the classpath for xercesImpl.jar, xalan.jar, or SMJavaApi.jar.

3. Configure a sample plug-in.

   There is an APIContext class in the SMJavaAPI that has a new method, getAttrMap(), which returns a map object containing the attributes from the web application to be included in the assertion. In the SiteMinder SDK, there are two sample Assertion Generator plug-ins that show how to use this map object:

   - SAML2AppAttrPlugin.java (SAML 2.0)
   - WSFedAppAttrPlugin.java (WS-Federation)

   These samples are located in the directory sdk/samples/assertiongeneratorplugin. They enable the Assertion Generator to add attributes from a web application to the Assertion Generator for inclusion in an assertion.

4. In the FSS Administrative UI, specify the plug-in you are using. Access the Advanced tab in the Service Provider Properties or Resource Partner Properties dialog and complete the following fields:

   Full Java Class Name

   Specify the Java class name for the plugin, For example, the sample classes included with the SiteMinder SDK are:

   - com.ca.assertiongenerator.SAML2AppAttrPlugin

     (SAML 2.0)

   - com.ca.assertiongenerator.WSFedAppAttrPlugin

     (WS-Federation)

Parameter

Specify a string of parameters to be passed to the plug-in specified in the Full Java Class Name field. These parameters would be the attributes you want to include in the assertion.

Note: Instead of specifying the assertion plug-in class and its parameters via the FSS Administrative UI, you can use the Policy Management API (C or Perl) to integrate the plug-in. For instructions, see the *SiteMinder SiteMinder Programming Guide for C* or the *SiteMinder Programming Guide for Java*.

5. Restart the Policy Server.

   Restarting the Policy Server ensures that the latest version of the assertion plug-in is picked up after being recompiled.

Protect the Authentication URL to Create a SiteMinder Session (SAML 2.0)

When you add a Service Provider to an affiliate domain, one of the parameters you are required to set is the AuthenticationURL parameter.

The file that the Authentication URL points to is the redirect.jsp file. This file is installed at the Identity Provider site where you install the Web Agent Option Pack or the SPS federation gateway. The redirect.jsp file must be protected by a SiteMinder policy so that an authentication challenge is presented to users who request a protected Service Provider resource but do not have a SiteMinder session.

A SiteMinder session is required for the following bindings:

- For users requesting a protected Service Provider resource

  If you configure single sign-on using an HTTP artifact binding, a persistent session is needed to store SAML assertions in the session server.

- For single sign-on using an HTTP POST binding

  A user must have a session, but it does not have to be a persistent session because assertions are delivered directly to the Service Provider site through the user's browser. The assertions do not have to be stored in the session server.

- For single logout

  If you enable single logout, a persistent session is required. When a user first requests a Service Provider resource, the session established at that time must be stored in the session server so that the necessary session information is available when a single logout is later executed.

After a user is authenticated and successfully accesses the redirect.jsp file, a session is established. The redirect.jsp file redirects the user back to the Identity Provider Web Agent or the SPS federation gateway so that the request can be processed and delivered to the SAML assertion for the user.

The procedure for protecting the Authentication URL is the same regardless of the following set-ups:

- Web Agent Option Pack installed on the same system as the Web Agent
- Application server with a Web Agent installed on a Web server proxy
- Application server protected by an Application Server Agent
- SPS federation gateway installed at the Identity Provider

To create a policy to protect the Authentication URL

1. Log into the FSS Administrative UI.
2. From the System tab, create Web Agents to bind to the realms that you will define for the web server at the IdP. You can assign unique Agent names for the web server at the Identity Provider and the Federation Web Services application or use the same Agent name for both.
3. Create a policy domain for the users who want to access Service Provider resources.
4. From the Users tab, select the users that should have access to the resources that are part of the policy domain.
5. Define a realm for the policy domain with the following values:
   a. Agent: select the Agent for the Web Server at the Identity Provider.
   b. Resource Filter:

      Web Agents v5.x QMR 4 and later, and SPS federation gateway enter:

      /siteminderagent/redirectjsp/

      Web Agents v5.x QMR 1, 2, or 3, enter:

      /affwebservices/redirectjsp/

      The resource filter, /siteminderagent/redirectjsp/ is an alias, set up automatically by the Federation Web Services application. It references the following:

      - *web_agent_home*/affwebservices/redirectjsp
      - *sps_home*/secure-proxy/Tomcat/webapps/affwebservices/redirectjsp

   c. For the remaining settings, accept the defaults or modify as needed.

6. For HTTP artifact binding only, select the Session tab and check the Persistent Session check box.

   To enable single sign-on using the SAML artifact binding, configure a persistent session for the Identity Provider realm. If you do not configure a persistent session, the user cannot access Service Provider resources.

7. Click OK to save the realm.

8. Create a rule for the realm. In the Resource field, accept the default value, the asterisk (*), to protect all resources for the realm. Select the Web Agent actions GET, POST, and PUT as the allowed actions.

9. Create a policy for the Web Server at the Identity Provider that includes the rule created in the previous step.

Protect the Artifact Resolution Service with Client Certificate Authentication (optional)

For SAML 2.0 HTTP-artifact SSO, the Artifact Resolution Service retrieves the assertion stored in the SiteMinder session server at the Identity Provider so it can be sent to the Service Provider. This service needs to be protected with a SiteMinder policy so assertions are retrieved only by authorized users.

By default, there is a pre-configured policy that uses the Basic over SSL authentication scheme to protect the Artifact Resolution Service. When you configure a policy that uses the client certificate authentication scheme to protect this service, this policy must be created for a different realm than the realm that uses the Basic over SSL scheme.

Generally, the administrator at the Identity Provider should create two policies to protect the Artifact Resolution Service by Basic over SSL and to protect it with client certificate authentication.

To protect the Artifact Resolution Service with a client certificate authentication scheme, you:

- Create a policy at the Identity Provider that uses an X.509 client certificate authentication scheme.
- Enable client certificate authentication at the consumer.

Using Client Cert. Authentication with an IIS 5.0 Web Server

Client certificate authentication is not supported for IIS 5.0 Web servers at the producer/Identity Provider. However, it can be used on an IIS 5.0 Web server at the consumer/Service Provider to communicate with a non-SiteMinder producer/Identity Provider.

To work around this issue, use the IIS 5.0 Web server's client certificate functionality at the producer/Identity Provider and do not configure SiteMinder's client certificate functionality. If you apply this workaround, be aware that the CN portion of the certificate's DN value must contain the affiliate name value.

More Information:

Create the Artifact Resolution Service Policy (see page 340)

Create the Artifact Resolution Service Policy

To create a policy for the Artifact Resolution Service

1. For each Service Provider, add an entry to a user directory. You can create a new user store or use an existing directory.

   Create a separate user record for each affiliate site that retrieving assertions from the Identity Provider.

   An attribute of the user record should have the same value that is specified in the Name field of the Service Provider Properties dialog box.

   For example, if you identified the affiliate as Company A in the Name field, the user directory entry should be:

   uid=CompanyA, ou=Development,o=partner

   The Policy Server will map the subject DN value of the Service Provider's client certificate to this directory entry.

2. Add the configured user directory to the FederationWebServicesDomain.

3. Create a certificate mapping entry.

   The value for the Attribute Name field in the Certificate Mapping Properties dialog box should be mapped to the user directory entry for the Service Provider. The attribute represents the subject DN entry in the Service Provider's certificate. For example, you may select CN as the Attribute Name, and this represents the Service Provider named cn=CompanyA,ou=Development,o=partner

4. Configure an X509 Client Certificate authentication scheme.

5. Create a realm under the FederationWebServicesDomain containing the following entries:
   - Name: <*any_name*>

     Example: cert artifact resolution
   - Agent: FederationWebServicesAgentGroup
   - Resource Filter: /affwebservices/saml2certartifactresolution
   - Authentication Scheme: client cert auth scheme created in the previous step.
6. Create a rule under the cert artifact resolution realm containing the following:
   - Name: <*any_name*>

     Example: cert artifact resolution rule
   - Resource: *
   - Web Agent Actions: GET, POST, PUT
7. Create a Web Agent response header under the FederationWebServicesDomain.

   The Artifact Resolution Service uses this HTTP header to make sure that the Service Provider for which the SAML assertion was generated is the one actually retrieving the assertion.

   Create a response with the following values:
   - Name: <*any_name*>
   - Attribute: WebAgent-HTTP-Header-Variable
   - Attribute Kind: User Attribute
   - Variable Name: consumer_name
   - Attribute Name: enter the use directory attribute that contains the Service Provider name value. For example, the entry could be uid=CompanyA.

   Based on these entries, the Web Agent will return a response named HTTP_CONSUMER_NAME.

8. Create a policy under the FederationWebServicesDomain containing the following values:
   - Name: <*any_name*>
   - User: Add the users from the user directory created in previously in this procedure
   - Rule: <*rule_created_earlier_in_this_procedure*>
   - Response: <*responsecreated_earlier_in_this_procedure*>
9. Complete the configuration steps at the Service Provider to use client certificate authentication, if they are not completed already.

Chapter 13: Configure SAML 2.0 Affiliations At the Identity Provider

This section contains the following topics:

Affiliation Overview

A SAML affiliation is a group of SAML entities that share a name identifier for a single principal.

Both Service Providers and Identity Providers can belong to an affiliation; however, an entity may belong to no more than one affiliation. Service Providers share the Name ID definition across the affiliation. Identity Providers share the user disambiguation properties across the affiliation.

Using affiliations reduces the configuration required at each Service Provider. Additionally, using one name ID for a principal saves storage space at the Identity Provider.

SiteMinder uses affiliations for the following use cases:

- Single sign-on
- Single logout

Affiliations are set up at the Identity Provider site. Service Providers are added to an affiliation at the Service Provider site.

Note: Configuring affiliations is optional.

Affiliations for Single Sign-On

In a single sign-on use case, the Service Provider sends a request for an assertion to an Identity Provider. The AuthnRequest contains an attribute that specifies an affiliation identifier.

When the Identity provider receives the request, it verifies that the Service Provider is a member of the affiliation identified in the AuthnRequest, and it generates the assertion with the Name ID shared by the affiliation. It returns this assertion to the Service Provider. Upon receiving the assertion, authentication takes place at the Service Provider.

Affiliations for Single Logout

When a Service Provider generates a logout request, it checks if the Identity Provider belongs to an affiliation and sets an attribute in the request to the affiliation's ID. The Identity Provider receives the request and checks that the Service Provider belongs to the affiliation identified in the attribute.

The Identity Provider obtains the affiliation Name ID from the Session Server's session store.When the Identity Provider issues logout request messages to all session participants, it includes the affiliation Name ID for the members of the affiliation.

Configure Affiliations

A SAML affiliation lets you add a SAML entity to a group so it can share a name identifier for a single principal.

To configure an affiliation

1. From the menu bar, select Edit, System Configuration, Create SAML Affiliation.

   The SAML Affiliation Properties dialog box opens.

2. In the top half of the dialog box, the following fields are required:

   - Name
   - Affiliation ID

Assign Name IDs to Affiliations

To assign a name ID associated with an affiliation, you need to configure the shared Name ID properties for the Service Providers belonging to the affiliation.

Note: If you use an affiliation, configuring a Name ID is required.

To configure a name ID

1. Select the Name IDs tab from the SAML Affiliation Properties dialog box.
2. Determine the value to use for the Name ID format.

   The format determines the type of value used for the identifier, such as whether the format is an email address or Windows domain qualified name.
3. Choose a Name ID Type.

   The type indicates if the value is static, a user attribute, or a distinguished name attribute from a user store.

   If you select the DN Attribute, the Allow Nested Groups check box can also be selected. Enabling nested groups means that the user record may be a DN from a user directory record nested within another directory.
4. Depending on the Name ID Type selected, fill-in the appropriate Name ID field(s).
5. Click OK to save your changes.

Specify Users for Disambiguation for SAML Affiliations

The Users tab has no function for a site acting as an Identity Provider. Disregard this tab.

For a system acting as a Service Provider, the Users tab lets you configure the user disambiguation process.

To configure the disambiguation process for a Service Provider

1. Enter an Xpath query in the Xpath Query field that the authentication scheme uses to obtain the LoginID from the assertion.
2. Select a namespace in the Namespace list box to match the search specification to and click Edit.

   The SiteMinder Authentication Scheme Namespace Mapping dialog box opens.
3. In the Search Specification field, enter the attribute that the authentication scheme uses to search a namespace, then click OK. Use %s in the entry as a LoginID variable.

   For example, the LoginID has a value of user1. If you specify Username=%s in the Search Specification field, the resulting string is Username=user1. This string is checked against the user store to find the correct record for authentication.

View a List of Service Providers in an Affiliation

To see a list of Service Providers that are members of the affiliation, select the SAML Service Providers tab.

This is a read-only list; you can only modify this list of affiliations from the Service Provider dialog box.

More Information:

Configure Affiliations (see page 344)

View Authentication Schemes That Use an Affiliation

To see a list of authentication schemes that use an affiliation for user disambiguation, select the SAML Auth Schemes tab.

This is a read-only list. To edit this list or the schemes themselves, you need to edit the particular scheme from the authentication scheme dialog box.

More Information:

Authenticate SAML 2.0 Users at the Service Provider (see page 347)

Chapter 14: Authenticate SAML 2.0 Users at the Service Provider

This section contains the following topics:

SAML 2.0 Authentication Scheme Overview

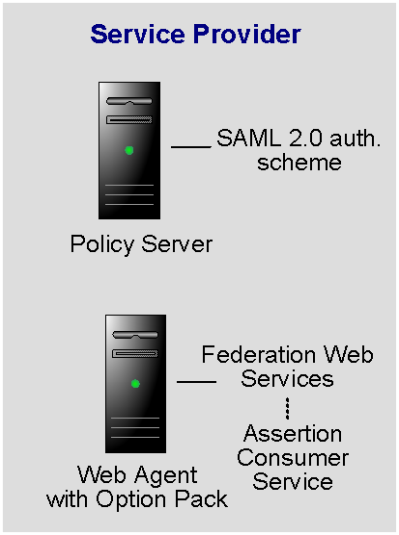
If you installed the Policy Server or SiteMinder SPS federation gateway at a consumer site, any SiteMinder site can consume assertions to authenticate and authorize users. If you have sites in your federated network that have user stores, you may want to use SAML 2.0 authentication.

The SAML 2.0 authentication scheme lets a Service Provider in a federated network authenticate a user. It enables cross-domain single sign-on by consuming a SAML assertion from an Identity Provider, identifying a user, and and establishing a SiteMinder session. After a SiteMinder session is established, the Service Provider can authorize the user for specific resources.

The following illustration shows the components for authentication at the Service Provider.

Note: A site may be both an Identity Provider and a Service Provider.

The major components for SAML 2.0 authentication are shown in the following illustration.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

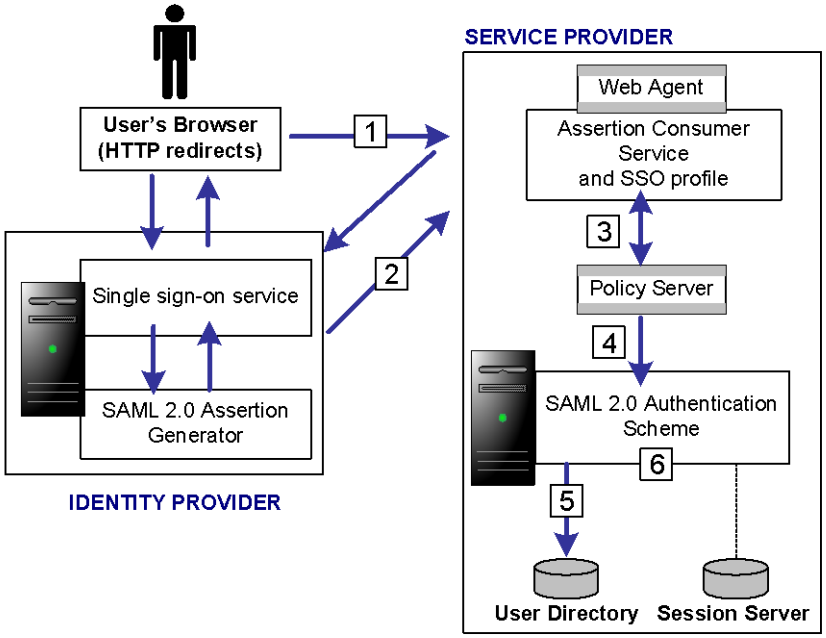
The SAML 2.0 authentication scheme is configured at the Service Provider's Policy Server, and is invoked by the Assertion Consumer Service. This service is a component of the Federation Web Services application and is installed on the Service Provider's Web Agent or SPS federation gateway. The Assertion Consumer Service obtains information from the SAML authentication scheme, then uses that information to extract the necessary information from a SAML assertion.

The SAML assertion becomes the user's credentials to login to the Policy Server at the Service Provider. The user is authenticated and authorized, and if authorization is successful, the user is redirected to the target resource.

Note: The Assertion Consumer Service accepts an AuthnRequest that includes an AssertionConsumerServiceIndex value of 0. All other values for this setting will be denied.

SAML Authentication Request Process

The following illustration shows how the SAML 2.0 authentication scheme processes requests.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The functional flow for authentication is as follows:

1. A user's browser makes a request for a Service Provider resource. This request goes to the AuthnRequest service at the Service Provider. The request is then redirected to the Identity Provider to obtain a SAML assertion.
2. The Identity Provider returns a response to the Service Provider.

   In the case of the HTTP-POST binding, the response contains the assertion. For the HTTP-Artifact binding, the response contains a SAML artifact.

3. The Assertion Consumer Service at the Service Provider receives the response message and determines whether the POST or Artifact binding is being used.

   If the artifact binding is being used, the Assertion Consumer Service sends the artifact to the Identity Provider to obtain a response that contains the actual assertion. The Assertion Consumer Service sends the response with the assertion as credentials to the Policy Server.

4. The Policy Server invokes the SAML 2.0 authentication scheme by passing the response message with the user credentials to the scheme to be authenticated.

5. The user disambiguation process begins.

6. After the disambiguation phase is complete, the SAML 2.0 authentication scheme validates the credentials in the assertion, validates the assertion itself for time validity, and, if applicable, verifies if the assertion was signed by a trusted Identity Provider.

   Note: For the POST binding, a signature is required and there must be certificate lookup information supplied. If a signature is not present, authentication fails. However, for the Artifact binding, a signed assertion is optional because the assertion response is obtained over a secure channel between the Service Provider and Identity Provider.

   If Single Logout is enabled, the user is redirected by the SLO servlet to a No Access URL.

More Information:

Configure User Disambiguation for User Look Ups (see page 355)

Configuration Tasks for SAML 2.0 Authentication

Required Tasks

Check Here	Required Tasks
	Complete the SAML 2.0 authentication scheme prerequisites.
	Set-up the authentication scheme for each Identity Provider that generated assertions. Assign a name, description, scheme type, and protection level.
	Specify the users who will be authenticated using the SAML 2.0 authentication scheme.
	Configure a single sign-on and select the binding to be used.

Check Here	Required Tasks
	Associate that scheme with a realm. You can do this on a per Identity Provider basis or create a single custom authentication scheme and single realm.

Optional Tasks

Check Here	Optional Tasks
	Enable single logout.
	Enable encryption for Name IDs and/or assertions.
	Customize assertions using the Message Consumer Plug-in.

Tips:

- Certain parameter values at the Identity Provider and Service Provider must match for the configuration to work. A list of those parameters is available in Configuration Settings that Must Use the Same Values (see page 497).
- To ensure you are using the correct URLs for the Federation Web Services servlets, the URLs are listed in Federation Web Services URLs Used in SiteMinder Configuration (see page 503).

SAML 2.0 Authentication Scheme Prerequisites

There are several prerequisites you must fulfill before configuration a SAML authentication scheme.

Install the Policy Server for the SAML Auth Scheme

The Policy Server provides the SAML authentication scheme at the consumer. It also provides the SAML assertion generator used by a producing site.

Install the Policy Server at the producing and consuming sites.

For installation instructions, refer to the *SiteMinder Policy Server Installation Guide*

Install the Web Agent or SPS Federation Gateway

The Web Agent is a required component in a SiteMinder federation security services network. You can either install a Web Agent on a web server or install the SPS federation gateway, which has an embedded web agent.

Note: Install this component at the Identity Provider and Service Provider.

At the consuming authority, set up the following components

1. Install one of the following:
   - Web Agent
   - SPS federation gateway
2. Configure the Web Agent or SPS federation gateway.

For instructions about the Web Agent, see the *SiteMinder Web Agent Installation Guide* and *SiteMinder Web Agent Configuration Guide.*

For instructions about the SPS federation gateway, see the *SiteMinder Secure Proxy Server Administration Guide*.

Important! You must define a value for the Web Agent configuration parameter DefaultAgentName for all Service Provider Web Agents. This value specifies a Web Agent identity. Additionally, the specified Agent identity must be included in the Resource Filter of the realm that protects the target resource. You configure the DefaultAgentName parameter in the Agent Configuration Object or the local Agent configuration file. Omitting the DefaultAgentName parameter or using the value specified in the AgentName parameter in the realm resource filter causes SAML 2.0 authentication to fail, regardless of the single sign-on profile

Set Up a Key Database to Sign and Verify SAML POST Responses

SiteMinder can sign and verify SAML POST Responses and sign AuthnRequest Messages.

To use SAML POST profile for passing assertions, the assertion generator at the Identity Provider uses its private key and signs the SAML response that contains the assertion. The Service Provider then needs to verify that signature using public-key certificates.

In addition to the response being signed, you can sign an AuthnRequest message. The AuthnRequest message is sent during the authentication process to authenticate a user for cross-domain single sign-on.

To accomplish these tasks, you must set up a key database for each Policy Server that is responsible for signing, verification or both.

Configure the SAML 2.0 Authentication Scheme

Before you can assign a SAML 2.0 authentication scheme to a realm, you must configure the scheme.

To configure the SAML 2.0 authentication scheme common setup

1. Check the SAML 2.0 Authentication Scheme Prerequisites (see page 351).
2. Log into the Policy Server User Interface.
3. From the menu bar, select Edit, System Configuration, Create Authentication Scheme.

   The Authentication Scheme Properties dialog box opens.
4. In the Authentication Scheme Type drop-down list, select SAML 2.0 Template.

   The contents of the SiteMinder Authentication Scheme dialog box change to support the SAML 2.0 scheme.

   n this dialog you will find the the following:

   - Scheme Common Setup group box--identifies the scheme type and the protection level.
   - Scheme Setup tab--identifies the Identity Provider that is generating assertions for this scheme and to specify other parameters that determine how information from the assertion is processed.
   - Advanced tab (optional)--for configuring a custom SAML 2.0 authentication scheme
5. Complete the fields.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

6. In the Scheme Setup tab:
   a. Accept the value for the SAML Version field, which must be 2.0.
   b. Configure at least one of the following for signature processing to work. By default, digital signature processing is enabled. However, you must :
      - HTTP-Post (Additional Configuration, SSO tab)

        For this binding, enter information about the certificate used to validate the signature of the posted assertion. The Issuer DN and the Serial Number are of the entity who issued and signed the certificate.
      - HTTP Redirect (Additional Configuration, SLO tab)

        For this binding, enter information about the certificate used to validate the signature of the SLO request.
   c. Configure validation of the digital signature.

      By default, signature processing is enabled; it is required by the SAML 2.0 specification; therefore, it *must* be enabled in a production environment. However, for debugging your initial federation setup *only*, you can temporarily disable all signature processing for the Service Provider (both signing and verification of signatures) by checking the Disable Signature Processing option.

      The value you enter for the Issuer DN field should match the issuer DN of the certificate in the smkeydatabase. We recommend you open a command window and enter the command smkeytool -lc to list the certificates and view the DN to ensure that you enter a matching value.

      Important! If you disable signature processing, you are disabling a mandatory security function.

Create a Custom SAML 2.0 Authentication Scheme (optional)

The Advanced tab of the Authentication Scheme Properties dialog box lets you use a custom SAML 2.0 scheme written with the SiteMinder Authentication API instead of the existing SAML 2.0 template provided by SiteMinder.

The Advanced tab contains the Library field. This field contains the name of the shared library that processes SAML artifact authentication. Do not change this value, unless you have a custom authentication scheme, written using the SiteMinder Authentication API.

The default shared library for HTML Forms authentication is smauthhtml.

Configure User Disambiguation for User Look Ups

When you configure an authentication scheme, you define a way for the authentication scheme to look up a user in a user store. Locating the user in the user store is the process of disambiguation. This is the user for which the system generates a session during the authentication process.

The SAML 2.0 authentication scheme first determines a LoginID from the assertion. The LoginID is a SiteMinder-specific term that identifies the user. By default, the LoginID is extracted from the Name ID value in the assertion. Optionally, you can obtain the LoginID from elsewhere in the assertion by specifying an Xpath query.

After the authentication scheme determines the LoginID, it uses the LoginID to locate a user in the user store. By default, the LoginID is passed back to the Policy Server to locate the user in the user store. For example, if you configure an LDAP user store to search for users based on the uid attribute, the Policy Server searches for the user based on the uid. Optionally, you can configure a search specification to locate a user in the user store. The search specification controls how the LoginID is used in the query to locate a user.

There are two ways of configuring user disambiguation:

- Locally, as part of the authentication scheme
- By selecting a configured SAML affiliation

More Information:

Configure Disambiguation Locally as Part of the Authentication Scheme (see page 356)
Use a SAML Affiliation to Locate a User Record (Optional) (see page 355)

Use a SAML Affiliation to Locate a User Record (Optional)

An affiliation is a group of Service Providers. Grouping Service Providers enables them to establish a link across the federated network, such that a relationship with one member of an affiliation establishes a relationship with all members of the affiliation.

All Service Providers in an affiliation share the same name identifier for a single principal. If one Identity Provider authenticates a user and assigns that user an ID, all members of the affiliation will use that same name ID, thereby reducing the configuration required at each Service Provider. Additionally, using one name ID for a principal saves storage space at the Identity Provider.

If you select an affiliation and you choose to use the optional Xpath query and search specification for user disambiguation, these options are defined as part of the affiliation itself and not part of the authentication scheme.

Note: An affiliation has to be defined before you can select it.

To select an affiliation

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.

2. Select the Users tab.
3. In the SAML Affiliation drop-down field, select a pre-defined affiliation name. These affiliations are configured at the Identity Provider.

If you select an affiliation, the Xpath Query and Search Specification fields are disabled.

More Information:

Configure SAML 2.0 Affiliations At the Identity Provider (see page 343)

Configure Disambiguation Locally as Part of the Authentication Scheme

If you choose to disambiguate locally, there are two steps in the process:

1. Obtain the LoginID--either by the default behavior or by using an Xpath query.
2. Locate the user in the user store--either by the default behavior or using a search specification.

Note: The use of Xpath and search specification are optional.

Use an Xpath Query to Obtain the LoginID

You can use Xpath to find the LoginID in place of the default behavior, where the LoginID is extracted from the NameID in the assertion.

To use Xpath

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.

2. Select the Users tab.

   The Users tab specifies who has access to protected resources at the Service Provider. Access to resources at the Service Provider is based on SiteMinder policies.

3. Enter an Xpath query that the authentication scheme uses to obtain a LoginID.

4. Click OK to save your configuration changes.

Use a Search Specification to Locate a User

After obtaining the LoginID, you can use a search specification to locate the user in place of the default behavior, where the LoginID is passed to the Policy Server.

To locate a user with a search specification

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.

2. Select the Users tab.

3. Select a namespace to match the search specification to and click Edit.

   The SiteMinder Authentication Scheme Namespace Mapping dialog box opens.

4. In the Search Specification field, enter a namespace attribute that the authentication scheme uses to search that namespace, then click OK. Use %s in the entry as a variable representing the LoginID.

   For example, the LoginID has a value of user1. If you specify Username=%s in the Search Specification field, the resulting string is Username=user1. This string is checked against the user store to find the correct record for authentication.

5. Click OK to save your configuration changes.

Specify Single Sign-on Bindings at the SP

To establish single sign-on between the Identity Provider and the Service Provider, you need to specify the SSO bindings supported by the Service Provider.

The SSO tab configures single sign-on using the artifact or POST binding. This tab also enforces single use assertion policy for POST binding to prevent the replaying of a valid assertion.

To configure single sign-on

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.

2. Select the SSO tab.

3. Complete entries for the fields on the SSO tab.

   The following are required fields:

   - Redirect Mode
   - SSO Service
   - Audience
   - HTTP-Artifact or HTTP-Post

     If you choose HTTP-Artifact as the binding, you must fill in the Resolution Service, Authentication, SP Name, and Password fields.

4. Specify a target resource for single sign-on to work. The target specifies the requested resource at the destination Service Provider site and it is required.

5. In the Bindings group box, you can select both HTTP-Artifact and HTTP-Post.

   If HTTP-POST is selected and artifact is not selected, only the POST binding will be accepted from the Identity Provider. If no binding is specified, the default is HTTP-artifact.

   If you select HTTP-Artifact binding, you have to:

   - Enable the session server to store the assertion before it is retrieved. Instructions are located in Storing User Session, Assertion, and Expiry Data (see page 207).
   - Configure the backchannel to select the type of authentication scheme protecting the Artifact Resolution Service, which retrieves the assertion at the Identity Provider. Instructions are located in Configure the Backchannel for HTTP_Artifact SSO (see page 359).
   - Optionally, add an entry for the Index field for each binding.

     If you have multiple endpoints, you can configure indexed endpoints. The entry you include here will be included by the Service Provider as a query parameter in the AuthnRequest that gets sent to the single sign-on service at the Identity Provider.

6. The following are other optional features you can select:

   - Enhanced Client and Proxy Profile
   - Sign AuthnRequests checkbox--tells the Policy Server at the Service Provider to sign the AuthnRequest after it is generated. This check box is required if the Identity Provider requires signed AuthnRequests. The AuthnRequest Service redirects the signed AuthnRequest to the Single Sign-on Service URL.
   - Allow IdP to Create New User Identifier

More Information:

Protect the Assertion Retrieval or Artifact Resolution Service (optional) (see page 234)

Configure the Backchannel for HTTP-Artifact SSO

If you select the HTTP-Artifact binding for single sign-on, configure the authentication scheme for the back channel that communicates with the Artifact Resolution Service. This service retrieves the assertion from the Identity Provider.

To configure the backchannel

1. If necessary, log on to the FSS Administrative UI.
2. Select the Backchannel tab.

3. Complete all the fields on the dialog.

   Important! If you are using basic authentication for the backchannel authentication scheme, the value of the SP Name field is the name of the Service Provider. If you are using client certificate authentication for the backchannel, the value of the SP Name field should be the alias of the client certificate stored in the smkeydatabase.

4. Click OK to save your configuration.

More Information:

WebLogic Configuration Required for Back Channel Authentication (see page 307)

Enforcing a Single Use Policy to Enhance Security

The single use policy feature prevents SAML 2.0 assertions that arrive via POST binding from being re-used at a Service Provider to establish a second session.

Note: Single use policy feature is enabled by default when you select the HTTP-POST binding.

Ensuring that an assertion is used only one time is an additional security measure for authenticating across a single sign-on environment. It mitigates security risks caused when an attacker acquires a SAML assertion from a user's browser that has already been used to establish a SiteMinder session. The attacker can then POST the assertion to the Assertion Consumer Service at the Service Provider to establish a second session.

A single use policy is enabled by a storage mechanism provided by the SiteMinder Session Server. This mechanism is expiry data. Expiry data ensures a single use policy for SAML 2.0 POST-binding assertions by storing time-based data about an assertion. The SAML 2.0 authentication scheme uses the expiry data interface to access the expiry data in the Session Server database.

How the Single Use Policy is Enforced

Upon successful validation of a SAML 2.0 assertion, the SAML 2.0 authentication scheme writes assertion data in the expiry data table with a key of the assertion ID and an expiration time. The Session Server Management thread in the Policy Server deletes expired data from the expiry data table.

If single policy use is enforced, writing assertion data will fail if an entry already exists in the expiry data table with a key of the assertion ID because the assertion has already been used to establish a session. If the scheme cannot write to the table in the session server, the SAML 2.0 authentication scheme denies the authentication in the same manner as an invalid assertion.

Writing assertion data may fail for other reasons; however, if the single use of the assertion cannot be enforced because the database is unavailable for any reason, then the authentication scheme will deny the request to ensure that assertions cannot be re-used.

Configure a Single Use Policy

To configure a single use policy

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.

2. Select the SSO tab.

3. Select the HTTP-Post.

   The Enforce Single Use Policy checkbox will also be selected by default.

4. Enable the session server.

More Information:

Enforcing a Single Use Policy to Enhance Security (see page 360)
Storing User Session, Assertion, and Expiry Data (see page 207)

Permit the Creation of a Name Identifier for SSO

As part of a single sign-on request, a Service Provider may request a particular user attribute to be included the assertion at the Identity Provider; however, the value of the required attribute may not be available in the user record at the Identity Provider.

You can enable the Service Provider to include the Allow/Create attribute as part of its AuthnRequest message to the Identity Provider. When a request is received at the Identity Provider, this attribute, together with the corresponding feature enabled at the Identity Provider, instructs the Identity Provider to generate a new, unique value for the NameID if it cannot find the requested attribute in its user store. This value is then included in the assertion sent back to the Service Provider.

When the Service Provider receives the assertion, the SAML 2.0 authentication scheme processes the response, performs a user lookup in its local user store, and, if the Service Provider locates the user record in its user store, it grants the user access.

If the Identity Provider is not configured to create a new identifier, it will not generate a unique identifier, regardless of whether an Allow/Create attribute is part of an AuthnRequest message. In this case, the normal flow of assertion generation continues after an entry is made in the Identity Provider log files that a unique identifier was not created.

For a unique identifier to be generated, the Allow/Create feature must be configured at both sites.

Include an Allow/Create Attribute in Authentication Requests

To include the Allow/Create attribute in an AuthnRequest message

1. Log in to the Policy Server.
2. Access the appropriate SAML 2.0 authentication scheme or create a new scheme.
3. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.
4. Select the SSO tab.
5. Check the Allow IDP to Create New Identifier check box.
6. Click OK.

Enable the Enhanced Client or Proxy Profile

The Enhanced Client or Proxy Profile (ECP) is an application of the single sign-on profile. An ECP is a system entity that knows how to contact an Identity Provider and supports the Reverse SOAP binding, PAOS for the purpose of providing single sign-on for a user.

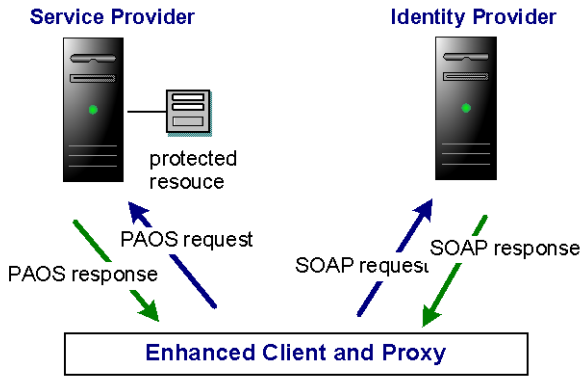
An enhanced client may be a browser or some other user agent that supports the ECP functionality. An enhanced proxy is an HTTP proxy, such as a Wireless Access Protocol proxy for a wireless device.

The ECP profile allows the Service Provider to make an authentication request without knowing the Identity Provider, and PAOS lets the Service Provider obtain the assertion through the ECP, which is always directly accessible, unlike the Identity Provider. The ECP acts as the intermediary between the Service Provider and the Identity Provider.

You might want to enable the ECP profile with single sign-on in the following situations:

- For a Service Provider that expects to service enhanced clients or proxies that require this profile.
- When the Identity Provider and Service Provider cannot communicate directly.
- When a proxy server is in use, such as a wireless access protocol (WAP) gateway in front of a mobile device with limited functionality

The flow of the ECP profile is shown in the following illustration.



To enable the ECP profile

1. Make sure the ECP request is directed to the AuthnRequest service. The following URL shows an example:

   https://*host:port*/affwebservices/public/saml2authnrequest=

2. Make sure that the headers in the ECP request include attributes required by the SAML 2.0 specification, such as the following:

   Accept: text/html; application/vnd.paos+xml
   PAOS: ver='urn:liberty:paos:2003-08' ;
   'urn:oasis:names:tc:SAML:2.0:profiles:SSO:ecp'

3. Use the FSS Administrative UI to fill out the required single sign-on fields on the SSO tab.
4. Select the Enhanced Client and Proxy Profile check box.
5. Click OK.

Supply SAML Attributes as HTTP Headers

An assertion response may include attributes in the assertion. These attributes can be supplied as HTTP header variables and used by a client application can use these headers for finer grained access control.

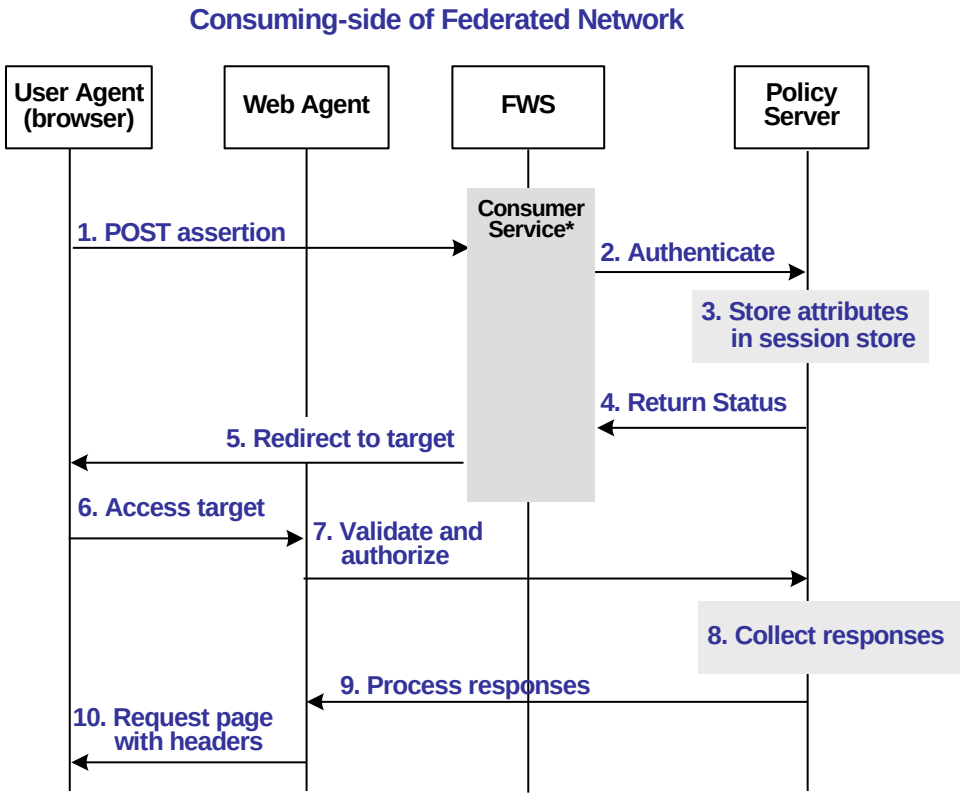
The benefits of including attributes in HTTP headers is as follows:

- HTTP headers are not persistent. They are present only within the request or response that contains them.
- HTTP headers, as supplied by the SiteMinder Web Agent, are not seen by the user's browser, which reduces security concerns.

Use Case for SAML Attributes As HTTP Headers

During authentication, a series of SAML attributes are extracted from an assertion and supplied as HTTP headers. During the authorization process, these headers are returned to the customer's application.

The following flow diagram shows the sequence of events at runtime:



*Consumer service can be one of the following:
–SAML Credential Collector (SAML 1.x)
–Assertion Consumer Service (SAML 2.0)
–Security Token Consumer Service (WS-Federation)

Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. In the flow diagram, the Web Agent block would be the embedded Web Agent in the SPS federation gateway. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

To process the attributes as HTTP headers, the sequence of events is as follows:

1. After the assertion is generated at the producing partner, it sends the assertion to the appropriate consumer service at the consuming partner. The delivery mechanism (POST or Artifact or WS-Fed) is irrelevant.

   Note: The consumer service can be the SAML credential collector (SAML 1.x), the Assertion Consumer Service (SAML 2.0), or Security Token Consumer Service (WS-Federation).

2. The consumer service calls its local Policy Server to use the configured authentication scheme to authenticate the user with the assertion.
3. If the authentication scheme's redirect mode parameter is set to PersistAttributes, the Policy Server caches the attributes in the session store as session variables.
4. The result of the authentication is returned to the consumer service.
5. The consumer service redirects the browser to the protected target resource.
6. The browser tries to access the target resource.
7. The Web Agent calls the Policy Server to validate the user's session and to ensure the user is authorized to access the target resource.
8. The Policy Server retrieves the attributes by a configured response.
9. The Policy Server processes the responses and sends the attributes to the Web Agent.
10. The Web Agent sets the HTTP headers as necessary.

Configuration Overview to Supply Attributes as HTTP Headers

There are several configuration steps required to retrieve the SAML attributes cached in the session store and provide them as HTTP headers.

The components you must configure are as follows

1. Select PersistAttributes as the redirect mode for the SAML authentication scheme. This enables the SAML Attributes to be returned as HTTP headers.
2. Configure an authorization rule for the the realm that contains the target resource.
3. Configure a response that uses the active response type for each SAML attribute to be supplied as a header.
4. Create a policy that binds the authorization rule and active response to implement the user of attributes as HTTP headers.

Set the Redirect Mode to Store SAML Attributes

After the consuming partner authenticates the user with the SAML assertion, the SAML attributes are written to the session store. The browser is then redirected to the target resource.

To redirect the browser with the attribute data

1. Log in to the FSS Administrative UI.
2. Access the SAML authentication scheme properties dialog.

   The properties dialog opens.
3. Set the Redirect Mode parameter to PersistAttributes.

   For SAML 1.x, the Redirect Mode is on the Scheme Setup tab. For SAML 2.0 and WS-Federation, the Redirect Mode is on the SSO tab accessed from the authentication scheme properties dialog.
4. Click OK to save your changes.

The redirect mode is now set to pass on the attribute data.

Create an Authorization Rule to Validate Users

For the realm containing the protected target resource, you need to create a rule that is triggered during the authorization process to retrieve the SAML attributes from the session store.

The rule is based on an authorization event (onAccessAccept) because the user has already been authenticated by the FWS application, therefore the Web Agent cannot re-authenticate the user and pass on the HTTP headers. So, the retrieval of the attributes must happen during the authorization stage.

To create an OnAccessAccept Rule for the realm

1. Log on to the FSS Administrative UI.
2. From the Domains tab, navigate to the realm which protects the target resource.
3. Select the realm with the target resource and choose Create Rule under Realm.

   The Rule Properties dialog opens.
4. Enter a name in the Name field that describes the rules purpose as an authorization rule.
5. Choose the realm protecting the target resource for the Realm field.
6. Enter an asterisk (*) in the Resource field.

7. Select Authorization events and OnAccessAccept in the Action group box..
8. Ensure that Enabled is checked in the Allow/Deny and Enable/Disable group box.
9. Click OK to save the rule.

The authorization rule is now defined for the realm with the protected resource.

Configure a Response to Send Attributes as HTTP Headers

You must configure a response that sends the SAML attributes as HTTP headers to the Web Agent. The Web Agent will process the response and make the header variables available to the client application.

To create a response to send the attributes as headers

1. Log on to the FSS Administrative UI.
2. From the Domains tab, select the domain that contains the target resource.
3. In the domain,select the Responses object and create a new response.

   The Response Properties dialog opens.
4. Click Create.

   The Response Attribute dialog opens.
5. Select WebAgent-HTTP-Header-Variable in the Attribute field.
6. Select Active Response in the Attribute Kind group box.
7. Complete the fields in the Attribute Fields group box as follows:

   Variable Name

   Specify the name you want for the header variable. You assign this name.

   Library Name

   smfedattrresponse

   This must be the entry for this field.

Function Name

getAttributeValue

This must be the entry for this field.

Parameters

Specify the name of the attribute as it appears in the assertion.

An agreement between you and your federated partner determines the attributes that will be in the assertion.

8. Click on OK to save the attribute.
9. Repeat the procedure for each attribute that should become an HTTP header variable. You can configure many attributes for a single response.

The response will send the attributes on to the Web Agent to become HTTP headers.

Create a Policy to Implement Attributes as HTTP Headers

To implement the use of SAML attributes as HTTP headers, you must group together the authorization event rule and active response in a policy.

To create the policy to generate HTTP Headers from SAML attributes

1. Log on to the FSS Administrative UI.
2. From the Domains tab, select the domain that contains the target resource.
3. In the domain, select the Policies object and create a new policy.

   The Policy Properties dialog opens.
4. Enter a descriptive name in the Name field.
5. Select the users that should have access to the protected resource in the Users tab.
6. Add the authorization rule you created previously on the Rules tab.
7. Select the authorization rule and click Set Response.

   The Available Responses dialog opens.
8. Select the active response you created previously and click OK.

   You return to the Rules tab. The response appears with the authentication rule.
9. Click OK to save the policy.

The policy that enables SAML attributes to be used as HTTP headers is complete.

Request Processing with a Proxy Server at the SP

When SiteMinder receives certain requests at the SP, it validates the message attributes using the local URL for Federation Web Services application before processing the request.

For example, a logout request message may contain the following attribute:

```
Destination="http://sp.domain.com:8080/affwebservices/public/saml2slo"
```

In this example, the destination attribute in the logout message and the address of the Federation Web Services application are the same. SiteMinder verifies that the destination attribute matches the local URL of the FWS application.

When the SiteMinder federated environment sits behind a proxy server, the local and destination attribute URLs are not the same because the Destination attribute is the URL of the proxy server. For example, the logout message may include the following Destination attribute:

```
Destination="http://proxy.domain.com:9090/affwebservices/public/saml2slo"
```

The local URL for Federation Web Services, http://sp.domain.com:8080/affwebservices/public/saml2slo, does not match the Destination attribute so the request is denied.

You can specify a proxy configuration to alter how SiteMinder determines the local URL used for verifying the message attribute of a request. When a proxy configuration is set, SiteMinder replaces the <*protocol*>://<*authority*> portion of the local URL with the proxy server URL, which results in a match between the two URLs.

Configure Request Processing with a Proxy Server at the SP

To support federated environments that use a proxy server at the SP

1. Log in to the FSS Administrative UIe.
2. Access the SAML 2.0 Auth Scheme Properties dialog.

   The SAML 2.0 Auth Scheme Properties dialog opens.
3. Select the Advanced tab.

4. Enter a partial URL for the proxy server, in the format <*protocol*>://<*authority*> in the Server field of the Proxy group box.

   For example, the proxy server configuration would be:
   http://proxy.domain.com:9090

   If your network includes the SPS federation gateway, the Server field must specify the SPS federation gateway host and port, for example,

   http://sps_federation_gateway.domain.com:9090

5. Click OK to save your changes.

The Server configuration affects the URLs for the following services at the SP:

- Assertion consumer Service
- Single Logout Service

The Server value becomes part of the URL used to verify SAML attributes like the Destination attribute. Essentially, if you are using a proxy server for one URL, you need to use it for all these URLs.

Enable Single Logout

The single logout (SLO) profile allows near-simultaneous logout of all sessions provided by a specific session authority and associated with a particular user. The logout is directly initiated by the user. A session authority is the authenticating entity that has initially authenticated the user. In most cases, the session authority is the Identity Provider.

The benefit to configuring single logout is that it ensures no sessions are left open for unauthorized users to gain access to resources at the Service Provider.

The single logout service can be initiated via user's browser from a link at the Service Provider or at the Identity Provider. When a user wants to logout, he clicks the logout link which points to an SLO servlet. This servlet, which is a component of Federation Web Services, processes logout requests and response coming from a Service Provider or Identity Provider; however, the servlet does not need to know the originator of the request or response. It uses the SiteMinder session cookie to determine the session to log out.

More information

Configure Single Logout (optional) (see page 328)

Bindings for Single Logout

The single logout feature transports messages using the HTTP-Redirect binding. This binding determines how SAML protocol messages are transported using HTTP redirect messages, which are 302 status code responses.

Configure Single Logout

To configure single logout

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.

2. Select the SLO tab.
3. Select the HTTP-Redirect checkbox.

   The rest of the fields become active.

4. Fill in the remaining fields. Validity Duration and SLO Location URL are the two required fields.
5. Enable the session server.

More Information:

Storing User Session, Assertion, and Expiry Data (see page 207)

How To Protect Resources with a SAML 2.0 Authentication Scheme

At the Service Provider, you must configure a SAML authentication scheme for each Identity Provider that generates assertions. Each scheme must be bound to a realm, which consists of all the target URLs that comprise the target resources requested by users. These resources then need to be protected by a SiteMinder policy.

To protect a federation resource with a SAML authentication scheme:

1. Create a realm that uses the SAML authentication scheme. The realm is the collection of target resources being requested by users.

   There are two ways to set-up a realm that includes a SAML authentication scheme:

   - You can create a unique realm for each authentication scheme and Identity Provider already configured.
   - You can configure a single target realm that uses a custom authentication scheme to dispatch requests to the corresponding SAML authentication schemes. Configuring one realm with a single target for all Identity Providers simplifies configuration of realms for SAML authentication.

2. After configuring a realm, configure an associated rule and optionally, a response.
3. Group the realm, rule, and response into a policy that protects the target resource.

Important! Each target URL in the realm is also identified in an unsolicited response URL. An unsolicited response is sent from the Identity Provider to the Service Provider, without an initial request from the Service Provider. In this response is the target. At the Identity Provider site, an administrator needs to include this response in a link so that this link the user gets redirected to the Service Provider.

Configure a Unique Realm for Each SAML Authentication Scheme

The procedure for configuring a unique realm for each SAML authentication scheme (artifact or profile) follows the standard instructions for creating realms in the FSS Administrative UI.

To create a realm for each SAML authentication scheme

1. Log on to the FSS Administrative UI.
2. Click the System tab.
3. Click Edit, System Configuration, Create Domain.

   The Domain dialog opens.

4. Create a policy domain that will contain the realm with the target resources.

5. Create a realm under the policy domain you created in the previous step, noting the following:
   a. Select the Web Agent protecting the web server where the target federation resources reside for the Agent field.
   b. Select the SAML authentication scheme for the Authentication Scheme field. This is the SAML scheme that should protect the realm.
6. Create a rule for the realm.

   As part of the rule you select a Web Agent action (Get, Post, or Put), which allows you to control processing when users authenticate to gain access to a resource.

Note: You can click Help for a description of fields, controls, and their respective requirements.

The realm is now configured.

Form the Policy to Protect the Target Resource

After creating the realm, you add it to a policy that protects target federation resources.

Note: The following procedure assumes that a user directory has already been created.

To create a policy for the target federation resources

1. Log on to the FSS Administrative UI.
2. Expand the domain with the target realm.
3. Select the Policies object.

   The Policy Properties dialog opens.
4. Configure the policy, using the realm you previously created for federation resources.
5. Save the policy.
6. Exit the FSS Administrative UI.

For detailed information about creating policies, see the *Policy Server Configuration Guide*.

Configure a Single Target Realm for All SAML Authentication Schemes

To simplify configuration of realms for SAML authentication schemes, you can create a single target realm for multiple producing authorities.

To do this, set-up:

- A single custom authentication scheme

  This custom scheme forwards requests to the corresponding SAML authentication schemes, which should already be configured for each producing authority.

- A single realm with one target URL

More information:

Create the Custom Authentication Scheme (see page 290)
Configure the Single Target Realm (see page 292)

Create SAML Authentication Schemes for the Single Target Realm

Configure the necessary SAML authentication schemes that will be referenced by the custom authentication scheme associated with the single target realm. When you define the custom authentication scheme, you define a parameter that instructs the Policy Server which SAML authentication schemes the custom scheme can apply to resource requests.

To create the SAML authentication scheme

1. Log on to the FSS Administrative UI.
2. Create SAML authentication schemes according to the procedures in this guide for the SAML protocol you are using.
3. Exit the FSS Administrative UI.

More information:

SAML 1.x Authentication Schemes (see page 269)
SAML 2.0 Authentication Scheme Overview (see page 347)

Create the Custom Authentication Scheme

A single target realm relies on a specific custom authentication scheme to work properly.

To configure a custom authentication scheme for a single target realm

1. Log on to the FSS Administrative UI.
2. Select the System tab.

3. Select Edit, System Configuration, Create Authentication Scheme.

   The Authentication Scheme Properties dialog opens.

4. Complete the fields as follows:

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Name

   Enter a descriptive name to indicate this is a custom auth scheme, such as SAML Custom Auth Scheme.

5. Complete the following field in the Scheme Common Setup group box:

   Authentication Scheme Type

   Custom Template

6. Complete the following fields in the Scheme Setup tab

   Library

   smauthsinglefed

   Secret and Confirm Secret

   Leave this field blank.

   Confirm Secret

   Leave this field blank

   Parameter

   Specify one of the following:

   - SCHEMESET=LIST; <*saml-scheme1*>;<*saml_scheme2*>

     Specifies the list of SAML authentication scheme names to use. If you configured an artifact scheme called artifact_producer1 and POST profile scheme called samlpost_producer2, you will enter these schemes. For example:

     SCHEMESET=LIST;artifact_producer1;samlpost_producer2

   - SCHEMESET=SAML_ALL;

     Specifies all the schemes you have configured. The custom authentication scheme will enumerate all the SAML authentication schemes and find the one with the correct Provider Source ID for the request.

- SCHEMESET=SAML_POST;

  Specifies all the SAML POST Profile schemes you have configured. The custom authentication scheme will enumerate the POST Profile schemes and find the one with the correct Provider Source ID for the request.

- SCHEMESET=SAML_ART;

  Specifies all the SAML artifact schemes you have configured. The custom authentication scheme will enumerate the artifact schemes and find the one with the correct Provider Source ID for the request.

Enable this scheme for SiteMinder Administrators

Leave unchecked.

7. Click OK to save your changes.

Configure the Single Target Realm

After configuring the authentication schemes, including the custom authentication scheme, you can configure a single target realm for federation resources.

To create the single target realm

1. Log in to the FSS Administrative UI.
2. Select the Domains tab.
3. Select the policy domain you previously created for the single target realm.
4. Select the Realms object and select Edit, Create Realm.

   The Realm Properties dialog opens.

5. Enter the following values to create the single target realm:

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Name

   Enter a name for this single target realm.

6. Complete the following field in the Resource group box:

   Agent

   Select the SiteMinder Web Agent protecting the web server with the target resources.

Resource Filter

Specify the location of the target resources. This is the location where any user requesting a federated resource should be redirected.

For example, /FederatedResources.

7. Select the Protected radio button in the Default Resource Protection group box.
8. Select the previously configured custom authentication scheme in the Authentication Scheme group box. This is the custom authentication using the smauthsinglefed library.

   For example, if the custom scheme was named Fed Custom Auth Scheme, this is the scheme you would select.
9. Click OK.

The single target realm task is complete.

Configure the Rule for the Single Target Realm

Under the single target realm, configure a rule to protect the resources.

1. Select the single target realm.
2. Select Edit, *single target realm*, Create Rule under Realm.

   The Rule Properties dialog displays.
3. Enter values for the fields in the dialog.

   Note: You can click Help for a description of fields, controls, and their respective requirements.
4. Click OK.

The rule for the single target realm configuration is created. It can now be used in a policy.

Create a Policy Using the Single Target Realm

Create a policy that references the single target realm. Remember that the single target realm uses the custom authentication scheme that directs requests to the appropriate SAML/WS-Fed authentication scheme.

Note: This procedure assumes you have already configured the domain, custom authentication scheme, single target realm and associated rule.

To create a policy and add it to an existing domain

1. Log on to the FSS Administrative UI.
2. From the Domains tab, select the Policies object.

3. Click Edit, Create Policy.

   The Policy Properties dialog opens.

4. Enter a name and a description of the policy in the General group box.
5. Add users to the policy from the Users tab.
6. Add the rule you created for the single target realm from the Rules tab.

   The remaining tabs are optional.

7. Click OK.

The policy task is complete.

Enforce Assertion Encryption Requirements for Single Sign-on

The encryption feature ensures that the authentication scheme processes only an encrypted assertion and/or Name ID in the assertion.

For added security, the Identity Provider may have encrypted the Name ID, user attributes, and/or the entire assertion. Encryption adds another level of protection when transmitting the assertion. When encryption is enabled at the Identity Provider, the public key is used to encrypt the data. When the assertion arrives at the Service Provider, it decrypts the encrypted data with the associated private key.

When you configure the encryption at the Session Provider, the assertion must contain an encrypted Name ID and/or assertion or the Service Provider will not accept the assertion.

Set Up Encryption for SSO

To enforce encryption requirements

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.

2. Select the Encryption tab.
3. To require that only the Name ID be encrypted, select the Require Encrypted Name ID checkbox.
4. To require that the entire assertion be encrypted, select the Require Encrypted Assertion checkbox.

   You can select the Name ID and the assertion.

5. Optionally, specify an alias for the private key that will be used to decrypt any encrypted data in the assertion received from the Identity Provider.
6. Click OK to save your changes.

Note: If you do not select the Encrypted Name ID or the Encrypted Assertion check box, the Service Provider accepts encrypted and clear-text Name IDs and assertions.

Customize Assertion Processing with the Message Consumer Plug-in

The Message Consumer Plug-in is SiteMinder's Java program that implements the Message Consumer Extension API. Using this plug-in you can implement your own business logic for processing assertions, such as rejecting an assertion and returning a SiteMinder-defined status code. This additional processing works together with SiteMinder's standard processing of an assertion.

Note: For more information about status codes for authentication and disambiguation, see the *SiteMinder Programming Guide for Java*.

During authentication, SiteMinder first tries to process the assertion by mapping a user to its local user store. If SiteMinder cannot find the user, it calls the postDisambiguateUser method of the Message Consumer Plug-in, if the plug-in is configured. The plug-in then has the opportunity to disambiguate the user, if it knows how.

If the plug-in successfully finds the user, SiteMinder proceeds to the second phase of authentication. If the plug-in cannot map the user to a local user store, the plug-in should return a UserNotFound error, which is documented in the MessageConsumerPlugin interface. The plug-in's use of SiteMinder's redirect URLs feature is optional and is based on the error code returned by the plug-in. If the Message Consumer plug-in is not configured, the redirect URLs are used based on the error generated by the SAML authentication scheme.

During the second phase of authentication, SiteMinder calls the postAuthenticateUser method of the Message Consumer Plug-in, if the plug-in is configured. If the method succeeds, SiteMinder redirects the user to the requested resource. If the method fails, you can configure the plug-in to send the user to a failure page. The failure page can be one of the redirect URLs that you can specify with the authentication scheme configuration, but this is not required.

To integrate the Message Consumer plug-in with SiteMinder, use the parameter values that you specify for the plug-in configuration. The plug-in configuration is part of the SAML 1.x, SAML 2.0 and WS-Federation authentication scheme configuration.

More information:

Specify Redirect URLs for Failed SAML 1.x Authentication (see page 287)
Specify Redirect URLs for Failed SAML 2.0 Authentication (see page 383)
Set Up Redirect URLs for Failed WS-Federation Authentication (see page 439)

Configuring the Message Consumer Plug-in (SAML 2.0)

To configure the message consumer plug-in

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.

2. Select the Advanced tab.

3. Implement the plug-in class.

   A sample class, MessageConsumerSAML20.java, can be found in sdk/samples/authextensionsaml20.

4. In the Full Java Class Name field, enter the Java class name of the plug-in. This plug-in is invoked by the Message Consumer at run time.

   The plug-in class can parse and modify the assertion, and then return the result to the Message Consumer for final processing.

   Only one plug-in is allowed for each authentication scheme. For example, com.mycompany.messageconsumer.SampleCode

   A sample plug-in is included in the SDK. You can view a sample message consumer plug-in at sdk/samples/authextensionsaml20.

   Note: Specify a Message Consumer plug-in for each authentication scheme.

Integrate the Message Consumer Plug-in with SiteMinder (SAML 2.0)

After configuring a message consumer plug-in, you have to integrate the plug-in with the SAML 2.0 authentication scheme.

The instructions for compiling the message consumer plug-in Java file are in the AssertionSample.java file, in sdk/samples/authextensionsaml20.

To integrate the Message Consumer plug-in with the authentication scheme

1. Compile the message consumer plug-in Java file.

   The Java file requires the following .jar file installed with the Policy Server:

   policy_server_home/bin/java/SmJavaApi.jar

2. In the JVMOptions.txt file, modify the -Djava.class.path value so it is set to the classpath for the plug-in. This enables the plug-in to be loaded.

   Note: Do not modify the classpath for SMJavaApi.jar.

3. Restart the Policy Server.

   Restarting ensures that the latest version of the message consumer plug-in is picked up after being recompiled.

Note: Instead of specifying the message consumer plug-in class and its parameters via the Policy Server User Interface you can use the Policy Management API (C or Perl). For instructions, see the *SiteMinder Programming Guide for C* or the *SiteMinder Programming Guide for Java*.

Additional information about the Message Consumer plug-in can be found as follows:

- Reference information (method signatures, parameters, return values, data types), and also the new constructor for UserContext class, are in the *Java Developer's Reference*. Refer to the MessageConsumerPlugin interface.
- Overview and conceptual information about authentication and authorization APIs, see the *SiteMinder Programming Guide for Java*.

Specify Redirect URLs for Failed SAML 2.0 Authentication

For single sign-on processing, you can configure several optional redirect URLs if a user cannot be authenticated at the Service Provider. The redirect URLs allow finer control over where a user is redirected if the assertion is not valid. For example, if a user cannot be located in a user store, you can fill in a User Not Found redirect URL and send the user to a registration page.

Note: These URLs are not required.

If you do not configure redirect URLs, standard SiteMinder processing takes place. How a failed authentication is handled depends on the configuration.

To configure optional Redirect URLs

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog box opens.

2. Select the Advanced tab.

3. Fill in a URL for one or more of the following fields:

   - Redirect URL for the User Not Found status
   - Redirect URL for the invalid SSO Message status
   - Redirect URL for the Unaccepted User Credential (SSO Message) status

   If you enter a value for the Redirect URL for the invalid SSO Message status, you must also choose a mode.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Federation Web Services handles the errors by mapping the authentication reason into one of the configured redirect URLs, then the user can be redirected to that URL to report the error.

Note: These redirect URLs can be used in conjunction with the SiteMinder Message Consumer Plug-in for further assertion processing. If authentication fails, the plug-in can send the user to one of the redirect URLs you specify.

Access the Artifact Resolution Service with a Client Certificate (optional)

This procedure is only for single sign-on with the artifact binding.

You can use client certificate authentication to secure the back-channel across which the Identity Provider sends the assertion to the Service Provider when using the HTTP-artifact binding.

Note: Certificate authentication for the back-channel is optional; you can use Basic authentication instead.

The SAML 2.0 authentication scheme with artifact binding is invoked by the Assertion Consumer Service. This service collects information from the scheme to retrieve the SAML assertion from the Identity Provider. You are required to specify an authentication method for the realm that contains the Artifact Resolution Service at the Identity Provider. This tells the Assertion Consumer Service what type of credentials to provide to retrieve the assertion.

If the Artifact Resolution Service is part of a realm configured for client certificate authentication, there are some configuration tasks at the Service Provider and the Identity Provider you need to complete.

- At the Service Provider, you need to select the client certificate option as part of the authentication scheme configuration as instructed in Configuring the Client Certificate Option at the Service Provider.
- At the Identity Provider, you need to create a policy to protect the Artifact Resolution Service as instructed in Protecting the Artifact Resolution Service at the Identity Provider.

Configuring the Client Certificate Option at the Service Provider

To set-up the client certificate authentication to secure the backchannel to the artifact resolution service, you need to

- Select the client cert option in the authentication scheme configuration
- Add a client certificate to the smkeydatabase

Select the Client Cert Option for Authentication

To present a client certificate as credentials

1. In the Authentication Scheme Properties dialog for SAML 2.0 authentication, click Additional Configuration.
2. Select the SSO tab.

3. Select HTTP-Artifact in the Bindings group box.
4. Select Client cert for the Authentication field.

Add a Client Certificate to the SMKeyDatabase

This procedure assumes you already have a private key and certificate from a Certificate Authority.

1. Create an smkeydatabase, if one does not already exist. Enter the command:
   smkeytool -createDB smkeydatabase -password <*password*>
2. Add a private key and client certificate to smkeydatabase by entering the following command.

   smkeytool -alias <*alias*> –addPrivKey - keyfile<file_path_to_key_file>
   -certfile<*file_path_to_certificate*>

   Notes:

   - The value for alias should be same as the value of the Name field specified in the Scheme Setup dialog for the SAML 2.0 authentication scheme with HTTP-artifact binding. The attribute of the Service Provider's subject DN, represented in the example by the CN value, should also reflect the Name value.

     For example, if you entered CompanyA as the Name, then alias would be Company A, and the attribute could be CN=CompanyA, OU=Development, O=CA, L=Islandia, ST=NY, C=US
   - To refer to the existing entry, subsequent keytool commands must use the same alias.
   - The value for keypass should be same as the value of the Password field specified in the Scheme Setup dialog for the SAML 2.0 authentication scheme.

Protect the Artifact Resolution Service at the Identity Provider

At the Identity Provider Policy Server, you must configure a policy to protect the artifact resolution service (see page 339). The realm for this policy must use an X.509 client certificate authentication scheme.

Chapter 15: Use an Attribute Authority to Authorize Users

This section contains the following topics:

Perform Authorizations with an Attribute Authority

The Policy Server can authorize a user based on the following types of information:

- The users to which the policy applies
- IP address restrictions
- Time restrictions
- Policy Expressions
- Active Policy

Additionally, the Policy Server can authorize a user based on user attributes provided by a SAML 2.0 Attribute Authority. When a user requests access to a protected resource, the authorizing entity can request additional user attributes to determine whether access to the resource should be granted.

In a SAML 2.0 federated network, there are two roles required to authorize a user based on user attributes:

- SAML Attribute Authority
- SAML Requester

SAML Attribute Authority

The SAML Attribute Authority adheres to the SAML 2.0 Assertion Query/Request profile. It relies on the Attribute Service to process a query message and create attribute assertions. These assertions contain user attributes that a SAML Requester uses to authorize access to protected resources. The Attribute Service is part of the Federation Web Services application.

When an entity makes a request to an Attribute Authority, the message contains the user attributes that the requester wants retrieved and the Name ID and the Issuer of the request. The Attribute Service uses the NameID to disambiguate the user so it knows what values to return for the requested attributes. The Attribute Service returns an response message that includes an attribute assertion wrapped in a SOAP message. This response includes the user attributes.

Note: The user does not need to be authenticated at the Attribute Authority and there does not need to be a single sign-on relationship between the Authority and the Requester.

SAML Requester

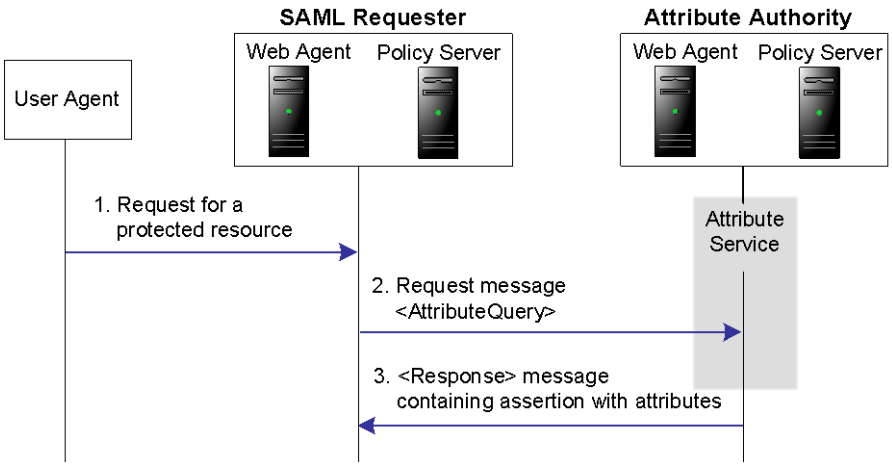
The SAML Requester is a SAML entity that uses the SAML 2.0 Assertion Query/Request profile to request attributes for a user. In SiteMinder, the SAML Requester is not a specific service, but a group of Policy Server features that can produce and process <AttributeQuery> messages. It is the Requester that asks for the user attributes from the Attribute Authority because the protected target resource always resides at the SAML requester. The Requester resolves these attributes into variables used by a policy expression.

Note: In a SiteMinder federated environment, the SAML Attribute Authority is the Identity Provider the SAML Requester is the Service Provider; however, this does not have to be the case.

To evaluate an authorization request based on SAML 2.0 user attributes, you add a SiteMinder attribute type called a **federation attribute variable** to a policy expression that is used in a policy protecting the target resource at the SAML Requester. When this variable is used in a policy, the SAML Requester sends a query message to the Attribute Authority. This query message contains the Name ID for the SAML entity for which the attributes are being requested. The SAML Attribute Authority returns a response message containing assertions with the attribute statements.

A user is required to have a session at the SAML Requester; however, the user does not have to log in or authenticate at the Attribute Authority.

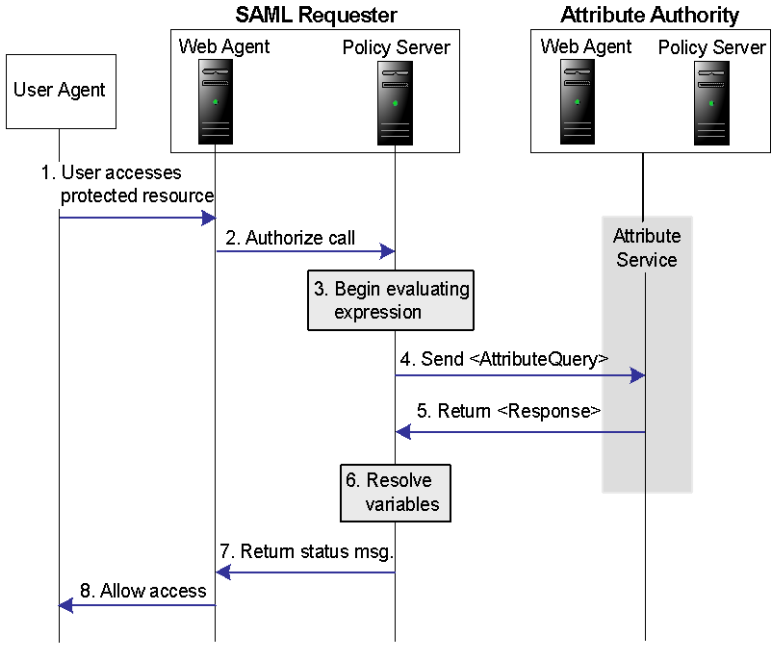
The following figure shows how an attribute query is processed.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

Flow Diagram for Authorizing a User with User Attributes

The following flow diagram shows the authorization process with an Attribute Authority.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The sequence of a user attribute request is as follows:

1. A user accesses a protected resource. The user might be logged in locally or may have authenticated via a SAML assertion.
2. The Web Agent at the SAML Requester makes a call to the local Policy Server determine if the user is authorized to access the resource. The policy that protects the resource uses a policy expression for authorization with a federated attribute variable.
3. The Policy Server tries to resolve these variables but cannot. The Policy Server looks the user up in the local user store to obtain the user's NameID.
4. An attribute query is sent to the AttributeService URL at the Attribute Authority. The AttributeQuery contains the users NameID and the requested attributes.

5. The Attribute Authority returns a SAML response containing an assertion with the requested attributes.
6. The SAML Requester completes the resolution of variables and then evaluates the policy expression.
7. An authorization status message is returned to the Web Agent.
8. Depending on the authorization status, the Web Agent allows or denies access to the requested resource.

Configure an Attribute Authority and a SAML Requester

To configure the SAML Attribute Authority at the Identity Provider

1. Define a search specification for locating a user. Enter the NameID into the search specification.
2. Define the attributes that can be returned in response to a query message.

To configure the SAML Requester at the Service Provider to send an attribute query:

1. Enable the AttributeQuery functionality.
2. Configure the back channel across which communications between the SAML Requester.
3. Define the list of attributes that can be requested by the SAML Requester.
4. Configure the federation attribute variables.
5. Configure the NameID for inclusion in the attribute query.

Set up the Attribute Authority

In a SiteMinder context, the Attribute Authority is the Identity Provider with the Attribute Authority service enabled.

Note: You do not need to configure other Identity Provider features, such as single sign-on to have the Identity Provider act as an Attribute Authority.

To configure a SiteMinder Attribute Authority

1. Log on to the FSS Administrative UI.
2. From the appropriate affiliate domain, double-click the Service Provider, acting as the SAML Requester, that will be requesting user attributes.

   The SAML Service Provider Properties dialog opens.
3. Select the Attribute Svc tab.

4. Check the Enabled check box to enable the Attribute Authority feature.
5. Select a namespace in the User Lookup box and click Edit.

   The Attribute Service Namespace Mapping dialog opens.
6. In the Search Specification field, enter a namespace attribute that the authentication scheme uses to search string, then click OK.

   Use **%s** in the entry as the variable that represents the NameID. For example, the NameID has a value of user1. If you specify Username=%s in the Search Specification field, the resulting string is Username=user1. This string is checked against the user store to find the correct record for authentication.
7. Click OK.

   You return to the Attribute Svc tab.
8. Optionally, modify the Validity Duration.
9. Optionally, to sign the assertions that are returned to the SAML Requester, check the Sign Assertions check box.
10. Click OK to save your changes.
11. Go to Configure the Attributes at the Attribute Authority (see page 392).

Configure Attributes at the Attribute Authority

When you configure an attribute, you indicate whether the attribute is used as part of a single sign-on request, or to satisfy an attribute query request. The attributes function is determined by the Retrieval Method field in the SAML Service Provider Attribute dialog.

If you want the same attribute to be used for both services, you must create two attribute statements that use the same Attribute name and variable; however, one attribute uses SSO as the retrieval method and one uses Attribute Services as the retrieval method.

To configure an attribute

1. Configure Attributes for SSO Assertions (see page 326).

   The configuration process for configuring attributes at the Attribute Authority are the same for configuring attributes for single sign-on assertions.
2. Select Attribute Service for the Retrieval Method field in the SAML Service Provider Attribute dialog.

   If this attribute is requested by an attribute query, selecting Attribute Service as the Retrieval Method marks the attribute for inclusion in the attribute assertion.

Configure the BackChannel for the Attribute Authority

If you configure a SAML Attribute Authority, you need to configure a secure backchannel across which the SAML Attribute Authority returns the SAML response to the requester.

Note: This procedure assumes you have already enabled the Attribute Authority Service.

To configure the backchannel

1. Open the FSS Administrative UI.
2. From the appropriate affiliate domain, double-click the Service Provider that will be requesting user attributes for authorization.

   The SAML Service Provider Properties dialog opens.
3. Select the General tab.
4. Click on Configure Backchannel Authentication.

   The Backchannel Properties dialog opens.
5. Complete the following fields:
   - Password
   - Confirm Password

   If you configured SAML 2.0 artifact authentication, you may already have configured a password for the backchannel. This password can be used for both SSO and the Attribute Authority Service.
6. Click OK to save your entries.

Set up a SAML Requestor to Generate Attribute Queries

For a Service Provider to act as a SAML Requester, you need to configure a SAML 2.0 authentication scheme so that an attribute query can be generated.

To configure the Service Provider as a SAML Requester:

1. Log on to the FSS Administrative UI.
2. Display the Authentication Schemes object and double-click an existing SAML 2.0 authentication scheme or create a new scheme.

   The Authentication Scheme Properties dialog opens.
3. Click Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog opens.

4. From this dialog you will configure fields in the following dialogs:
   - Attributes tab
   - NameIDs tab
   - Backchannel tab
5. Finally, you will configure a Federation Attribute Variable.

More Information:

Define an Attribute to Include in an Attribute Query (see page 394)
Configure the NameID for the Attribute Query (see page 395)
Configure the Backchannel for the Attribute Query (see page 395)
Create a Federation Attribute Variable (see page 396)

Define an Attribute to Include in an Attribute Query

To configure an attribute that can be included in an attribute query

1. Log on to the FSS Administrative UI.
2. Access the Authentication Scheme Properties dialog for the SAML 2.0 authentication scheme that protects the resource that will be protected based on a user attribute.
3. Click on Additional Configuration.

   The SAML 2.0 Auth Scheme Properties dialog opens.
4. Click on the Attributes tab.
5. Click Add.

   The Add Attribute dialog opens.
6. Enter values for the following fields:
   - Local Name
   - Attribute Name
   - Name Format
7. Click OK to save your changes.

   You return to the Attributes dialog.
8. In the Attribute Query group box, select Enabled and enter a value for the Attribute Service field.
9. Optionally, select the following checkboxes:
   - Get All Attributes
   - Require Signed Assertions

10. Click OK.

    The Name IDs tab opens and a message is displayed instructing you to specify an attribute name for the name identifier.

11. Configure a NameID (see page 395). This NameID configured in the SAML 2.0 Auth.Scheme Properties is included in the attribute query for use by the Attribute Authority.

Configure the NameID for the Attribute Query

When a SAML Requester sends a query message to the Attribute Authority, it includes the NameID of the user whose attributes it is requesting. When you configure the NameID, you are specifying how the NameID is obtained by the SAML Requester so it can be placed in the attribute query.

To specify a NameID

1. If necessary, select the authentication scheme you want to configure and access the Authentication Scheme Properties dialog.
2. Click Additional Configuration and select the Name IDs tab.
3. Define the following for the NameID:
   - Name ID format
   - Name ID Type
   - Name ID Fields
4. Click OK to save your changes.

You may be prompted to configure the backchannel if it is not already configured.

Configure the Backchannel for the Attribute Query

The attribute query is sent across a secure backchannel to the Attribute Authority.

Note: There is only one backchannel between the Service Provider and the Identity Provider. Therefore, the backchannel configuration that you define for the attribute query is the same backchannel configuration that is used if you configure the SAML artifact profile.

To configure the backchannel

1. If necessary, access the Authentication Scheme Properties dialog for the SAML requester.
2. Click on Additional Configuration

3. Select the Backchannel tab.
4. Complete the following fields:
   - Authentication
   - SP Name
   - Password
   - Confirm Password

Create a Federation Attribute Variable

To use a federation attribute variable in a policy expression, you need to first create the attribute variable.

To define a federation attribute variable

1. Log on to the FSS Administrative UI.
2. From the list of Domains, expand the policy domain where the variable will be added.
3. Expand the Variables list by clicking on the plus (+) symbol.
4. Select Federation Attribute Variable then select Edit, Create Variable

   The Federation Attribute Variable Properties dialog opens.
5. Complete all the fields in the dialog.
6. Click OK to save the variable.
7. Add this variable to an expression used by a policy that protects a federated resource.

Note: A policy expression can use multiple Federation attribute variables; each variable is tied to a SAML 2.0 authentication scheme. Therefore, a single expression can result in many attribute requests sent to many Attribute Authorities.

Create a Policy Expression with the Federation Attribute Variable

To use Federation attribute variables as part of the authorization process, you need to configure the attribute variable then add it to a policy expression. You then associate this policy expression with the policy protecting the target resource at the SAML requester.

Chapter 16: Identify WS-Federation Resource Partners at the Account Partner

This section contains the following topics:

Configuration Checklist

Identifying a Resource Partner in a SiteMinder federated network is a task you complete at the Account Partner because the Account Partner needs information about the Resource Partner to generate an assertion for that partner. At the Account Partner, you define how the two entities communicate determine the types of profiles that each side supports, such as Web single sign-on and signout.

- Required Configuration Tasks (see page 398)
- Optional Configuration Tasks (see page 398)

Tips:

- Certain parameter values at the Account Partner and Resource Partner must match for the configuration to work. A list of those parameters can be found in Configuration Settings that Must Use the Same Values (see page 497).
- To ensure you are using the correct URLs for the Federation Web Services servlets, a list of URLs can be found in Federation Web Services URLs Used in SiteMinder Configuration (see page 503).

Required Configuration Tasks for Configuring Resource Partners

Check Here	Required Task
	Create an Affiliate domain.
	Add a Resource Partner to the affiliate domain and: ■ Specify the name of the Resource Partner ■ Specify and protect the Authentication URL ■ Select users from a user store for which assertions will be generated ■ Specify the Name ID on the Name IDs tab ■ Specify the Resource Partner ID, the Account Partner ID, and the Skew Time on the General tab ■ Configure all fields on the SSO tab to setup single sign-on

Note: You can save a Resource Partner entity without configuring a complete SSO profile; however, you cannot pass an assertion to the Resource Partner without configuring SSO.

More Information:

Creating Affiliate Domains (see page 237)
Add a Resource Partner to an Affiliate Domain (see page 399)

Optional Configuration Tasks for Configuring a Resource Partner

Check Here	Optional Task
	Configure single sign-on restrictions: ■ Set IP address restrictions to limit the addresses used to access Resource Partners. ■ Configure time restrictions for Resource Partners.
	Configure attributes for inclusion in assertions
	Configure signout.
	Customize a SAML response using the Assertion Generator plug-in

More Information:

Specify IP Address Restrictions for Resource Partners (optional) (see page 406)
Set up Time Restrictions for Resource Partner Availability (optional) (see page 407)
Configure Signout (see page 412)
Customizing Content in WS-Federation Assertions (see page 414)

Add a Resource Partner to an Affiliate Domain

To identify a Resource Partner as an available consumer of SiteMinder-generated assertions, you add the Resource Partner to an affiliate domain configured at the Account Partner's Policy Server. You then define the Resource Partner's configuration so that the Account Partner can issue security token response messages containing assertions.

To add a Resource Partner to an affiliate domain

1. Log into the FSS Administrative UI.
2. Display the list of domains.
3. Expand the AffiliateDomain and select the Resource Partners object.
4. From the menu bar select Edit, Create Resource Partner.

   The Resource Partner Properties dialog opens.
5. Fill in the following fields at the top of the dialog:
   - Name (a unique name)
   - Description
   - Authentication URL
   - Use Secure URL
   - Application URL

   Note: You can click Help for a description of fields, controls, and their respective requirements.
6. Check Enabled to enable the Account Partner to recognize the Resource Partner you have identified.

More Information:

Protect the Authentication URL to Generate a SiteMinder Session (see page 417)

Select Users for Which Assertions Will Be Generated

When you configure a Resource Partner, you include a list of users and groups for which the WS-Federation Assertion Generator generates SAML assertions.

Note: You may only add users and groups from directories that are in an affiliate domain.

To specify users and groups that have access to Resource Partner resources

1. Log into the FSS Administrative UI.
2. Access the Resource Partner Properties dialog and select the Users tab.

   If the associated affiliate domain contains more than one user directory, the directories appear as subordinate tabs on the Users tab.
3. Click the Add/Remove button.

   The Users/Groups dialog box opens.
4. To add users, select an entry from the Available Members list and click the Left Arrow button, which points to the Current Members list.

   Reversing the procedure removes users from the Current Members list.

   - You can select multiple entries by holding the CTRL or SHIFT key and clicking entries in one of the Members lists. When you select multiple entries and click one of the Arrow buttons, the FSS Administrative UI moves all of the selected entries.
   - Individual users are not displayed automatically. However, you can use the Search utility to find a specific user within one of the listed groups. Different types of user directories must be searched differently.
5. Click OK to save your changes.

Excluding a User or Group from Resource Partner Access

You can exclude users or groups of users from obtaining an assertion. This is useful if you have a large user group that should have access to a Resource Partner, but you there is a small subset of this group that you want to exclude.

To exclude a user or group from access to a Resource Partner's resources

1. In the Users/Groups dialog box, select a user or group from the Current Members list.
2. To exclude the selected user or group, click Exclude.

   The symbol to the left of the user or group in the Current Members list changes to indicate that the user or group is excluded from the Resource Partner.
3. Click OK.

Allow Nested LDAP Groups Resource Partner Access

LDAP user directories may contain groups nested in other groups. In complex directories, large amounts of user information may be organized in a nested hierarchy.

If you enable a Resource Partner to search for users in nested groups, any subset group from a larger group that you add to a policy is searched by the Policy Server. If you do not enable nested groups, the Policy Server only searches the single group you specify for the Resource Partner.

To allow the Resource Partner to search nested groups in an LDAP user directory

1. From the Users tab, select the Allow Nested Groups check box to enable nested groups searching for the Resource Partner.
2. If the associated affiliate domain contains more than one user directory, the directories appear as tabs on the User tab.

Add Users by Manual Entry for Resource Partner Access

From the Users/Groups dialog box, you can use the Manual Entry option to add users who can access the Resource Partner resources.

To add a user by manual entry

1. In the Manual Entry group box, do one of the following:
   - For LDAP directories, enter a valid DN in the Entry field.

     For each DN specified in the Entry field, you can select an action from the Action drop down list, as follows:

     Search Users--the LDAP search is limited to matches in user entries.

     Search Groups--the LDAP search is limited to matches in group entries.

     Search Organizations--the LDAP search is limited to matches in organization entries.

     Search Any Entry--the LDAP search is limited to matches in user, group, and organization entries.

     Validate DN--the LDAP search locates this DN in the directory.

   - For Microsoft SQL Server, Oracle and WinNT directories, enter a user name in the Manual Entry field.

     For an Microsoft SQL Server or Oracle, you can enter a SQL query instead. For example:

     SELECT NAME FROM EMPLOYEE WHERE JOB ='MGR';

     The Policy Server performs the query as the database user specified in the Username field of the Credentials and Connection tab for the user directory. When constructing the SQL statement for the Manual Entry field, you need to be familiar with the database schema for the user directory. For example, if you are using the SmSampleUsers schema and want to add specific users, you could select a user entry from the SmUser table.

   Note: For an LDAP directory, you can enter all in the Manual Entry field to add all directory entries to the Resource Partner.

2. Click Add to Current Members.

   The FSS Administrative UI adds the user or query to the Current Members list.

3. Click OK to save your changes.

Specify Name IDs for WS-Federation Assertions

A name ID names a user in an assertion in a unique way. The value you configure in the FSS Administrative UI will be included in the assertion sent to the Resource Partner.

The format of the name ID establishes the type of content used for the ID. For example, the format might be the User DN so the content would be a uid.

Configure a Name ID for a WS-Federation Assertion

To configure a name ID

1. Log in to the FSS Administrative UI and access the Resource Partner entry you want to configure.
2. Select the Name IDs tab on the Resource Partner Properties dialog box.
3. Select the Name ID Format.

   For a description of each format, see Section 8.3 of the *Assertions and Protocols for the OASIS Security Assertion Markup Language (SAML) V2.0* specification (sstc-saml-core-2.0-cd-04.pdf).
4. Choose the Name ID Type from the following options:
   - Static value
   - User attribute
   - DN attribute (with or without nested groups)

   The contents of the Name ID Fields group box change according to the Name ID Type selected.
5. Complete the fields for the selected Name ID Type.

Configure Required General Information for a Resource Partner

Select the General tab to configure required items, such as the ID of the Resource Partner and Account Partner.

To configure the general settings

1. Log in to the FSS Administrative UI.
2. Open the Resource Partner Properties dialog.
3. Select the General tab.

4. Fill-in values for these required fields.
   - Resource Partner ID
   - Account Partner ID
   - Skew Time
5. For debugging purposes only, you can temporarily disable all signature processing (both signing and verification of signatures) by selecting the Disable Signature Processing checkbox.

   Important! By default, signature processing is enabled because it is required by the WS-Federation Passive Requester profile for single sign-on; therefore, it *must* be enabled in a production environment.

More Information:

Set the Skew Time WS-Federation Single Sign-on (see page 404)

Set the Skew Time WS-Federation Single Sign-on

In the Skew Time field on the General tab, enter the difference, in seconds, between the system clock at the Account Partner and the system clock at the Resource Partner.

For single sign-on, the values of the Validity Duration (set on the SSO tab) and Skew Time (set on the General tab) instruct how the WS-Federation Assertion Generator calculates the total time that an assertion is valid. In the assertion document, the beginning and end of the validity interval is represented by the NotBefore and NotOnOrAfter values.

To determine the beginning of the validity interval, the assertion generator takes the system time when the assertion is generated and sets the IssueInstant value in the assertion according to this time. It then subtracts the Skew Time value from the IssueInstant value. The resulting time becomes the NotBefore value.

To determine the end of the validity interval, the assertion generator adds the Validity Duration value and the Skew Time together. The resulting time becomes the NotOnOrAfter value. Times are relative to GMT.

For example, an assertion is generated at the Account Partner at 1:00 GMT. The skew time is 30 seconds and the validity duration is 60 seconds, making the assertion validity interval between 12:59:30 GMT and 1:01:30 GMT. This interval begins 30 seconds prior to the time the assertion was generated and ends 90 seconds afterward.

Configure Single Sign-on for WS-Federation

The Resource Partner and the Account Partner exchange user information, session information and Account Partner information, in an assertion document sent in a security token response message. When you configure single sign-on at the Account Partner, you determine how the Account Partner delivers an assertion to a Resource Partner.

To set-up single sign-on at the Account Partner

1. Log in to the FSS Administrative UI.
2. Select the Resource Partner you want to configure.
3. Open the Resource Partner Properties dialog.
4. Select the SSO tab.
5. Fill in entries for the following fields on this tab:
   - Authentication Method
   - Validity duration
   - Security Token Consumer Service
   - Authentication Level
6. Optionally, configure policy restrictions based on IP address or time by clicking on Restrictions and completing the appropriate fields.

More Information:

Customizing Content in WS-Federation Assertions (see page 414)

Set the Authentication Scheme Protection Level

The WS-Federation Assertion Generator creates an assertion based on a user session. The user associated with the session has been authenticated at a particular authentication scheme protection level. This means that you can control which users an assertion is generated for based on the protection level at which they authenticated.

Users are authenticated at different protection levels. Therefore, the assertions generated should be for users who authenticated at the required level. Failure to adhere to the protection level may compromise the federated environment's security because the assertions may misrepresent the authentication level at which a user actually authenticated.

Specify IP Address Restrictions for Resource Partners (optional)

The FSS Administrative UI allows you to specify an IP address, range of IP addresses, or a subnet mask of the Web server on which a user's browser must be running for the user to access a Resource Partner. If IP addresses have been specified for a Resource Partner, only users who access the Resource Partner from the appropriate IP addresses are accepted.

To specify IP addresses

1. Log in to the FSS Administrative UI.
2. Select the Resource Partner you want to configure.
3. Open the Resource Partner Properties dialog.
4. Select the SSO tab, then click on Restrictions.
5. Click Add.

   The Add an IP Address dialog box opens.
6. Select one of the following radio buttons to indicate the type of IP address value you are adding:

   Note: If you do not know the IP address, but you have a domain name for the address, click on the DNS Lookup button. In the DNS Lookup dialog box, enter a fully qualified host name in the Host Name field and click OK.

   - Single Host--specifies a single IP address that hosts the user's browser. If you specify a single IP address, the Resource Partner can only be accessed by users from the specified IP address.
   - Host Name--specifies a Web server using its host name. If you specify a host name, the Resource Partner is only accessible to users who access it from the specified host.
   - Subnet Mask--specifies a subnet mask for a Web server. If you specify a subnet mask, the Resource Partner is only accessible to users who access the Resource Partner resources from the specified subnet mask.

     When you select this radio button, the Add an Address and Subnet Mask dialog opens. Use the Left and Right arrow buttons, or click and drag the slider bar to select a subnet mask.
   - Range--specifies IP address range. If you specify a range of IP addresses, the Resource Partner only permits users who access the Resource Partner resources from one of the IP addresses in the range of addresses. You enter a starting (FROM) and ending (TO) addresses to determine the range.
7. Click OK to save your configuration.

Set up Time Restrictions for Resource Partner Availability (optional)

You can specify time restrictions that indicate a Resource Partners's availability. When you add a time restriction, the Resource Partner functions only during the period specified. If a user attempts to access a resource outside of that period, the Account Partner does not produce assertions.

Note: Time restrictions are based on the system clock of the server on which the Policy Server is installed.

To specify a time restriction

1. Log in to the FSS Administrative UI.
2. Select the Resource Partner you want to configure.
3. Open the Resource Partner Properties dialog.
4. Select the SSO tab, then click on Restrictions.
5. In the Time Restrictions group box, click Set.

   The Time dialog box opens. This dialog box is identical to the Time Restrictions dialog box used for rule objects.
6. Click OK.

Allow Access to the Federation Web Services Application

After you add affiliates to an affiliate domain, the affiliates need permission to access the Federation Web Services application. When you install the Policy Server, the FederationWebServicesDomain is installed by default. This domain includes the following policies:

- FederationWSAssertionRetrieval
- FederationWSNotificationService
- FederationWSSessionServicePolicy
- SAML2FWSArtifactResolutionServicePolicy

To specify permission to the Federation Web Services application

1. From the Domains tab, expand FederationWebServicesDomain and select Policies.
2. Select one of the policies, and click Edit, Properties of Policy.

   For SAML 1.x, you need to permit access to:

   - FederationWSAssertionRetrieval
   - FederationWSNotificationService
   - FederationWSSessionServicePolicy

   For SAML 2.0, you need to permit access to SAML2FWSArtifactResolutionServicePolicy

   The SiteMinder Policy dialog opens.
3. From the Users tab, select one of the following:

   - FederationWSCustomUserStore tab for SAML 1.x
   - SAML2FederationCustomUserStore tab for SAML 2.0.

   The Users/Groups dialog opens.

   The consumers, Service Providers, and Resource Partners are the "users" included in the listed user stores.
4. Click Add/Remove on the appropriate tab.
5. From the Available Members list, choose the affiliate domains that should have access to Federation Web Services then move them to the Current Members list.
6. Click OK to return to the Policy List.
7. Repeat this procedure for all policies relevant for the SAML version you are using.

Set Up Links to Initiate WS-Federation Single Sign-on

You can set up links to initiate single sign-on from either side of a WS-Federation network.

Initiate Single Sign-on at the Account Partner

If a user visits the Account Partner before going to the Resource Partner, there needs to be a link the user can select that generates an HTTP Get request to the Account Partner's Single Sign-on Service. The hard-coded link that you create must point to this service and must contain the RP Provider ID and, optionally, parameters, such as the wct parameter, the value of which must contain the time in UTC format.

The syntax for the link to the Single Sign-on Service is as follows:

https://*ap_server:port*/affwebservices/public/wsfedsso?wa=wsignin1.0&wtrealm=*RP_ID*

ap_server:port

Specifies the server and port number of the system at the Account Partner that is hosting the Web Agent Option Pack or the SPS federation gateway, depending on which component is installed in your federation network.

RP_ID

Resource Partner identity

Initiate Single Sign-on at the Resource Partner

If a user starts at the Resource Partner to initiate single sign-on, typically the user goes to a site selection page at the Resource Partner to choose from a list of Account Partners where authentication takes place. The site selection page is in an unprotected realm.

The link on the site selection page points to the Single Sign-on Service at an AP and must contain the Provider ID of RP and optionally, other parameters, such as wct, which holds the value of the time in UTC format. After the link is selected, the user's browser is redirected to the Account Partner to get the assertion.

Configure Attributes for WS-Federation Assertions (optional)

Attributes can provide information about a user requesting access to a resource at a Resource Partner. An attribute statement passes user attributes, DN attributes, or static data from the Account Partner to the Resource Partner in a SAML assertion. Any configured attributes are included in the assertion in one <AttributeStatement> element or the <EncryptedAttribute> element in the assertion.

Note: Attributes statements are not required in an assertion.

Attributes can be used by servlets, Web applications, or other custom applications to display customized content or enable other custom features. When used with Web applications, attributes can implement fine-grained access control by limiting what a user can do at the Resource Partner. For example, you can send an attribute variable called Authorized Amount and set it to a maximum dollar amount that the user can spend at the Resource Partner.

Attributes take the form of name/value pairs. When the Resource Partner receives the assertion, it takes the attribute values and makes them available to applications.

Federated Services are attributes that applications at Resource Partner sites can interpret and pass on to other applications.

You configure attributes in the Attributes tab of the Resource Partner Properties dialog box. This involves choosing an Attribute Kind then filling in values for the variable name and attribute value.

Configure Assertion Attributes for WS-Federation

To configure assertion attributes

1. Log on to the FSS Administrative UI.
2. In the Resource Partner Properties dialog, click on the Attributes tab.
3. Click Create.

   The Resource Partner Attribute dialog box opens.
4. From the Attribute drop down list, select the name format identifier, which is specified by the <NameFormat> attribute in the <Attribute> element of an assertion attribute statement. This value classifies the attribute name so that the Resource Partner can interpret the name.

   The options are:

   - EmailAddress
   - UPN
   - CommonName
   - Group
   - NameValue

   For more information on these options, refer to the WS-Federation specification.

5. On the Attribute Setup tab, select one of the following radio buttons:

   Note: The radio button selection determines the available fields in the Attribute Fields group box.

   Static

   Returns data that remains constant.

   Use a static attribute to return a string as part of a SiteMinder response. This type of response can be used to provide information to a Web application. For example, if a group of users has specific customized content on a Web site, the static response attribute, show_button = yes, could be passed to the application.

   User Attribute

   Returns profile information from a user's entry in a user directory.

   This type of response attribute returns information associated with a user in a directory. A user attribute can be retrieved from an LDAP, WinNT, or ODBC user directory.

   For the Policy Server to return values from user directory attributes as response attributes, the user directories must be configured in the User Directory dialog box.

   DN Attribute

   Returns profile information from a directory object in an LDAP or ODBC user directory.

   This type of attribute is used to return information associated with directory objects to which the user is related. Groups to which a user belongs, and Organizational Units (OUs) that are part of a user DN, are examples of directory objects whose attributes can be treated as DN attributes.

   For example, you can use a DN attribute to return a company division for a user, based on the user's membership in a division.

   Note: For the Account Partner to return an attribute containing DN attributes values, the user directories must be configured in the User Directory dialog box.

   If you select the DN Attribute radio button, you may also select the Allow Nested Groups check box. Selecting this check box allows SiteMinder to return an attribute from a group that is nested in another group specified by a policy. Nested groups often occur in complex LDAP deployments.

6. Optionally, if the attribute is retrieved from an LDAP user directory that contains nested groups (groups that contain other groups), and you want the Policy Server to retrieve DN attributes from the nested groups, select the Allow Nested Groups check box in the Attribute Kind group box.

7. Complete the necessary fields for you Attribute Kind and save the changes.

Use a Script to Create a New Attribute

The Advanced tab of the Resource Partner Attribute dialog contains the Script field. This field displays the script that SiteMinder generates based on your entries in the Attribute Setup tab. You can copy the contents of this field and paste them into the Script field for another response attribute.

Note: If you copy and paste the contents of the Script field for another attribute, you must select the appropriate radio button in the Attribute Kind group box of the Attribute Setup tab.

Configure Signout

Ensuring that a user is completely logged out of all sessions ensures security. Signout is the process of a user being logged out of all of his user sessions associated with the browser that initiated the logout.

Signout is triggered by a user-initiated logout and is implemented using a Signout Servlet at Account Partner and Resource Partner sites. A user initiates a signout request from an Account Partner or a Resource Partner by clicking a link pointing to the respective signout servlet that then triggers the signout process.

Be aware that signout does not necessarily end all sessions for a user. For example, if the user has two browsers open, that user can establish two independent sessions. Only the session for the browser that initiates the signout is terminated at all federated sites for that session. The session in the other browser is still active.

Note: SiteMinder only supports the WS-Federation Passive Request profile for signout.

By configuring the settings on the Signout tab, you are informing the Account Partner whether the Resource Partner supports signout, and if so, how signout is handled.

If you enable signout, you must also:

- Enable the session server at the Account Partner using the Policy Server Management Console
- Configure persistent sessions for the realm with the protected resources at the Resource Partner

Enable Signout

To configure signout

1. Log in to the FSS Administrative UI.
2. Access the Resource Partner Properties dialog for the Resource Partner you want to configure.
3. Select the Signout tab.
4. Select the Enable Signout checkbox.

   The URL fields become active.
5. Enter values for the following URL fields:
   - Signout Cleanup URL
   - Signout Confirm URL

   These fields must each have an entry that starts with https:// or http://.
6. Click OK.

Validate Signout Requests that are Digitally Signed

By default, signature processing is enabled because it is required by the WS-Federation Passive Requester profile; therefore, it *must* be enabled in a production environment. WS-Federation signout requests are always signed by SiteMinder, but no configuration is required in the FSS Administrative UI. You only have to add the private key and certificate of the authority responsible for signing to the smkeydatabase.

Important! For debugging purposes only, you can temporarily disable all signature processing (both signing and verification of signatures) by checking the Disable Signature Processing option on the General tab.

To validate signatures of signout requests, there are configuration steps in the FSS Administrative UI and the smkeydatabase.

To set-up validation

1. Add the public key to the Account Partner's smkeydatabase.

   The public key must correspond to the private key and certificate that the Resource Partner used to do the signing.
2. In the FSS Administrative UI, select the Enable Signout checkbox on the Signout tab.

   If you select this check box, the Account Partner will validate the signature of the signout request and response.

More Information:

Manage the Key Database for Signing and Encryption (see page 471)

Customizing Content in WS-Federation Assertions

The WS-Federation Assertion Generator produces SAML assertions. The assertions are used to authenticate users in a federation environment. You can customize the content of the SAML assertion by configuring an Assertion Generator plug-in. Using this plug-in, you can modify the assertion content for your business agreements between partners and vendors.

To use the WS-Federation Assertion Generator plug-in

1. Implement the plug-in class.

   A sample class, AssertionSample.java, can be found in sdk/samples/assertiongeneratorplugin.

2. Configure the Assertion Generator plug-in from the Advanced tab of the Resource Partner Properties dialog box.

   Note: Specify an Assertion Generator plug-in for each Resource Partner.

   a. In the Full Java Class Name field, enter the Java class name of the plug-in.

      For example, com.mycompany.assertiongenerator.AssertionSample

      A sample plug-in is included in the SDK. You can view the sample assertion plug-in at sdk/samples/assertiongeneratorplugin.

   b. Optionally, in the Parameters field, enter the string that gets passed to the plug-in as a parameter at run time.

      The string can contain any value; there is no specific syntax to follow.

For reference information about the WS-Federation Assertion Generator plug-in (method signatures, parameters, return values, data types), and also the new constructor for UserContext class, see the AssertionGeneratorPlugin interface in the *Javadoc Reference*. This information applies to the WS-Federation Assertion Generator as well as the SAML Assertion Generator.

For overview and conceptual information, see the *SiteMinder Programming Guide for Java*.

Integrate the Assertion Generator Plug-in with SiteMinder (SAML 2.0/WS-Federation)

If you write an assertion generator plug-in, you have to integrate the plug-in to work with SiteMinder.

To compile the assertion plug-in Java file, see the instructions in the SAML2AssertionSample.java file in the directory:

sdk/samples/assertiongeneratorplugin

To integrate the assertion generator plug-in with SiteMinder

1. Compile the assertion plug-in Java file.

   This file requires the following .jar files installed with the Policy Server:

   - *policy_server_home*/bin/jars/SmJavaApi.jar
   - *policy_server_home*/bin/thirdparty/xercesImpl.jar
   - *policy_server_home*/bin/endorsed/xalan.jar

2. In the JVMOptions.txt file, modify the -Djava.class.path value so it includes the classpath for the plug-in. This enables the plug-in to be loaded.

   Note: Do not modify the classpath for xercesImpl.jar, xalan.jar, or SMJavaApi.jar.

3. In the FSS Administrative UI, specify the plug-in that SiteMinder should use. Access the Advanced tab in the Service Provider Properties or Resource Partner Properties dialog and complete the following fields:

   Full Java Class Name

   Specify a Java class name for an existing plug-in

   Parameter

   Specify a string of parameters to be passed to the plug-in specified in the Full Java Class Name field.

   Note: Instead of specifying the assertion plug-in class and its parameters via the FSS Administrative UI, you can use the Policy Management API (C or Perl) to integrate the plug-in. For instructions, see the *SiteMinder Programming Guide for C* or the *SiteMinder Programming Guide for Java*.

4. Restart the Policy Server.

   Restarting the Policy Server ensures that the latest version of the assertion plug-in is picked up after being recompiled.

To enable the Assertion Generator to include attributes from a web application in an assertion

1. Compile the assertion plug-in Java file.

   This file requires the following .jar files installed with the Policy Server:

   - *policy_server_home*/bin/java/SmJavaApi.jar
   - *policy_server_home*/bin/thirdparty/xercesImpl.jar
   - *policy_server_home*/bin/endorsed/xalan.jar

2. In the JVMOptions.txt file, modify the -Djava.class.path value so it includes the classpath for the plug-in. This enables the plug-in to be loaded.

   Note: Do not modify the classpath for xercesImpl.jar, xalan.jar, or SMJavaApi.jar.

3. Configure a sample plug-in.

   There is an APIContext class in the SMJavaAPI that has a new method, getAttrMap(), which returns a map object containing the attributes from the web application to be included in the assertion. In the SiteMinder SDK, there are two sample Assertion Generator plug-ins that show how to use this map object:

   - SAML2AppAttrPlugin.java (SAML 2.0)
   - WSFedAppAttrPlugin.java (WS-Federation)

   These samples are located in the directory sdk/samples/assertiongeneratorplugin. They enable the Assertion Generator to add attributes from a web application to the Assertion Generator for inclusion in an assertion.

4. In the FSS Administrative UI, specify the plug-in you are using. Access the Advanced tab in the Service Provider Properties or Resource Partner Properties dialog and complete the following fields:

   Full Java Class Name

   Specify the Java class name for the plugin, For example, the sample classes included with the SiteMinder SDK are:

   - com.ca.assertiongenerator.SAML2AppAttrPlugin

     (SAML 2.0)

   - com.ca.assertiongenerator.WSFedAppAttrPlugin

     (WS-Federation)

Parameter

Specify a string of parameters to be passed to the plug-in specified in the Full Java Class Name field. These parameters would be the attributes you want to include in the assertion.

Note: Instead of specifying the assertion plug-in class and its parameters via the FSS Administrative UI, you can use the Policy Management API (C or Perl) to integrate the plug-in. For instructions, see the *SiteMinder SiteMinder Programming Guide for C* or the *SiteMinder Programming Guide for Java*.

5. Restart the Policy Server.

   Restarting the Policy Server ensures that the latest version of the assertion plug-in is picked up after being recompiled.

Protect the Authentication URL to Generate a SiteMinder Session

When you add a Resource Partner to an affiliate domain, one of the parameters you are required to set is the Authentication URL parameter.

The Authentication URL points to the redirect.jsp file, which is installed at the Account Partner site, where you install the Web Agent Option Pack or SPS federation gateway. The redirect.jsp file must be protected by a SiteMinder policy so that an authentication challenge is presented to users who request a protected Resource Partner resource but do not have a SiteMinder session.

A SiteMinder session is required for the following bindings:

- For users requesting a protected Resource Partner resource
- For single sign-on

  A user must have a session, but it does not have to be a persistent session because security token response messages are delivered directly to the Resource Partner site through the user's browser. The tokens do not have to be stored in the session server.
- For signout

  If you enable signout, a persistent session is required. When a user first requests a Resource Partner resource, the session established at that time must be stored in the session server so that the necessary session information is available when signout is later executed.

After a user is authenticated and successfully accesses the redirect.jsp file, a session is established. The redirect.jsp file redirects the user back to the Account Partner so the request can be processed and the assertion can be delivered to the user.

The procedure for protecting the Authentication URL is the same regardless of the following conditions:

- Web Agent Option Pack is installed on the same system as the Web Agent
- Web Agent Option Pack is installed on an application server with a Web Agent installed on a Web server proxy
- Web Agent Option Pack is installed on an application server protected by an Application Server Agent
- SPS federation gateway provides the redirect.jsp file

To create a policy to protect the Authentication URL

1. Log into the FSS Administrative UI.
2. From the System tab, create Web Agents to bind to the realms that you will define for the Account Partner Web Server. You can assign unique Agent names for the Web Server at the Account Partner and the Federation Web Services application or use the same Agent name for both.
3. Create a policy domain for the users who want to access Resource Partner resources.
4. From the Users tab, select the users that should have access to the resources that are part of the policy domain.
5. Define a realm for the policy domain with the following values:
   a. Agent: select the Agent for the Web Server at the Account Partner.
   b. Resource Filter:

      Web Agents v5.x QMR 4 and later, and SPS federation gateway enter:

      /siteminderagent/redirectjsp/

      Web Agents v5.x QMR 1, 2, or 3, enter:

      /affwebservices/redirectjsp/

      The resource filter, /siteminderagent/redirectjsp/ is an alias, set up automatically by the Federation Web Services application. It is a reference to the following:

      - For a Web Agent:

        web_agent_home/affwebservices/redirectjsp

      - For an SPS federation gateway:

        sps_home/secure-proxy/Tomcat/webapps/affwebservices/redirectjsp

   c. For the remaining settings, accept the defaults or modify as needed.
6. Click OK to save the realm.

7. Create a rule for the realm. In the Resource field, accept the default value, the asterisk (*), to protect all resources for the realm. Select the Web Agent actions GET, POST, and PUT as the allowed actions.
8. Create a policy for the Web Server at the Account Partner that includes the rule created in the previous step.

Chapter 17: Authenticate WS-Federation Users at a Resource Partner

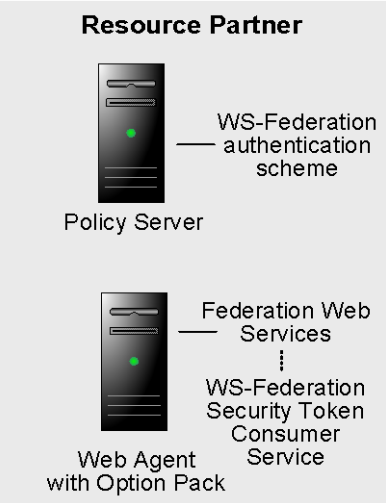
This section contains the following topics:

WS-Federation Authentication Scheme Overview

If you purchased the Policy Server or SPS federation gateway, any SiteMinder site can consume a WS-Federation <RequestSecurityTokenResponse> message and use the assertion in the response to authenticate and authorize users. If you have sites in your federated network that have user stores, you may want to use WS-Federation authentication.

The WS-Federation authentication scheme lets a Resource Partner authenticate a user. It enables cross-domain single sign-on by consuming a SAML assertion and establishing a SiteMinder session. After the user is identified, the Resource Partner site can authorize the user for specific resources.

A site may be both a WS-Federation Resource Partner and Account Partner.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

The WS-Federation authentication scheme is configured at the Resource Partner-side Policy Server and is invoked by the WS-Federation Security Token Consumer Service. The Security Token Consumer Service is a component of the Federation Web Services application and is installed on the Resource Partner-side Web Agent. This service obtains information from the WS-Federation authentication scheme at the Policy Server and uses that information to extract the necessary information from the assertion to authenticate a user.

The SAML assertion becomes the user's credentials to login to the Policy Server at the Resource Partner site. The user is authenticated and authorized, and if authorization is successful, the user is redirected to the target resource.

Configuration Tasks for WS-Federation Authentication

The following table lists configuration tasks to create a WS-Federation authentication scheme.

Check Here	Task
	Create an authentication scheme for each Account Partner that generates assertions.
	Associate that scheme with a realm and add that realm to the policy. You can do this on a per Account Partner basis or create a single custom authentication scheme and single realm.

Notes:

- Certain parameter values at the Account Partner and Resource Partner must match for the configuration to work. A list of those parameters can be found in Configuration Settings that Must Use the Same Values (see page 497).
- To ensure you are using the correct URLs for the Federation Web Services servlets, review the list of URLs, which can be found in Federation Web Services URLs Used in SiteMinder Configuration (see page 503).

More Information:

How To Protect a Target Resource with a WS-Federation Authentication Scheme (see page 440)

WS-Federation Authentication Scheme Prerequisites

The following are prerequisites for implementing the WS-Federation authentication scheme:

- Install the Policy Server

  The Policy Server provides the authentication scheme at the Resource Partner. It also provides the WS-Federation assertion generator used by an Account Partner.

  Install the Policy Server at the producing and consuming sites.

  For installation instructions, refer to the *SiteMinder Policy Server Installation Guide*

- Install either of the following at the Account Partner and Resource Partner sites:
  - Web Agent and the Web Agent Option Pack
  - SPS federation gateway

  The Web Agent/Web Agent Option Pack or the SPS federation gateway provide the Federation Web Services application, which enables Resource Partner to consume assertions and supplies other federation services for SiteMinder.

  For installation instructions, see the relevant guides:
  - *SiteMinder Web Agent Installation Guide*
  - *Web Agent Option Pack Guide*
  - *SiteMinder Secure Proxy Server Administration Guide*
- Set Up the SmKeyDatabase to Sign and Verify Responses

Configure the WS-Federation Authentication Scheme

The configuration of the WS-Federation authentication scheme provides information about the Account Partner that generates the assertion for the Resource Partner and instructs how the Resource Partner supports the authentication process.

To configure the common setup and scheme setup

1. Check the WS-Federation Authentication Scheme Prerequisites.
2. Log into the FSS Administrative UI.
3. From the menu bar, select Edit, System Configuration, Create Authentication Scheme.

   The Authentication Scheme Properties dialog box opens.
4. From the Authentication Scheme Type drop-down list, select WS-Federation Template.

   The contents of the SiteMinder Authentication Scheme dialog box change for the scheme.
5. Configure the scheme common setup group box by entering values for the fields.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

6. Configure the scheme setup by entering values for the following fields:
   - Resource Partner ID
   - Account Partner ID
   - Skew Time
   - Alias (required if signature processing enabled)
7. Ensure the Disable Signature Processing checkbox is set appropriately for single sign-on.

   Important! For debugging purposes only, you can temporarily disable all signature processing (both signing and verification of signatures) by checking the Disable Signature Processing option.

After configuring an authentication scheme, associate the scheme with a realm that contains the resource you want to protect.

More Information:

How To Protect a Target Resource with a WS-Federation Authentication Scheme (see page 440)

Create a Custom WS-Federation Authentication Scheme

The Advanced tab of the Authentication Scheme Properties dialog box lets you use a custom WS-Federation scheme written with the SiteMinder Authentication API instead of the existing template provided by SiteMinder.

The Advanced tab contains the Library field. This field contains the name of the shared library that processes WS-Federation authentication. Do not change this value, unless you have a custom authentication scheme, written using the SiteMinder Authentication API.

The default shared library is smauthsaml.

Locate User Records for Authentication

When you configure an authentication scheme, you define a way for the authentication scheme to look up a user in a user store. Locating the user in the user store is the process of disambiguation. This is the user for which the system generates a session during the authentication process.

The WS-Federation authentication scheme first determines a LoginID from the assertion. The LoginID is a SiteMinder-specific term that identifies the user. By default, the LoginID is extracted from the Name ID value in the assertion. Optionally, you can obtain the LoginID from elsewhere in the assertion by specifying an Xpath query.

After the authentication scheme determines the LoginID, it uses the LoginID to locate a user in the user store. By default, the LoginID is passed back to the Policy Server to locate the user in the user store. For example, if you configure an LDAP user store to search for users based on the uid attribute, the Policy Server searches for the user based on the uid. Optionally, you can configure a search specification to locate a user in the user store. The search specification controls how the LoginID is used in the query to locate a user.

You configure user disambiguation locally, as part of the authentication scheme.

Configure Disambiguation Locally

To locate a user record in a local user directory you have to disambiguate the user. Disambiguation is a two-step process:

1. Obtain the LoginID--either by the default behavior of extracting it from the assertion or by using an Xpath query.
2. Using the LoginID, locate the user in the user store--either by the default behavior of passing the LoginID to the Policy Server or using a search specification.

Note: The use of Xpath and search specification are optional.

Use An Xpath Query to Obtain a LoginID for a WS-Federation User

You can use an Xpath query to find the LoginID in place of the default behavior, where the LoginID is extracted from the NameID in the assertion.

To use an Xpath query to locate a user record

1. From the Authentication Scheme Properties dialog, click Additional Configuration.

   The WS-Federation Auth Scheme Properties dialog opens.

2. Select the Users tab.

   The Users tab specifies who has access to protected resources at the Resource Partner. Access to resources at the Resource Partner is based on SiteMinder policies.

3. Enter an Xpath query that the authentication scheme uses to obtain a LoginID.

4. Click OK to save your configuration changes.

Use a Search Specification to Locate a WS-Federation User

You can use a search specification to locate a user record in place of the default behavior of the LoginID being passed to the Policy Server to locate the user.

To locate a user with a search specification

1. From the Authentication Scheme Properties dialog, click Additional Configuration.

   The WS-Federation Auth Scheme Properties dialog opens.

2. Select the Users tab.

3. Select a namespace to match the search specification to and click Edit.

   The SiteMinder Authentication Scheme Namespace Mapping dialog box opens.

4. In the Search Specification field, enter the attribute that the authentication scheme uses to search a namespace, then click OK. Use %s in the entry as a variable representing the LoginID.

   For example, the LoginID has a value of user1. If you specify Username=%s in the Search Specification field, the resulting string is Username=user1. This string is checked against the user store to find the correct record for authentication.

5. Click OK to save your configuration changes.

Configure WS-Federation Single Sign-on Binding for Authentication

The SSO tab configures the WS-Federation single sign-on binding for authentication. This tab also enforces single use assertion policy to prevent the replaying of a valid assertion.

To configure WS-Federation single sign-on

1. Access the Authentication Scheme Properties dialog for the WS-Federation scheme.
2. Click Additional Configuration.

   The WS-Federation Auth Scheme Properties dialog opens.
3. Select the SSO tab.
4. Select a value for the Redirect Mode field.
5. Specify a target resource in the Target field for single sign-on to work. The target specifies the requested resource at the destination Resource Partner and it is required.
6. Optionally, select the Enable Single Use Policy.
7. Click OK to save your configuration.

More Information:

Enforce a Single Use Policy to Enhance Security (see page 428)

Enforce a Single Use Policy to Enhance Security

The single use policy feature prevents a WS-Federation assertion from being re-used at a Resource Partner to establish a second session.

Ensuring that an assertion is used only one time is an additional security measure for authenticating across a single sign-on environment. It mitigates security risks caused when an attacker acquires a security token response message from a user's browser that has already been used to establish a SiteMinder session. The attacker can then post the assertion to the WS-Federation Assertion Consumer Service at the Resource Partner to establish a second session.

A single use policy is enabled by a storage mechanism provided by the SiteMinder Session Server. This mechanism is expiry data. Expiry data ensures a single use policy for WS-Federation assertions by storing time-based data about an assertion. The WS-Federation authentication scheme uses the expiry data interface to access the expiry data in the Session Server database.

How the WS-Federation Single Use Policy is Enforced

Upon successful validation of an assertion, the WS-Federation authentication scheme writes assertion data in the expiry data table with a key of the assertion ID and an expiration time. The Session Server Management thread in the Policy Server deletes expired data from the expiry data table.

If single policy use is enforced, writing assertion data will fail if an entry already exists in the expiry data table with a key of the assertion ID because the assertion has already been used to establish a session. If the scheme cannot write to the table in the session server, the WS-Federation authentication scheme denies the authentication in the same manner as an invalid assertion.

Writing assertion data may fail for other reasons; however, if the single use of the assertion cannot be enforced because the database is unavailable for any reason, then the authentication scheme will deny the request to ensure that assertions cannot be re-used.

Configure a Single Use Policy

To configure a single use policy

1. From the Authentication Scheme Properties dialog box, click Additional Configuration.

   The WS-Federation Auth Scheme Properties dialog box opens.

2. Select the SSO tab.

   The Enforce Single Use Policy checkbox is selected by default.

3. Enable the session server.

More Information:

Enforce a Single Use Policy to Enhance Security (see page 428)
Storing User Session, Assertion, and Expiry Data (see page 207)

Implement WS-Federation Signout

Signout allows near-simultaneous logout of all sessions for browser session associated with a particular user. The benefit of the signout feature is that it ensures no sessions are left open within a browser session for unauthorized users to gain access to resources at the Resource Partner.

Signout can be initiated via user's browser from a link at the Resource Partner or at the Account Provider that directs the browser to the Signout servlet at the Account Partner. This servlet, which is a component of Federation Web Services, processes signout requests and responses coming from a Resource Partner or Account Partner; however, the servlet does not need to know the originator of the request or response. It uses the SiteMinder session cookie to determine which session to end.

Enable Signout

To configure signout

1. Log on to the FSS Administrative UI.
2. Access the Authentication Scheme Properties dialog for the WS-Federation scheme.
3. Click Additional Configuration.

   The WS-Federation Auth Scheme Properties dialog opens.
4. Select the Signout tab.
5. Select the Enable Signout checkbox.

   The Signout URL field becomes active.
6. Enter a value for the Signout URL. The URL must begin with https:// or http://.
7. Click OK.
8. Enable the session server.

More Information:

Storing User Session, Assertion, and Expiry Data (see page 207)

Customize Assertion Processing with the Message Consumer Plug-in

The Message Consumer Plug-in is SiteMinder's Java program that implements the Message Consumer Extension API. Using this plug-in you can implement your own business logic for processing assertions, such as rejecting an assertion and returning a SiteMinder-defined status code. This additional processing works together with SiteMinder's standard processing of an assertion.

Note: For more information about status codes for authentication and disambiguation, see the *SiteMinder Programming Guide for Java*.

During authentication, SiteMinder first tries to process the assertion by mapping a user to its local user store. If SiteMinder cannot find the user, it calls the postDisambiguateUser method of the Message Consumer Plug-in, if the plug-in is configured. The plug-in then has the opportunity to disambiguate the user, if it knows how.

If the plug-in successfully finds the user, SiteMinder proceeds to the second phase of authentication. If the plug-in cannot map the user to a local user store, the plug-in should return a UserNotFound error, which is documented in the MessageConsumerPlugin interface. The plug-in's use of SiteMinder's redirect URLs feature is optional and is based on the error code returned by the plug-in. If the Message Consumer plug-in is not configured, the redirect URLs are used based on the error generated by the SAML authentication scheme.

During the second phase of authentication, SiteMinder calls the postAuthenticateUser method of the Message Consumer Plug-in, if the plug-in is configured. If the method succeeds, SiteMinder redirects the user to the requested resource. If the method fails, you can configure the plug-in to send the user to a failure page. The failure page can be one of the redirect URLs that you can specify with the authentication scheme configuration, but this is not required.

To integrate the Message Consumer plug-in with SiteMinder, use the parameter values that you specify for the plug-in configuration. The plug-in configuration is part of the SAML 1.x, SAML 2.0 and WS-Federation authentication scheme configuration.

More information:

Specify Redirect URLs for Failed SAML 1.x Authentication (see page 287)
Specify Redirect URLs for Failed SAML 2.0 Authentication (see page 383)
Set Up Redirect URLs for Failed WS-Federation Authentication (see page 439)

Configure the Message Consumer Plug-in for WS-Federation

To customize assertion processing

1. Log on to the FSS Administrative UI.
2. Access the Authentication Scheme Properties dialog for the WS-Federation scheme.
3. Click Additional Configuration.

   The WS-Federation Auth Scheme Properties dialog opens.
4. Select the Advanced tab.

5. Implement the plug-in class.

   A sample class, MessageConsumerSAML20.java, can be found in sdk/samples/authextensionsaml20.

   Note: This sample class is used for both SAML 2.0 and WS-Federation.

6. In the Full Java Class Name field, enter the Java class name of the plug-in. This plug-in is invoked by the Message Consumer at run time.

   The plug-in class can parse and modify the assertion, and then return the result to the Message Consumer for final processing.

   Only one plug-in is allowed for each authentication scheme. For example, com.mycompany.messageconsumer.SampleCode

   A sample plug-in is included in the SDK. You can view a sample message consumer plug-in at sdk/samples/authextensionsaml20.

   Note: Specify a Message Consumer plug-in for each authentication scheme.

Integrate the Message Consumer Plug-in with SiteMinder (WS-Federation)

In addition to configuring a message consumer plug-in, you have to integrate the plug-in with the WS-Federation authentication scheme.

The instructions for compiling the message consumer plug-in Java file are in the AssertionSample.java file, in sdk/samples/authextensionsaml20.

To integrate the Message Consumer plug-in with the authentication scheme

1. Compile the message consumer plug-in Java file.

   The Java file requires the following .jar file installed with the Policy Server:

   <policy_server_home>/bin/java/SmJavaApi.jar

2. In the JVMOptions.txt file, modify the -Djava.class.path value so it is set to the classpath for the plug-in. This enables the plug-in to be loaded.

   Note: Do not modify the classpath for SMJavaApi.jar.

3. Restart the Policy Server.

   Restarting ensures that the latest version of the message consumer plug-in is picked up after being recompiled.

Note: Instead of specifying the message consumer plug-in class and its parameters via the FSS Administrative UI you can use the Policy Management API (C or Perl). For instructions, see the *SiteMinder Programming Guide for C* or the *SiteMinder Programming Guide for Java*.

Additional information about the Message Consumer plug-in can be found as follows:

- Reference information (method signatures, parameters, return values, data types), and also the new constructor for UserContext class, are in the *Java Developer's Reference*. Refer to the MessageConsumerPlugin interface.
- Overview and conceptual information about authentication and authorization APIs, see the *SiteMinder Programming Guide for Java*.

Supply SAML Attributes as HTTP Headers

An assertion response may include attributes in the assertion. These attributes can be supplied as HTTP header variables and used by a client application can use these headers for finer grained access control.

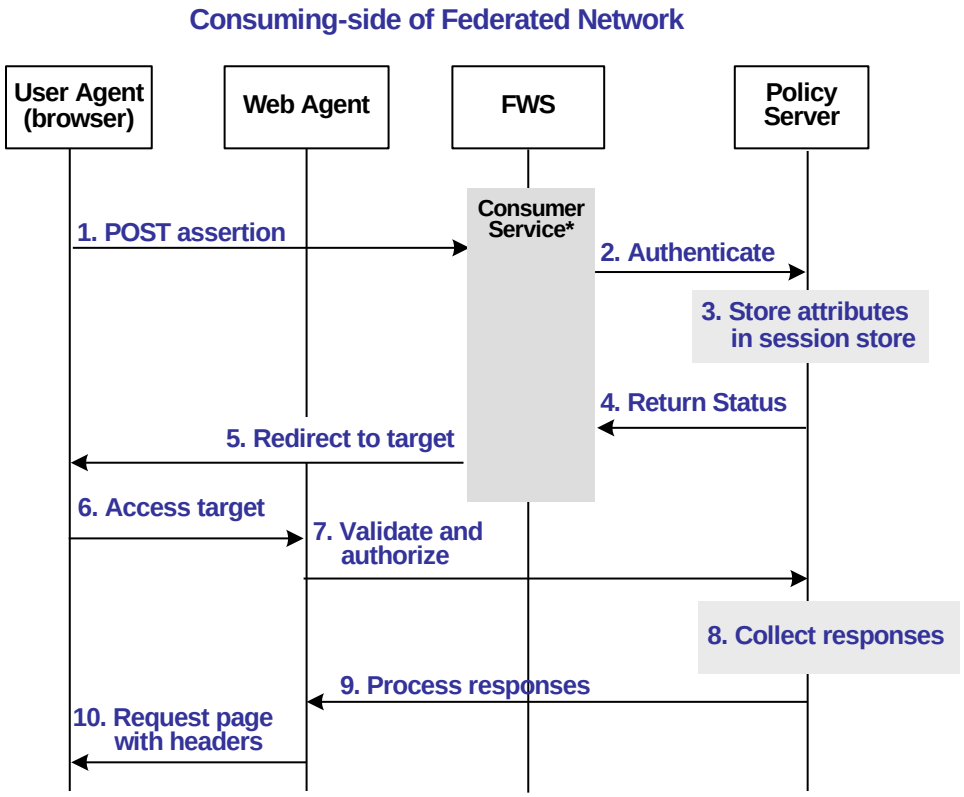
The benefits of including attributes in HTTP headers is as follows:

- HTTP headers are not persistent. They are present only within the request or response that contains them.
- HTTP headers, as supplied by the SiteMinder Web Agent, are not seen by the user's browser, which reduces security concerns.

Use Case for SAML Attributes As HTTP Headers

During authentication, a series of SAML attributes are extracted from an assertion and supplied as HTTP headers. During the authorization process, these headers are returned to the customer's application.

The following flow diagram shows the sequence of events at runtime:



*Consumer service can be one of the following:
–SAML Credential Collector (SAML 1.x)
–Assertion Consumer Service (SAML 2.0)
–Security Token Consumer Service (WS-Federation)

Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. In the flow diagram, the Web Agent block would be the embedded Web Agent in the SPS federation gateway. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

To process the attributes as HTTP headers, the sequence of events is as follows:

1. After the assertion is generated at the producing partner, it sends the assertion to the appropriate consumer service at the consuming partner. The delivery mechanism (POST or Artifact or WS-Fed) is irrelevant.

   Note: The consumer service can be the SAML credential collector (SAML 1.x), the Assertion Consumer Service (SAML 2.0), or Security Token Consumer Service (WS-Federation).

2. The consumer service calls its local Policy Server to use the configured authentication scheme to authenticate the user with the assertion.
3. If the authentication scheme's redirect mode parameter is set to PersistAttributes, the Policy Server caches the attributes in the session store as session variables.
4. The result of the authentication is returned to the consumer service.
5. The consumer service redirects the browser to the protected target resource.
6. The browser tries to access the target resource.
7. The Web Agent calls the Policy Server to validate the user's session and to ensure the user is authorized to access the target resource.
8. The Policy Server retrieves the attributes by a configured response.
9. The Policy Server processes the responses and sends the attributes to the Web Agent.
10. The Web Agent sets the HTTP headers as necessary.

Configuration Overview to Supply Attributes as HTTP Headers

There are several configuration steps required to retrieve the SAML attributes cached in the session store and provide them as HTTP headers.

The components you must configure are as follows

1. Select PersistAttributes as the redirect mode for the SAML authentication scheme. This enables the SAML Attributes to be returned as HTTP headers.
2. Configure an authorization rule for the the realm that contains the target resource.
3. Configure a response that uses the active response type for each SAML attribute to be supplied as a header.
4. Create a policy that binds the authorization rule and active response to implement the user of attributes as HTTP headers.

Set the Redirect Mode to Store SAML Attributes

After the consuming partner authenticates the user with the SAML assertion, the SAML attributes are written to the session store. The browser is then redirected to the target resource.

To redirect the browser with the attribute data

1. Log in to the FSS Administrative UI.
2. Access the SAML authentication scheme properties dialog.

   The properties dialog opens.
3. Set the Redirect Mode parameter to PersistAttributes.

   For SAML 1.x, the Redirect Mode is on the Scheme Setup tab. For SAML 2.0 and WS-Federation, the Redirect Mode is on the SSO tab accessed from the authentication scheme properties dialog.
4. Click OK to save your changes.

The redirect mode is now set to pass on the attribute data.

Create an Authorization Rule to Validate Users

For the realm containing the protected target resource, you need to create a rule that is triggered during the authorization process to retrieve the SAML attributes from the session store.

The rule is based on an authorization event (onAccessAccept) because the user has already been authenticated by the FWS application, therefore the Web Agent cannot re-authenticate the user and pass on the HTTP headers. So, the retrieval of the attributes must happen during the authorization stage.

To create an OnAccessAccept Rule for the realm

1. Log on to the FSS Administrative UI.
2. From the Domains tab, navigate to the realm which protects the target resource.
3. Select the realm with the target resource and choose Create Rule under Realm.

   The Rule Properties dialog opens.
4. Enter a name in the Name field that describes the rules purpose as an authorization rule.
5. Choose the realm protecting the target resource for the Realm field.
6. Enter an asterisk (*) in the Resource field.

7. Select Authorization events and OnAccessAccept in the Action group box..
8. Ensure that Enabled is checked in the Allow/Deny and Enable/Disable group box.
9. Click OK to save the rule.

The authorization rule is now defined for the realm with the protected resource.

Configure a Response to Send Attributes as HTTP Headers

You must configure a response that sends the SAML attributes as HTTP headers to the Web Agent. The Web Agent will process the response and make the header variables available to the client application.

To create a response to send the attributes as headers

1. Log on to the FSS Administrative UI.
2. From the Domains tab, select the domain that contains the target resource.
3. In the domain,select the Responses object and create a new response.

   The Response Properties dialog opens.
4. Click Create.

   The Response Attribute dialog opens.
5. Select WebAgent-HTTP-Header-Variable in the Attribute field.
6. Select Active Response in the Attribute Kind group box.
7. Complete the fields in the Attribute Fields group box as follows:

   Variable Name

   Specify the name you want for the header variable. You assign this name.

   Library Name

   smfedattrresponse

   This must be the entry for this field.

Function Name

getAttributeValue

This must be the entry for this field.

Parameters

Specify the name of the attribute as it appears in the assertion.

An agreement between you and your federated partner determines the attributes that will be in the assertion.

8. Click on OK to save the attribute.
9. Repeat the procedure for each attribute that should become an HTTP header variable. You can configure many attributes for a single response.

The response will send the attributes on to the Web Agent to become HTTP headers.

Create a Policy to Implement Attributes as HTTP Headers

To implement the use of SAML attributes as HTTP headers, you must group together the authorization event rule and active response in a policy.

To create the policy to generate HTTP Headers from SAML attributes

1. Log on to the FSS Administrative UI.
2. From the Domains tab, select the domain that contains the target resource.
3. In the domain, select the Policies object and create a new policy.

   The Policy Properties dialog opens.
4. Enter a descriptive name in the Name field.
5. Select the users that should have access to the protected resource in the Users tab.
6. Add the authorization rule you created previously on the Rules tab.
7. Select the authorization rule and click Set Response.

   The Available Responses dialog opens.
8. Select the active response you created previously and click OK.

   You return to the Rules tab. The response appears with the authentication rule.
9. Click OK to save the policy.

The policy that enables SAML attributes to be used as HTTP headers is complete.

Set Up Redirect URLs for Failed WS-Federation Authentication

For single sign-on processing, you can configure several optional redirect URLs if a user cannot be authenticated at the Resource Partner. The redirect URLs allow finer control over where a user is redirected if the assertion is not valid. For example, if a user cannot be located in a user store, you can fill in a Redirect URL for the User Not Found and send the user to a registration page.

Note: These URLs are not required.

If you do not configure redirect URLs, standard SiteMinder processing takes place. How a failed authentication is handled depends on the configuration.

To configure optional Redirect URLs

1. Access the Authentication Scheme Properties dialog for WS-Federation
2. Click Additional Configuration.

   The WS-Federation Auth Scheme Properties dialog opens.
3. Select the Advanced tab.
4. Fill in a URL for one or more of the following fields:
   - Redirect URL for the User Not Found status
   - Redirect URL for the invalid SSO Message status
   - Redirect URL for the Unaccepted User Credential (SSO Message) status

   If enter a value for the Redirect URL for the Invalid SSO Message status, you must also choose a mode.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Federation Web Services handles the errors by mapping the authentication reason into one of the configured redirect URLs, then the user can be redirected to that URL to report the error.

Note: These redirect URLs can be used in conjunction with the SiteMinder Message Consumer Plug-in for further assertion processing. If authentication fails, the plug-in can send the user to one of the redirect URLs you specify.

How To Protect a Target Resource with a WS-Federation Authentication Scheme

After configuring a WS-Federation authentication scheme, you can use the scheme to protect the realm that holds the target resources requested by users. These resources then need to be protected by a SiteMinder policy.

At the Resource Partner, you must configure a WS-Federation authentication scheme for each Account Partner that generates assertions. The Account Partner is identified in the Account Partner ID field of the Scheme Setup tab. Each scheme must then be bound to a realm, which consists of all the target URLs that comprise the Resource Partner resources.

There are two ways to set-up a realm that contains target URLs:

- You can create a unique realm for each authentication scheme and Account Partner already configured.
- You can configure a single target realm that uses a custom authentication scheme to dispatch requests to the corresponding WS-Federation authentication schemes. Configuring one realm with a single target for all Account Partners simplifies configuration of realms for authentication.

Important! Each target URL in the realm is also identified in an unsolicited response URL. An unsolicited response is sent from the Account Partner to the Resource Partner, without an initial request from the Resource Partner. In this response is the target. At the Account Partner site, an administrator needs to include this response in a link so that this link the user gets redirected to the Resource Partner.

Configure a Unique Realm for Each WS-Fed Authentication Scheme

The procedure for configuring a unique realm for each WS-Federation authentication scheme (artifact or profile) follows the standard instructions for creating realms in the FSS Administrative UI.

To create a realm for each WS-Federation authentication scheme

1. Log on to the FSS Administrative UI.
2. Click the System tab.
3. Click Edit, System Configuration, Create Domain.

   The Domain dialog opens.
4. Create a policy domain that will contain the realm with the target resources.

5. Create a realm under the policy domain you created in the previous step, noting the following:
   a. Select the Web Agent protecting the web server where the target federation resources reside for the Agent field.
   b. Select the WS-Federation authentication scheme for the Authentication Scheme field. This is the authentication scheme that should protect the realm.
6. Create a rule for the realm.

   As part of the rule you select a Web Agent action (Get, Post, or Put), which allows you to control processing when users authenticate to gain access to a resource.

Note: You can click Help for a description of fields, controls, and their respective requirements.

The realm is now configured.

Form the Policy to Protect the Target Resource

After creating the realm, you add it to a policy that protects target federation resources.

Note: The following procedure assumes that a user directory has already been created.

To create a policy for the target federation resources

1. Log on to the FSS Administrative UI.
2. Expand the domain with the target realm.
3. Select the Policies object.

   The Policy Properties dialog opens.
4. Configure the policy, using the realm you previously created for federation resources.
5. Save the policy.
6. Exit the FSS Administrative UI.

For detailed information about creating policies, see the *Policy Server Configuration Guide*.

Configure a Single Target Realm for All WS-Federation Authentication Schemes

To simplify configuration of realms for all WS-Federation authentication schemes, create a single target realm for multiple Account Partners.

To do this, set-up:

- A single custom authentication scheme

  You should have already configured a WS-Federation authentication scheme for each Account Partner prior to configuring a custom template.

- A single realm with one target URL

Configure WS-FederationAuthentication Schemes for the Single Target Realm

Configure the necessary WS-Federation authentication schemes that will be referenced by the custom authentication scheme you associate with the single target realm. When you define the custom authentication scheme, you define a parameter that instructs the Policy Server which authentication schemes that the custom scheme uses.

To create the WS-Federation authentication scheme

1. Log on to the FSS Administrative UI.
2. Create the WS-Federation authentication schemes according to the procedures in this guide.
3. Exit the FSS Administrative UI.

Configure a Custom WS-Federation Auth. Scheme

A single target realm relies on a custom authentication scheme to work.

To configure a custom authentication scheme for a single target realm

1. Log on to the FSS Administrative UI.
2. Select the System tab.
3. Select Edit, System Configuration, Create Authentication Scheme.

   The Authentication Scheme Properties dialog opens.

4. Complete the fields as follows:

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Name

   Enter a descriptive name to indicate this is a custom auth scheme, such as WS-Fed Custom Auth Scheme.

5. Complete the following field in the Scheme Common Setup group box:

   Authentication Scheme Type

   Custom Template

6. Complete the following fields in the Scheme Setup tab

   Library

   smauthsinglefed

   Secret and Confirm Secret

   Leave this field blank.

   Confirm Secret

   Leave this field blank

   Parameter

   Instructs the custom scheme which WS-Federation authentication schemes it should use. Specify one of the following options:

   - SCHEMESET=LIST;Scheme1;Scheme2;

     Specifies list of target WS-Federation authentication scheme names to use (Scheme1 and Scheme2 are examples)

   - SCHEMESET=WSFED_PASSIVE;

     The smauthsinglefed scheme enumerates all WS-Federation authentication schemes to find the one with correct Provider Source Id.

   Enable this scheme for SiteMinder Administrators

   Leave unchecked.

7. Click OK to save your changes.

Configure the Single Target Realm

After configuring the authentication schemes, including the custom authentication scheme, you can configure a single target realm for federation resources.

To create the single target realm

1. Log in to the FSS Administrative UI.
2. Select the Domains tab.
3. Select the policy domain you previously created for the single target realm.
4. Select the Realms object and select Edit, Create Realm.

   The Realm Properties dialog opens.

5. Enter the following values to create the single target realm:

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Name

   Enter a name for this single target realm.

6. Complete the following field in the Resource group box:

   Agent

   Select the SiteMinder Web Agent protecting the web server with the target resources.

   Resource Filter

   Specify the location of the target resources. This is the location where any user requesting a federated resource should be redirected.

   For example, /FederatedResources.

7. Select the Protected radio button in the Default Resource Protection group box.

8. Select the previously configured custom authentication scheme in the Authentication Scheme group box. This is the custom authentication using the smauthsinglefed library.

   For example, if the custom scheme was named Fed Custom Auth Scheme, this is the scheme you would select.

9. Click OK.

The single target realm task is complete.

Create a Policy Using the Single Target Realm

Create a policy that references the single target realm. Remember that the single target realm uses the custom authentication scheme that directs requests to the appropriate SAML/WS-Fed authentication scheme.

Note: This procedure assumes you have already configured the domain, custom authentication scheme, single target realm and associated rule.

To create a policy and add it to an existing domain

1. Log on to the FSS Administrative UI.
2. From the Domains tab, select the Policies object.
3. Click Edit, Create Policy.

   The Policy Properties dialog opens.

4. Enter a name and a description of the policy in the General group box.

5. Add users to the policy from the Users tab.
6. Add the rule you created for the single target realm from the Rules tab.

   The remaining tabs are optional.
7. Click OK.

The policy task is complete.

Chapter 18: Use SAML 2.0 Provider Metadata To Simplify Configuration

This section contains the following topics:

SiteMinder SAML 2.0 Metadata Tools Overview

Siteminder provides a metadata tool to programmatically import and export SAML2 metadata so you can efficiently exchange federation configurations between a site that uses SiteMinder and a partner that may or may not use SiteMinder. Programmatic use of SAML2 metadata should limit the amount of configuration that you perform.

The metadata tool is installed by the Policy Server. There are two command-line utilities that make up the SiteMinder metadata tools: smfedexport and smfedimport

Exporting metadata involves the following types of input:

- User input
- Access to the SiteMinder smkeydatabase for including KeyInfo into the metadata
- Access to the smkeydatabase for signing
- Access to the policy store to reference similar metadata that may be used as a template.

Importing metadata involves:

- User input
- Access to the policy store
- Access to the smkeydatabase for verifying signatures, if certificates are configured
- Parsing the XML metadata in the metadata document
- Storing the relevant metadata in the policy store
- Storing the PKI information from the metadata in the smkeydatabase

Export Metadata Tool

You can use the export tool in the following situations:

- Create an Identity Provider metadata file for use by Service Providers

  To facilitate federation with sites acting as Service Providers, use the tool to produce a metadata file containing information about profiles supported by the Identity Provider. This XML output that the export tool generates describes the Identity Provider. Sites acting as Service Providers can import this metadata file to establish a relationship with the Identity Provider.

- Create an Identity Provider metadata file based on an existing Service Provider

  A SiteMinder Identity Provider's generates a metadata file based on an existing Service Provider object defined in the Identity Provider's policy store. The use of the Service Provider object reduces the amount of required data that a user must enter because many of the settings for the Identity Provider metadata file can be derived from the existing Service Provider. Also, the default names of the servlets provided by Siteminder are used.

  Use of the export tool in the way assumes that the Identity Provider's existing relationship with a Service Provider will be similar to the relationship being established, and that the URLs of the servlets for SSO and SLO services are the Siteminder default servlet names prepended with the IP address and port of the Federation Web Services application, that is,

  - http://*idp_server:port*/affwebservices/public/saml2sso
  - http://*idp_server:port*/affwebservices/public/saml2slo

  idp_server:port

  Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

- Create a Service Provider metadata file for Use by Identity Providers

  A SiteMinder Service Provider can facilitate federation with sites acting as Identity Providers by producing a metadata file containing information about the profiles it supports. An Identity Provider can import the metadata file to establish a relationship with the Service Provider.

- Create an Service Provider metadata file based on an existing SAML 2.0 Authentication Scheme

  A SiteMinder Service Provider generates a metadata file based on an existing SAML 2.0 Authentication Scheme object already defined in the Service Provider's policy store. The use of the Service Provider object reduces the amount of required data that a user must enter because many of the settings for the SP metadata file can be derived from the existing SAML 2.0 authentication scheme and the default names of the servlets provided by Siteminder are used.

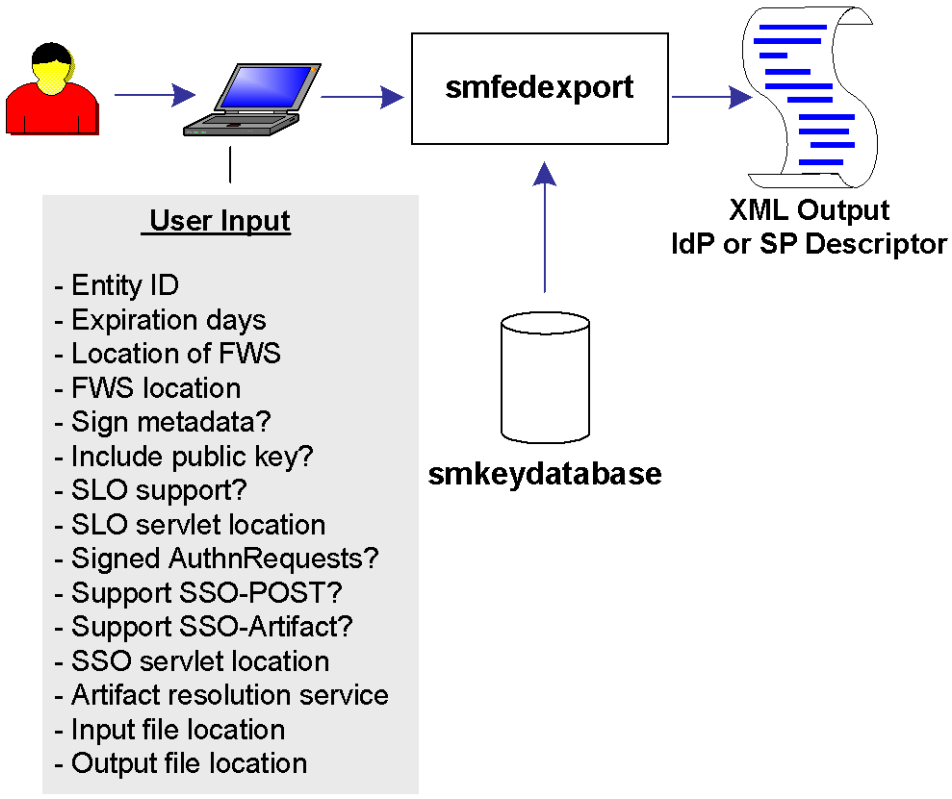
  The use of the export tool in this way assumes that the Service Provider's existing relationship with an Identity Provider will be similar to the relationship being established, and that the URLs of the servlets for SSO and SLO services are the Siteminder default servlet names prepended with the IP address and port of the Federation Web Services application, such as,

  - http://*idp_server:port*/affwebservices/public/saml2sso
  - http://*idp_server:port*/affwebservices/public/saml2slo

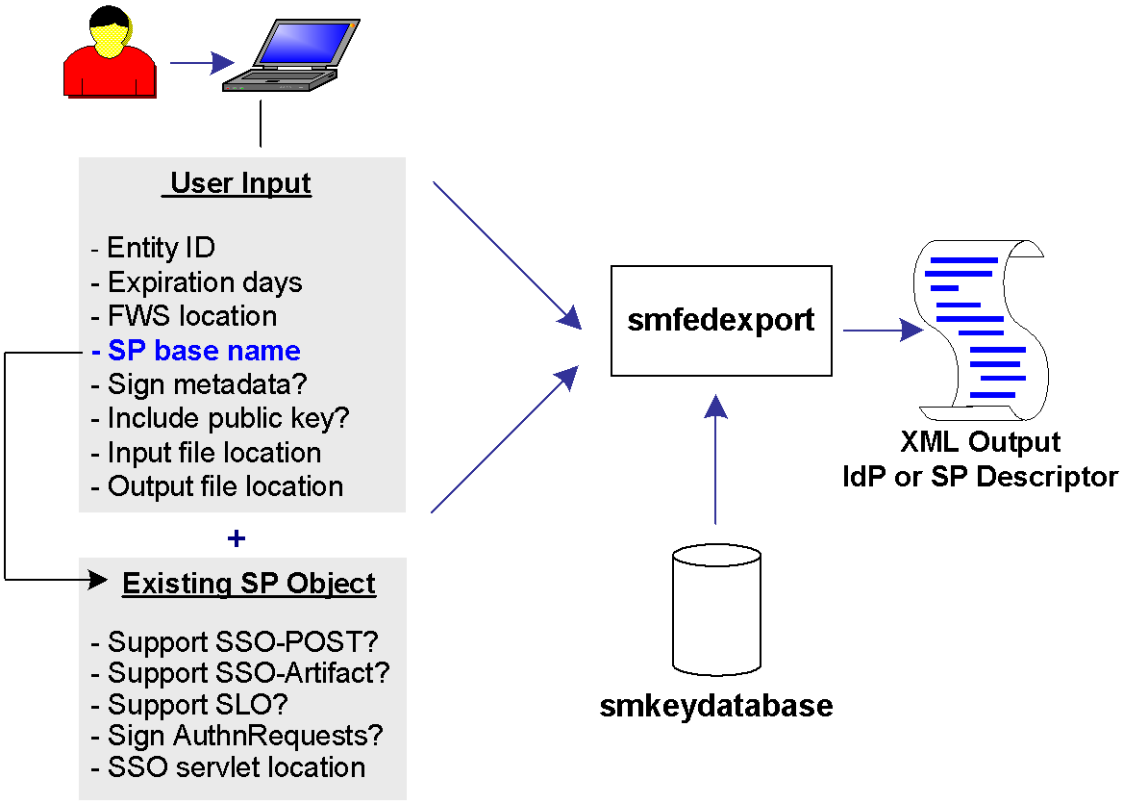
  idp_server:port

  Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

The following figure shows a metadata file generated only from user input.



The following figure shows a metadata file that is generated from a combination of user input and data from an existing Service Provider object.



Run the smfedexport Tool

The smfedexport tool lets you export SAML 2.0 metadata to an XML file.

If you enter smfedexport without any command arguments, all the command arguments and their usage are displayed.

To run the smfedexport tool

1. At the machine where you installed the Policy Server, open a command window.
2. Enter the smfedexport command using the syntax associated with the task you want to complete:

   Note: Command arguments enclosed in square brackets [] are optional.

   To export a SAML 2.0 Identity Provider metadata file:

   smfedexport -type saml2idp [-entityid <entityid>] [-expiredays <num>]
   [-fwsurl <FWS Location> [-spbase <spname>] -username <SiteMinder Admin Name>
   -password <SiteMinder Admin Password>]][-sign][-pubkey]
   [-slo <SLO Service Location> -slobinding <REDIR>] [-reqsignauthr]
   [-sso <SSO Service Location> -ssobinding <REDIR|SOAP>]
   [-ars <Artifact Resolution Service Location>][-output <file>]

   To export a SAML 2.0 Service Provider metadata file:

   smfedexport -type saml2sp [-entityid <entityid>] [-expiredays <num>]
   [-fwsurl <FWS Location> [-schemebase <Auth Scheme name>
   -username <SiteMinder Admin Name> -password <SiteMinder Admin Password>]]
   [-sign][-pubkey][-slo <SLO Service Location> -slobinding <REDIR>]
   [-signauthr][-acs <Assertion Consumer Service> -acsbinding <ART|POST|PAOS>
   -acsindex <num>][-acsisdef]][-output <file>]

   To sign an existing Metadata document:

   smfedexport -type (saml2sp|saml2idp) -sign -input <file> -output <file>

After running these command, an XML file will be produced. If the -type option is set to saml2idp, the default output file name is IDPSSODescriptor.xml. If the -type option is set to saml2sp, the default output file name is SPSSODescriptor.xml.

After the initial command options are processed by smfedexport, the tool prompts you for additional data based on the type of export file being generated. Any optional arguments not entered on the command-line have defined default values.

Note: If you are creating an IdP metadata file, you must have at least one Single Sign-on Service defined in the smfedexport command. If you are creating an SP metadata file, you must have at least one Assertion Consumer Service defined in the smfedexport command.

Command Options for smfedexport

The smfedexport command-line options are listed in the table that follows:

Option	Description	Values
-acs	Assertion Consumer Service URL	URL
-acsindex	Assertion Consumer Service index value	integer
-acsisdef	Makes the immediately preceding Assertion Consumer Service the default.	none
-acsbinding	SAML protocol binding for the Assertion Consumer Service.	■ ART (for artifact) ■ POST (for POST) ■ PAOS (for Reverse SOAP - ECP)
-ars	Artifact Resolution Service	URL
-entityid	Represents the ID of the SP or IDP whose metadata you are exporting	URI
-expiredays	Days until the metadata document is no longer valid	integer, 0 is the default A value of 0 indicates that the metadata document has no expiration and results in no "validUntil" elements being generated in the exported XML
-fwsurl	URL pointing to the FWS application.	URL in the form http://*host:port*
-input	Full path to an existing XML file	string, no default
-output	Full path to an output XML file	Default values: IDPSSODescriptor.xml SPSSODescriptor.xml
-password	SiteMinder Administrator name Requires the -username option	string, no default
-pubkey	Specifies that a public key certificate should be included in the metadata. This key will be used by the partner site for signature encryption and verification.	true, if present false otherwise
-reqsignauthr	Require signed AuthnRequests	true, if present false otherwise

Option	Description	Values
-schemebase	Points to an existing Service Provider. The settings for the profiles/bindings are taken from this provider. Requires the following options: -fwsurl -username -password	authentication scheme name
-spbase	Points to an existing Service Provider. The settings for the profiles/bindings are taken from this provider. Requires the following options: -fwsurl -username -password	Service Provider Name
-sign	Indicates whether or not the metadata be signed	true, if present false, otherwise
-signauthr	Indicates whether the SP sign its AuthnRequests	true, if present false, otherwise
-slo	Single Logout Service URL	URL

Option	Description	Values
-slobinding	HTTP binding used for single logout. HTTP Redirect binding is the only option.	
-sso	Single Sign On Service URL	URL
-ssobinding	SSO Service URL protocol binding	■ REDIR (for Web SSO) ■ SOAP (for ECP)
-type (Required)	Entity type of the export file.	saml2idp sam2sp
-username	SiteMinder Administrator name Requires the -password option	string, no default

smfedexport Tool Examples

Example: Exporting an Identity Provider

```
smfedexport -type saml2idp -entityid http://www.myidp.com/idp1
-expiredays 30 -sign -pubkey -slohttpredir http://www.mysite.com
/affwebservices/public/saml2slo -reqsignauthr
-ssoart http://www.mysite.com/affwebservices/public/saml2sso
-artressvc http://www.mysite.com/affwebservices/
saml2artifactresolution -output myidpdescription.xml
```

Example: Exporting an Service Provider

smfedexport -type saml2sp -entityid http://www.myidp.com/sp1 -expiredays 30 -sign -pubkey -slohttpredir http://www.mysite.com/affwebservices/public/saml2slo -signauthr -aconsvcpost http://www.mysite.com/affwebservices/public/saml2assertionconsumer -aconsvcpostindex 12345 -output myidpdescription.xml

Example: Modifying and Signing an Exported Data File

This example assumes that you have already exported metadata to an XML file using the smfedexport tool, but now you want to modify the file and digitally sign it.

To modify and sign a metadata file

1. Edit the existing XML file using an XML editor.
2. Enter the following command:

   smfedexport -sign -infile *file* -output *file*

   For example:

   smfedexport -sign -infile myspdescription.xml -output newspdescription.xml

To modify an exported file that is already digitally signed

1. Edit the existing XML file using an XML editor as need.
2. Delete the <Signature> element from the file.
3. Enter the following command:

   smfedexport -sign -infile *file* -output *file*

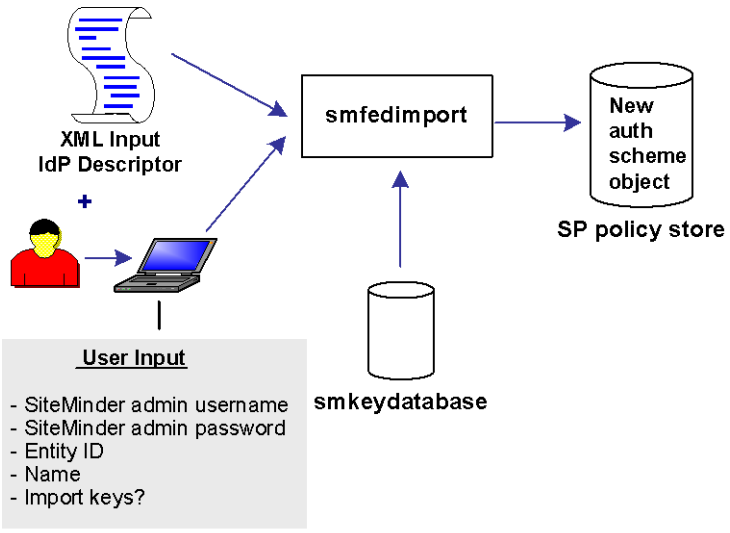
   For example:

   smfedexport -sign -infile myspdescription.xml -output newspdescription.xml

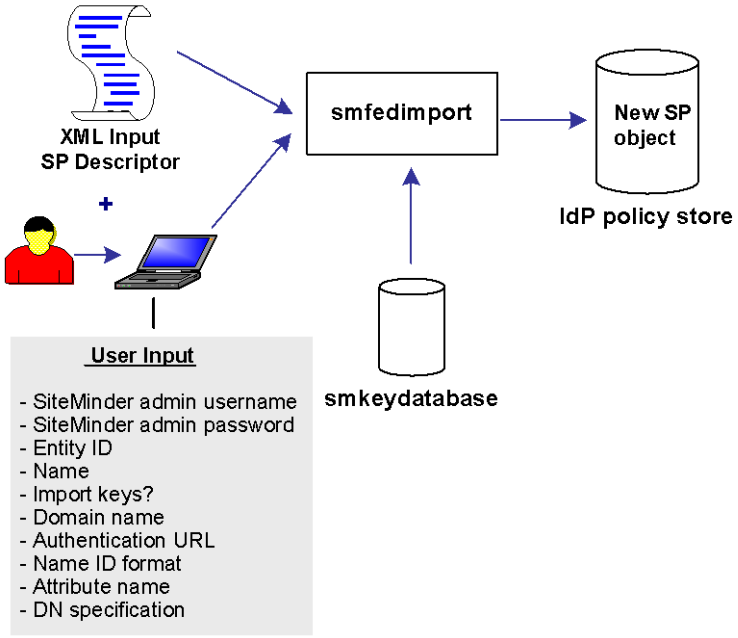
Import Metadata Tool

You can use the import tool for the following tasks:

- Create a new SAML 2.0 authentication scheme for a Service Provider, as shown in the following figure.



- Create a new SAML 2.0 Service Provider object for an Identity Provider.



Run the smfedimport Tool

The smfedimport utility can import SAML Identity Providers and Service Providers into a Siteminder policy store and smkeydatabase. If you import a Service Provider input file, the result is a new SiteMinder Service Provider object within an existing affiliate domain. If you import a SAML Identity Provider input file, the result is an authentication scheme based on the SiteMinder SAML 2.0 Template.

When the smfedimport command-line utility is run, the first and second parameters will be the username and password of the Siteminder administrator. The third and final argument is the path to the input XML file.

To run the smfedimport tool

1. At the machine where you installed the Policy Server, open up a command window.
2. Enter the command using the following syntax:

   To import a SAML2 Identity Provider metadata file into the policy store:

   smfedimport -type saml2idp -username <username> -password <password> -entityid <entityid> -name <name> [-importkeys <name>] [-silent] -input [set the File Name variable]

   To import a Service Provider metadata file into the policy store:

   smfedimport -type saml2sp -username <username> -password <password> -entityid <entityid> -domainname <name> -authurl <URL> -nameidformat (U|E|X|W|K|N|P|T|U) -nameidtype (S | U | D) -attrname <name> -dnspec <spec> -name <name>
   [-importkeys <name>] [-silent] -input [set the File Name variable]

   Note: Switches in square brackets [] are optional.

After the initial command options are processed by smfedimport, the tool prompts you for additional, required data based on the type of file that is being imported. Any optional arguments that are not entered on the command-line have defined default values.

smfedimport Tool Examples

Example: Importing Identity Provider metadata

smfedimport -type saml2idp -username Siteminder -password siteminderpassword -entityid http://www.myidp.com -name mynewauthscheme -importkeys keyaliasname -input mypartnersidpinfo.xml

Example: Importing Service Provider metadata

smfedimport -type saml2sp -username Siteminder -password siteminderpassword -entityid http://www.mysp.com -name mynewsaml2sp -importkeys keyalisname -domainname myaffiliatedomain -authurl http://www.mysite.com/login.html -nameidformat U -nameidtype S -attrname attrname -input mypartnersspinfo.xml

Command Options for smfedimport

The command-line options are listed in the following table.

Option	Description	Value
-attrname	Attribute name required for nameID	string
-authurl	Authentication URL	URL
-dnspec	DN specification required for name ID type only	string
-domainname	Affiliate domain name	string
-entityid	Entity ID	The Service Provider ID for the import or the Identity Provider ID for the import
-importkeys	Indicates whether or not certificates in the metadata are imported into smkeydatabase.	string. Enter a name that becomes an alias associated with the certificate in smkeydatabase. If there are multiple certificates, the aliases will be added as name, name1, name2.
-input	input file	string
-name	Indicates the name of the SiteMinder object, such as the name of the Service Provider, the Identity Provider, or the name of a SAML authentication scheme	string
-nameidformat	Name ID format	(U)nspecificed--default (E)mail address (X)509 Subject name (W)indows domain name (K)erberos Principal Name E(n)tity Identifier

Option	Description	Value
		(P)ersistent Identifier (T)ransient Identifier
-nameidtype	Name ID type	(S)tatic (U)ser attribute (D)N attribute
-password	SiteMinder Administrator password	string, no default
-type (Required)	Entity type of the import file	saml2idp sam2sp
-silent	Determines whether the tool interactively prompts the user With this option, the tool operates in silent mode. It does not interactively prompt the user for missing input and does not prompt the user to accept the import of each separate entity in the input file. The tool assumes that all entities in the input file should be imported.	true, if present false otherwise
-username	SiteMinder Administrator name	string, no default

Processing Import Files with Multiple SAML 2.0 Providers

If there are multiple providers specified in one import file, the tool imports them into the same affiliate domain with names based on the value you specify for the smfedimport command option -**name**.

For example, if there are three Service Providers in the import file and you specify:

```
-name mySP
```

The tool registers the imported providers as mysp, mysp_1, and mysp_2. The integer increases by one for each subsequent provider. If there is a mixture of Identity Providers and Service Providers in an import file, the naming convention still applies.

Processing Import Files with Multiple Certificate Aliases

If there are multiple certificates in the import file, the tool imports them into the smkeydatabase and assigns alias names based on the value you specify with smfedimport command option **–importkeys**.

For example, if there are three certificates in the import file and you specify:

```
-importkeys myalias
```

The tool registers the imported certificates as myalias, myalias_1, and myalias_2. The integer increases by one for each subsequent certificate.

Chapter 19: Federation Security Services Trace Logging

This section contains the following topics:

Trace Logging

The Web Agent trace logging facility and the Policy Server Profiler enable SiteMinder to monitor the performance of the Web Agent and Policy Server. These logging mechanisms provide comprehensive information about the operation of SiteMinder processes so you can analyze performance and troubleshoot issues.

For Federation Security Services, several logging components are available to collect trace messages related to federated communication. Trace messages provide detailed information about program operation for tracing and/or debugging purposes. Trace messages are ordinarily turned off during normal operation, but you can enable them to extract more in-depth information in addition to the trace message itself; for example, the name of the current user or realm. The collected trace messages are written to a trace log.

Note: For Web Agents on IIS 6.0 servers, log files are created only after the first user request has been submitted. To check your configuration in the log file, a user has to submit a request.

Set Up and Enabling Trace Logging

You can establish trace logs at the Web Agent and the Policy Server to monitor SiteMinder operation.

Log Messages for Federation Web Services at the Web Agent

The Federation Web Services (FWS) application, installed with the Web Agent Option Pack, represents the federation client. The component that controls the trace messages and monitors FWS activity is the Fed_Client component.

Within the Fed_Client component, the following sub components are included:

- single sign-on--monitors single sign-on activity
- single logout--monitors requests for single logout.
- discovery profile--monitors the identity provider discovery profile related activity.
- administration--watches administration-related messages
- request--monitors request and authentication activity.
- general--monitors activity not covered by the other subcomponents.
- configuration--monitors SAML 2.0 Service Provider configuration messages

FWS uses the common tracing facility used by the Web Agent to log trace messages. The following files are used to set up trace logging:

- trace configuration file--the configuration file that determines which components and events FWS monitors. The default file is FWSTrace.conf.
- trace log file--the output file for all the logged messages. You provide a name and the location for this file in the Web Agent configuration file.
- Web Agent configuration file or Agent Configuration Object--contains the logging parameters that enable logging and format the log. It does not define message content.

Configure FWS Trace Logging

To collect trace messages for the Federation Web Services application, you have to configure the FWS trace logging.

To configure FWS trace logging

1. Do one of the following:
   - Make a copy of the default template, FWSTrace.conf and modify the file to include only the data you want to monitor.
   - Copy one of the preconfigured templates and assign a new name to it.

   Note: Do not edit the template directly.

2. Open the LoggerConfig.properties file in the directory *web_agent_home*/affwebservices/WEB-INF/classes, and set the following parameters:
   - Set TracingOn to Yes. This instructs the trace facility to write messages to a file.
   - Set the TraceFileName parameter to the full path of the trace log file. The default location is in *web_agent_home*/config/FWSTrace.log.
   - Set the TraceConfigFile parameter to the full path of the trace configuration file, either the default template, FWSTrace.conf or another template. Templates can be found at *web_agent_home*/config.
3. Optionally, you can format the trace log file, the file that contains the log output. The following parameters are the Web Agent configuration parameters that dictate the format of the trace log file:
   - TraceRollover
   - TraceSize
   - TraceCount
   - TraceFormat
   - TraceDelim

   The LoggerConfig.properties file contains descriptions of all these settings.

Log Messages for Federation Services at the Policy Server

The component that controls the trace messages for federation services at the Policy Server is the Fed_Server component. This component monitors activity for the assertion generator and the SAML authentication scheme.

To configure logging at the Policy Server, use the Policy Server Profiler. The Profiler is available from the Policy Server Management Console, and it is a graphical user interface that lets you specify the following:

- trace configuration file--defines the components and subcomponents that will be included in the file.
- trace log file--the output file for all the logged messages.

The following subcomponents are available for the Fed_Server component:

- Configuration --monitors SAML 2.0 Service Provider configuration activity.
- Assertion_Generator--watches the activity for the SAML 1.x and 2.0 assertion generators.
- Auth_Scheme--monitors the activity of the SAML 1.x or SAML 2.0 authentication schemes.
- Saml_Requester--watches SAML Requester activity
- Attribute_Service--watches the Attribute Service activity

Use the SiteMinder Profiler to Log Trace Messages

The Profiler is the Policy Server facility used for logging. You access it from the Policy Server Management Console.

To configure the Profiler to collect trace messages for federation services

1. Open the Policy Server Management Console.
2. Select the Profiler tab.
3. Select the Enable Profiling check box.
4. In the Configuration File field, click on the Browse button and locate the template you would like to use.

   You can load the default template, trace.conf, located in *policy_server_home*/config, or one of the preconfigured templates, located in *policy_server_home*/config/profiler_templates.
5. In the Output group box, select whether the data should be logged to the Console or to a File or both. If you select a file, specify a path to that file in the Output to file field and select an output format.

   Note: Ensure the log file uses a unique name.
6. Click OK to save your changes.

Update Federation Web Services Data in the Logs

If you modify any part of the federation configuration at the producer/Identity Provider or the consumer/Service Provider, you need to flush the Federation Web Services cache for the changes to appear in the trace logs.

Note: There is a brief delay from when the changes are made and when Federation Web Services receives the information.

To flush the cache

1. Access the FSS Administrative UI.
2. Select Tools, Manage Cache to access the Cache Management dialog.
3. Click Flush All.
4. Click OK.

Simplify Logging with Trace Configuration Templates

To make the task of collecting tracing data simpler, a series of pre-configured templates are installed with the Policy Server and the Web Agent Option Pack. You can use these templates instead of creating your own trace configuration file to collect the data that gets written to a trace log.

Trace Logging Templates for Federation Web Services

The following templates are available for Federation Web Services:

Template	Tracing Messages Collected
WebAgentTrace.conf	Default template. Collects data that you specify.
FWS_SSOTrace.conf	Collects single sign-on messages
FWS_SLOTrace.conf	Collects single logout messages
FWS_IPDTrace.conf	Collects Identity Provider Discovery Profile messages

All these templates include the Fed_Client component and subcomponents related to the specific data being tracked. Look at each template to see the exact contents. The templates are located in *web_agent_home*/config.

To use a template for trace logging:

1. Make a copy of the template you want to use and give it a new name.

   Note: Do not edit the template directly.
2. Open the Agent configuration file or Agent configuration Object.
3. Set the TraceFile parameter to Yes.
4. Set the TraceFileName parameter to the full path to the trace log file. This is the file that contains the log output.
5. Set the TraceConfigFile parameter to the full path to the newly named template file.

6. Format the trace log file. The following parameters are the Web Agent configuration parameters that dictate the format of the trace log file:
   - TraceAppend
   - TraceFormat
   - TraceDelimiter
   - TraceFileSize
   - LogLocalTime

   For descriptions of each logging parameter, see the *SiteMinder Web Agent Configuration Guide*.

Note: Web Agents installed on IIS 6.0 and Apache 2.0 Web servers do not support dynamic configuration of log parameters set locally in the Agent configuration file. Consequently, when you modify a parameter, the change does not take effect until the Agent is restarted. However, these log settings can be stored and can be updated dynamically if you configure them in an Agent configuration object on the Policy Server.

Federation Web Services Template Sample

The following is an excerpt from the FWS_SLOTrace.conf template. The majority of the file contains comments and instructions on how to use the file, the command syntax, and the available subcomponents for the Fed_Client component.

The except shows the component, Fed_Client and the subcomponents (Single_Logout and Configuration) that will be monitored. It also shows the specific data fields that indicate what each message will contain (Date, Time, Pid, Tid, TransactionId, SrcFile, Function, Message)

components: Fed_Client/Single_Logout, Fed_Client/Configuration
data: Date, Time, Pid, Tid, TransactionID, SrcFile, Function, Message

Trace Logging Templates for the IdP and SP

The following templates are available for trace logging related to the Identity Provider and the Service Provider, such as assertion generation or SAML authentication.

Template	Tracing Messages Collected
samlidp_trace.template	Collects messages related to Identity Provider activity

Template	Tracing Messages Collected
samlsp_trace.template	Collects messages related Service Provider activity

Look at each template to see the exact contents. The templates are located in *policy_server_home*/config/profiler_templates.

To use the template

1. Open the Policy Server Management Console.
2. Select the Profiler tab.
3. Select the Enable Profiling check box.
4. In the Configuration File field, click on the Browse button and locate the template you would like to use.
5. In the Output group box, select whether the data should be logged to the Console or to a File or both. If you select a file, specify a path to that file in the Output to file field and select an output format.

   Note: Ensure the log file uses a unique name.
6. Click OK to save your changes.

Service Provider Template Sample

The following is the samlsp_trace.template file.

components: Server/Policy_Server_General, IsProtected/Resource_Protection, Login_Logout/Authentication, Login_Logout/Policy_Evaluation, Login_Logout/Active_Expression, Login_Logout/Session_Management, IsAuthorized/Policy_Evaluation, JavaAPI, Fed_Server/Auth_Scheme, Fed_Server/Configuration
data: Date, Time, Tid, TransactionID, SrcFile, Function, Domain, Resource, Action, User, Message

For Federation Security Services, it includes the Fed_Server component along with the subcomponents Auth_Scheme and Configuration.

The data fields that indicate what each message will contain are:

Date, Time, Tid, TransactionId, SrcFile, Function, Domain, Resource, Action User, and Message.

Identity Provider Profiler Sample

At the Identity Provider, the Profiler tab of the Policy Server Management Console specifies a template in the Configuration File field. For example, a sample entry for the Configuration File field would be:

c:\program files\ca\siteminder\config\profile_templates\samlidp_template.trace

For information about using the Profiler, see the *Policy Server Administration Guide*.

Chapter 20: Manage the Key Database for Signing and Encryption

This section contains the following topics:

SmKeyDatabase Overview

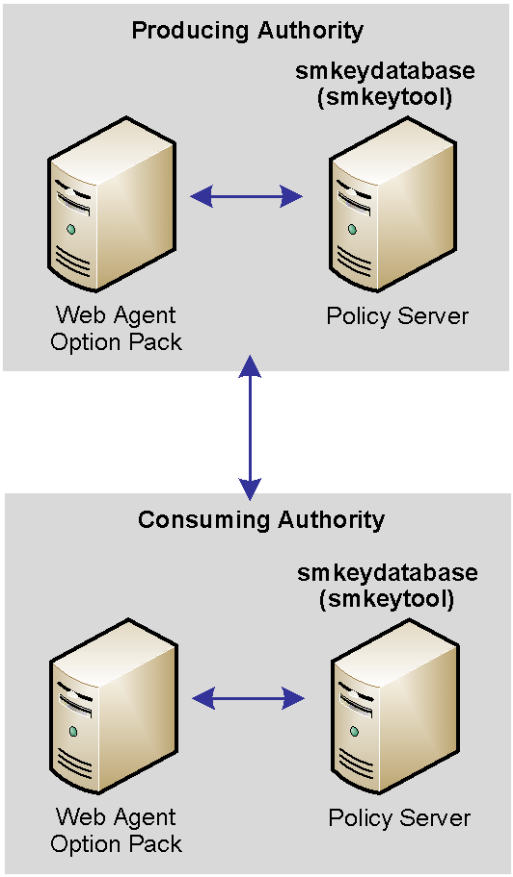
The smkeydatabase is a key and certificate database used for signing, verification, encryption, and decryption between a SiteMinder consuming authority and a SiteMinder producing authority. The database is made up of multiple files. You can manage and retrieve keys and certificates in this database using the SiteMinder tool called smkeytool.

You can store multiple private keys in the smkeydatabase. If you have multiple federated partners, you can use a different private key for each partner.

The smkeydatabase is installed with a SiteMinder Policy Server. The Policy Server uses certified Federal Information Processing Standard (FIPS) 140-2 compliant cryptographic libraries, which enables a SiteMinder environment to use FIPS-compliant algorithms to encrypt sensitive data. As a result, all data in the smkeydatabase is encrypted using these FIPS-compliant algorithms.

Note: If you upgrade from a previous version of the Policy Server to r12 SP1, see the *SiteMinder Upgrade Guide* for instructions on migrating the smkeydatabase so that data is properly encrypted.

The following illustration shows the location of the key store in a SiteMinder federated network.



Note: The SPS federation gateway can replace the Web Agent and Web Agent Option Pack to provide the SiteMinder Federation Web Services application functions. For information about installing and configuring the SPS federation gateway, see the *CA SiteMinder Secure Proxy Server Administration Guide*.

Role of the Smkeydatabase at the Producing Authority

At the producing authority, the smkeydatabase is used for the following features:

- Single sign-on (SAML 1.x POST profile, SAML 2.0 POST binding, or WS-Federation)

  To use SAML 1.x POST profile, the SAML 2.0 POST binding or WS-Federation Passive Requester Profile for passing assertions, the assertion generator at the producing authority needs to sign the SAML the assertion. The recipient consuming authority needs to verify that signature.

- Encryption of assertions, Name IDs and attributes for SAML 2.0 artifact or POST authentication

  If you enable encryption, the producer/Identity Provider must provide the public key certificate of the Service Provider for encrypting the data, while the consumer/Service Provider uses a private key to decrypt the data.

- Single logout

  For single logout, the side initiating the logout request signs the request and the side receiving the request validates the signature. Conversely, the receiving side must sign the response and the initiator must validate the response.

- AuthnRequests for Single sign-on

  The Identity Provider can require that the Service Provider sign AuthnRequest messages. To sign these messages, you have to have a private key and certificate. The Identity Provider then needs to validate the request with the public key that corresponds to the private key.

To accomplish signing, verification, and encryption, you must set up an smkeydatabase for each Policy Server that is responsible for signing, verification, and encryption.

Role of the Smkeydatabase at the Consuming Authority

At the consuming authority, the smkeydatabase is used for SAML 1.x and SAML 2.0 artifact single sign-on.

For SAML 1.x and SAML 2.0 artifact protocol, the consuming authority sends a request for the assertion to the Assertion Retrieval Service (SAML 1.x) or the Artifact Resolution Service (SAML 2.0). These services retrieve the assertion from the producing authority, which then returns the assertion to the consuming authority over a back channel.

It is recommended that you protect these services from unauthorized access. To secure the Assertion Retrieval or Artifact Resolution Service, you can use one of the following authentication methods:

- Basic (SAML 2.0 Artifact Resolution Service only)
- Basic over SSL
- X.509 Client Certificate

For any of these authentication methods, the smkeydatabase at the consuming authority must be configured correctly so it can communicate with the Assertion Retrieval Service or Artifact Resolution Service in a secure manner.

If the connection between the two entities is an SSL connection, the consuming authority needs to have the Certificate Authority (CA) certificate associated with the server certificate from the producing authority to ensure that it trusts the server certificate. If an X.509 client certificate is required to establish a connection, then the smkeydatabase at the consuming authority must contain the client certificate.

Aliases in the Smkeydatabase

Aliases enable you to easily reference any single certificate or certificate and private key pair in the smkeydatabase. Every certificate or certificate/private key pair in the smkeydatabase must have a unique alias.

More Information:

Migrate AM.keystore and Update smkeydatabase (see page 491)

Certificate Revocation Lists in the smkeydatabase

A Certificate Revocation Lists (CRL) is issued by a Certificate Authority to its subscribers. The list contains serial numbers of subscribers whose digital certificates have been revoked. When a user attempts to access a server, the server allows or denies access based on the CRL entry.

If Federation Security Services tries using a revoked partner certificate, you see a message in the SAML assertion that SAML authentication has failed.

If you are using CRLs, the smkeydatabase must point to a current CRL for each root CA certificate to help the Policy Server enforce secure access. To add and maintain a CRL in the smkeydatabase, a series of command options are available with SiteMinder's smkeytool utility, which is used to modify the smkeydatabase.

If you are using CRLs, you need to specify the location of a CRL for the smkeydatabase. Updating a CRL differs depending on the CRL type. To update a certificate file, you have to point the smkeydatabase to the most updated file. To update LDAP CRLs, the location of the list must be specified and then the server administrator can configure the list to be updated automatically.

Note: The CRL feature for the smkeydatabase has no relationship to the SiteMinder client certificate authentication scheme. Federation CRL features must be configured on their own.

The CRL feature for the smkeydatabase includes the following:

- Addition of certificate files or LDAP CRLs

  Note: The SiteMinder Policy Server explicitly requests LDAP CRLs in binary transfer encoding, using the certificateRevocationList;binary or authorityRevocationList;binary LDAP attributes. Therefore, when a Certificate Authority (CA) publishes a CRL using the LDAP protocol, it must return the CRL data in binary format, in accordance with RFC4522 and RFC4523.
- PEM and DER encodings for file CRLs
- Only DER encodings for LDAP CRLs
- SAML 1.x, SAML 2.0, and WS-Federation protocols

The CRL feature does not support the Online Certificate Status Protocol (OCSP).

You can add a CRL to the smkeydatabase using smkeytool.

To add a CRL to the smkeydatabase

1. Add the CRL file or LDAP CRL to smkeydatase with the addRevocationList command option.

   Example:

   ```
   smkeytool -addRevocationInfo -issueralias verisignca -type filecrl
   -location c:\crls\verisign_root_ca.crl
   ```

2. Restart the Policy Server.

Formats Supported by the Smkeydatabase

The smkeydatabase supports the following formats:

- Private Keys: Private keys must be in PKCS1, PKCS5, PKCS8 or PKCS12 format and DER or PEM encoded. Only RSA keys are supported.
- Public Certificates: V1, V2 and V3 of the X.509 certificate format are supported. DER, Base64, and PEM encoding formats are supported.

What Gets Stored in smkeydatabase?

These keys and certificates in smkeydatabase can be at the consuming or producing authority.

The following types of keys and certificates are stored in smkeydatabase:

- Signer's private key and the corresponding certificate, which is is the public key that is signed by a certificate authority.

  The key and certificate are used to do the following:

  - Sign SAML responses for single sign-on, AuthnRequests, and single logout requests
  - Decrypt assertions, Name IDs, and attributes.

  The smkeydatabase can store multiple private keys and certificates. If a signing alias is configured, the Assertion Generator uses the key associated with that alias to sign assertions. If no signing alias is configured, the Assertion Generator uses the key with the alias **defaultenterpriseprivatekey** to sign assertions. If there is no default enterprise private key found, then the Assertion Generator uses the first private key that it finds in the database to sign assertions.

  Important! To store multiple keys in the database, you must define the first key you add with the alias defaultenterpriseprivatekey before you can add subsequent keys.

- Public-key certificates that correspond to the private keys used to:
  - Sign SAML responses from the assertion issuers
  - Certificates to sign AuthnRequests, certificates used for verifying a single sign-on response, single logout response, or encrypting an assertion, Name ID, or attributes.

A given Policy Server may sign and/or verify responses. Keys and certificates for signing and validation can be added to the same key database, depending on what the Policy Server is doing. For single sign-on, if a site is only consuming assertions using SAML POST profile, then that consumer/Service Provider only verifies the response; it never signs it. In the case of single logout, it depends upon which site initiates the single logout that determines which side signs or verifies requests and responses.

Certificates Stored in the SmkeyDatabase Only at the Consuming Authority

The following types of certificates are stored in smkeydatabase at the consuming authority site:

Certificate Authority (CA) certificates

Used for establishing an SSL connection from a consuming authority to the web server at a producing authority.

A set of common root CA certificates are shipped with the default smkeydatabase. To use a certificate for a CA that are not already in the key store, you must import the certificate into the database.

Client certificates

Used for sending a certificate from a consuming authority to a producing authority. The certificate serves as credentials when the consumer must authenticate using a client certificate authentication scheme to access the Assertion Retrieval or Artifact Resolution Service.

Partner certificates

Used for performing digital signature verification at the consuming authority site to ensure the authority issuing the assertion is a trusted site. At a SAML 2.0 Identity Provider, the partner certificate is used to verify the signed messages from the Service Provider during single logout. The Service Provider's certificate must exist at Identity Provider's machine.

When the Web Agent initializes, it gets all the client and server certificates, but the keys remain at the Policy Server.

Properties File for the Key Database

The smkeydatabase properties file, smkeydatabase.properties, defines the configuration parameters required to access and manage the key database.

The smkeydatabase.properties file is installed in:

- *policy_server_home*\config\properties (Windows)
- *policy_server_home*/config/properties (UNIX)

Modify this file only to change the following options:

- NativeDBName--specifies name of the key database
- DBLocation--indicates the directory where the key database resides
- DBUpdateFrequencyMinutes--specifies the frequency at which the database is read from the file system.

The smkeydatabase.properties file contains the following settings:

- DBLocation (see page 478)
- NativeDBName (see page 478)
- XMLDocumentOpsImplementation (see page 478)
- AffiliateIXMLSignatureImplementation (see page 479)
- IXMLSignatureImplementation (see page 479)
- EncryptedPassword (see page 479)
- IXMLEncryptDecryptImplementation (see page 479)
- DBUpdateFrequencyMinutes (see page 480)

Descriptions of each setting follow.

DBLocation Setting

Specifies the path to the directory where the database resides.

Enter the location that smkeytool should use when you manually create the database.

Default: *policy_server_home*/smkeydatabase

NativeDBName Setting

Identifies the name of the database.

Specify the name you want smkeytool to use when you create the database.

Default: smkeydatabase

XMLDocumentOpsImplementation Setting

Specifies the Java class that implements the XML signing and validation.

Note: Do not change this value; it is static and preconfigured.

Default: com.ca.smkeydatabase.api.XMLDocumentOpsImpl

AffiliateIXMLSignatureImplementation Setting

Specifies the Java class that implements low-level cryptographic operations for signing and validation.

Note: Do not change this value; it is static and preconfigured.

Default: com.ca.smkeydatabase.api.XMLSignatureApacheImpl

IXMLSignatureImplementation Setting

Specifies the Java class for Transactionminder that implements low-level cryptographic operations for signing and validation.

Note: Do not change this value; it is static and preconfigured.

Default: com.ca.smkeydatabase.api.XMLSignatureApacheImpl

EncryptedPassword Setting

Indicates the smkeydatabase password.

(Encrypted using the policy store key at database creation.) Prior to creating a key database, this entry contains a dummy value.

Default: *encrypted_password_string*

IXMLEncryptDecryptImplementation Setting

Identifies the Java class that implements the encryption and decryption of assertions, Name IDs, and attributes.

Note: Do not change this value; it is static and preconfigured.

Default: com.ca.smkeydatabase.api.XMLEncryptDecryptApacheImpl

DBUpdateFrequencyMinutes Setting

Indicates the frequency at which the database is read from the file system. Specifically, its the number of minutes after which the in-memory smkeydatabase expires and is reloaded.

Until this interval passes, certificates and keys added, removed, or changed in the database will not affect the Policy Server. If the value is 0, key database caching is disabled entirely. If the value is -1, the cache persists until the Policy Server is restarted.

Default: 60 minutes

Modify the Key Database Using smkeytool

Smkeytool is a SiteMinder command-line utility that allows you to populate and manage smkeydatabase. The smkeytool utility is installed with the Policy Server in the following locations:

- *policy_server_home*/bin (UNIX)
- *policy_server_home*\bin (Windows)

Use smkeytool to:

- Create and delete a key database

  You can only have one key database per Policy Server. After the database is created, you can add keys and certificates.
- Add and delete private keys
- Add and delete a partner certificate
- List all certificates stored in the key database
- Import root certificates of CAs
- Add client certificate keys

  If you are using a root or chain Certificate Authority (CA) at the consuming authority that is not listed in the smkeydatabase, you need to add it to the smkeydatabase.

  For example, a signed VeriSign CA server-side certificate is used to SSL-enable the producer-side web server installed with the Web Agent Option Pack. To use this certificate for Basic over SSL authentication, add the VeriSign certificate to the smkeydatabase at the consumer. This ensures that the consumer is communicating with a producer that can present a server-side certificate that has been verified by a trusted CA.

- Export key data from smkeydatabase
- Add, list, validate, and delete a Certificate Revocation List

Note: If you are adding a private key or certificate, delete the certificate metadata from the certificate file before trying to import it into the smkeydatabase. Import only the data starting with the --BEGIN CERTIFICATE-- marker and ending with the --END CERTIFICATE-- marker. Be sure to include the markers.

Smkeytool Command Syntax and Options

Smkeytool is a command-line utility that provides many options to manage the smkeydatabase.

Run the smkeytool utility from a command line, using the following syntax:

UNIX

smkeytool.sh *-option* [*-argument(s)*]

Windows

smkeytool.bat *-option* [*-argument(s)*]

If you enter smkeytool from a command line without any options, you will see a list of all command line options.

The smkeytool utility uses the following command options and arguments:

- createDB (see page 482)
- addPrivateKey (see page 483)
- addCertOption (see page 484)
- addRevocationInfo (see page 484)
- changepassword (see page 485)
- deleteRevocationInfo (see page 485)
- deleteDB (see page 486)
- delete (see page 486)
- export (see page 486)
- findAlias (see page 487)
- importDefaultCACerts (see page 487)
- listCerts (see page 487)
- listRevocationInfo (see page 488)

- printCert (see page 488)
- renameAlias (see page 488)
- validateCert (see page 489)
- help (see page 489)

A description of each command option follows.

createDB Option

Creates an new smkeydatabase to store keys and certificates. By default, the directory is named smkeydatabase. You can change the smkeydatabase location by modifying the smkeydatabase.properties file.

All private keys in the smkeydatabase are encrypted using FIPS-compliant algorithms.

Important! To store multiple keys in the database, you must define the first key you add with the alias defaultenterpriseprivatekey before you can add subsequent keys.

Arguments for -createDB are as follows:

-password <*password*>

Required. The password is used to store all data in an encrypted format in the key database. It can be a value from 6 to 32 characters. It is encrypted using the policy store key and added to the smkeydatabase.properties file.

-importDefaultCACerts

(Optional) Imports the default Certificate Authority (CA) certificates during the creation of the database. These certificates are imported from the cacerts.keystore file, which is installed with the Policy Server and contains all default CA certificates. This option is the same as executing the -importDefaultCACerts option.

addPrivKey Option

Adds a private key and certificate pair to the key database. You can have multiple private keys and certificates in the database, but only RSA keys are supported.

Note: Only private keys are stored in the smkeydatabase in encrypted form.

The Policy Server at the producing authority uses a single enterprise private key to sign SAML messages and to decrypt encrypted SAML messages received from the consuming authority. Typically, the enterprise key is the first private key found in the smkeydatabase.

When you use the -addPrivKey command, you can specify the key data by combining the -keyfile and -certfile options or by using the -keycertfile option alone.

Arguments for -addPrivKey are as follows:

-alias <*alias*>

Required. Assigns an alias to a single certificate or certificate/private key pair in the database. The alias must be a unique string and should contain only alphanumeric characters.

-certfile <*cert_file*>

Specifies the full path to the location of the certificate associated with this private key. Required for keys in PKCS1, PKCS5, and PKCS8 format.

-keyfile <*private_key_file*>

Specifies the full path to the location of the private key file. Required for keys in PKCS1, PKCS5, and PKCS8 format.

-keycertfile <*key_cert_file*>

Specifies the full path to the location of the PKCS12 file that contains the private key and public certificate data. Required for keys in PKCS12 format.

-password <*password*>

Optional. Specifies the password that was used to encrypt the private key when the key/certificate pair was originally created. When a private key is added to the smkeydatabase, this password must be supplied to decrypt the private key before it gets written to the smkeydatabase.

Note: This password is not stored in the smkeydatabase.

After the key is decrypted and placed in the smkeydatabase, smkeydatabase encrypts the private key again using its own password, which is the password specified when the smkeydatabase was created.

addCert Option

Adds a certificate to the key database.V1, V2, and V3 versions for X.509 certificate format are supported DER and PEM encoding formats are supported. Restart the Web Agent when you add a Certificate Authority certificate.

If you indicate that you want to trust the certificate as a Certificate Authority, this certificate will always be treated as a CA certificate.

Arguments for addCert are as follows:

-alias <*alias*>

Required. Alias to the certificate associated with this private key in the database. Must be a unique string and should contain only alphanumeric characters.

-infile <*cert_file*>

Required. Full path to the location of the newly added certificate.

-trustcacert

Optional. Checks that the user provider certificate being added is a CA certificate. Smkeytool checks that the certificate has a digital signature extension and that the certificate has the same IssuerDN and Subject DN values.

-noprompt

(Optional) The user will not be prompted to confirm the addition of the certificate.

addRevocationInfo Option

Specifies the location of a CRL so the smkeydatabase can locate the list during the SAML authentication process. The smkeydatabase does not store the contents of a CRL, but merely reads the CRL contents when the Policy Server starts and after a refresh interval has elapsed.

Important! If you add a CRL entry to the smkeydatabase, you must restart the Policy Server.

Arguments for addRevocationInfo are as follows:

-issueralias <*issuer_alias*>

Required. Alias name of the Certificate Authority who issues the CRL.

Example: -issueralias verisignCA

-type (*ldapcrl* | *filecrl*)

Required. Specifies whether the list is a certificate file or an LDAP CRL. The options are ldapcrl or filecrl.

-location <*location*>

Required. Specifies the location of the CRL. For a file, specify the full path to the file. For an LDAP CRL, specify the full path to the LDAP server node.

Example of file location: -location c:\crls\siteminder_root_ca.crl

Example of LDAP CRL location: -location "http://localhost:880/sn=siteminderroot, dc=crls,dc=com"

changePassword Option

Permits you to change the password for the smkeydatabase. Changing the password causes all entries encrypted under the old password to be re-encrypted under the new password using FIPS-compliant algorithms.

Arguments for changePassword are as follows:

-password <*password*>

Required. Specifies the existing password used to originally create the smkeydatabase

-newpassword <new_*password*>

Required. Specifies the new password for the smkeydatabase.

deleteRevocationInfo Option

Deletes a CRL from the database.

Arguments for -deleteRevocationInfo are as follows:

-issueralias <*issuer_alias*>

Required. Name of the Certificate Authority who issues the CRL.

-noprompt

(Optional) The user will not be prompted to confirm the deletion of the CRL from the database.

deleteDB Option

Deletes the smkeydatabase based on configuration data in the smkeydatabase.properties file. All the entries in the key database and the aliases data store file will be deleted.

Argument for -deleteDB is as follows:

-noprompt

(Optional) The user will not be prompted to confirm the deletion of the database.

delete Option

Deletes an existing certificate from the smkeydatabase. If the certificate has an associated private key, the key is also deleted.

Argument for -delete is as follows:

-alias <*alias*>

Required. Alias of the certificate to be removed.

-noprompt

(Optional) The user will not be prompted to confirm the deletion of the database.

export Option

Exports an existing certificate or a private key from the smkeydatabase to a file. Certificate data is exported using PEM encoding. Private key data is exported using DER encoded PKCS8 format.

Arguments for the -export option are as follows:

-alias <*alias*>

Required. Identifies the certificate or key to be exported.

-outfile <*out_file*>

Required. Specifies the full path to the output file for the exported certificate or key.

-type (key|cert)

Optional. Indicates whether a certificate or key is being exported. If no option is specified, a certificate is the default.

-password <*password*>

Required only when exporting a private key. Specifies the password used to encrypt the private key at the time the key gets exported to a file. You do not need a password to export the certificate holding the public key because certificates are exported in clear text.

When a private key is exported, it gets exported to the output file in encrypted form using this password. To add this same private key back to the smkeydatabase, run the -addPrivKey command and use this password.

findAlias Option

Determines the alias associated with a certificate that is already in the smkeydatabase.

Argument for -findAlias is as follows:

-infile <*cert_file*>

Required. Full path to the certificate file associated with the alias you want to find

-password <*password*>

Password required only when a password-protected P12 file is specified as the certificate file.

importDefaultCACerts Option

Imports all default trusted Certificate Authority certificates from the cacerts.keystore file, which is installed with the Policy Server, into the smkeydatabase. Certificate Authority certificates are used to verify the server certificate associated with the producing authority's web server.

listCerts Option

Lists some metadata of all the certificates stored in key database.

Argument for -listCerts is as follows:

-alias <*alias*>

(Optional) Lists the metadata details of the certificate and key associated with the alias specified. This option supports the asterisk (*) as a wildcard character. You can use this wildcard at the beginning and/or at the end of an alias value. Always enclose the asterisk in quotes to avoid a command shell from interpreting the wildcard character.

listRevocationInfo Option

Displays a list of current CRLs in the smkeydatabase. The -listRevocationInfo option only prints the CRL name, type (file or ldap), and the location of all the CRLs in the database.

Argument for -listRevocationInfo is as follows:

-issueralias <*issuer_alias*>

(Optional) Name of the Certificate Authority who issues the CRL. This option supports the asterisk (*) as a wildcard character. You can use this wildcard at the beginning and/or at the end of an alias value. Always enclose the asterisk in quotes to avoid a command shell from interpreting the wildcard character.

printCert Option

Displays some metadata of the specified certificate. This command is especially useful for UNIX systems, where it is difficult to see the certificate properties.

Arguments for -printCert are as follows:

-infile <*cert_file*>

Required. Location of the certificate file.

-password <*password*>

Password required only when a password-protected P12 file is specified as the certificate file.

renameAlias Option

Renames an existing alias associated with a certificate.

Arguments for -renameAlias are as follows:

-alias <*current_alias*>

Required. Current alias associated with a certificate.

-newalias <*new_alias*>

Required. New alias name. Value must be a unique string and should contain only alphanumeric characters.

validateCert Option

(Optional) Indicates whether a certificate is revoked or not.

Arguments for -validateCert are as follows:

-alias <*alias*>

Required. Alias to the certificate associated with this private key in the database. Must be a unique string and should contain only alphanumeric characters.

-infile <*crl_file*>

Optional. Specifies the CRL file that you want smkeytool to look in for the certificate to validate it.

help Option

Shows how to use the smkeytool utility.

Smkeytool Examples for UNIX Platforms

Example: Create a key database

This example shows the command for creating an smkeydatabase:

```
smkeytool.sh -createDB -password siteminderdb
```

Example: Add a private key and certificate

This example shows the command to add a private key and certificate to the smkeydatabase. The example assumes you are running the smkeytool from the directory where the certificates and keys are located, as follows:

```
smkeytool.sh -addPrivkey -password keypswd -alias idp1privkey -keyfile privkey.pkcs8 -certfile sample.crt
```

If you are not running smkeytool from the directory where the certificates and keys are located, you need to specify the full path to directory where these items are located, as follows:

```
smkeytool.sh -addPrivkey -alias privkey1 -keyfile "export/ca/siteminder/certs/
sampleprivkey.pkcs8" -certfile "export/ca/siteminder/certs/samplecert.crt"
```

Example: Add an trusted CA certificate

This example shows the commands required to add a trusted certificate authority certificate:

Important! Before adding a trusted certificate, obtain a CA certificate from a certificate authority.

To add a trusted CA certificate:

1. Check whether it already exists in the consuming authority database by entering:
   smkeytool.sh -listCerts
2. Add the CA certificate by entering:
   smkeytool.sh -addCert -alias -sp1cacert -infile /opt/netegrity/siteminder/certs/sampleCARoot.cer -trustcacert

Smkeytool Examples for Windows Platforms

Example: Create a key database

This example shows the command for creating an smkeydatabase:

```
smkeytool.bat -createDB -password smdb
```

Example: Add a private key and certificate

This example shows the command to add a private key and certificate to the smkeydatabase. The example assumes you are running the smkeytool from the directory where the certificates and keys are located, as follows:

```
smkeytool.bat -addPrivkey -password keypswd   -alias privkey1
-keyfile sampleprivkey.pkcs8" -certfile samplecert.crt"
```

If you are not running smkeytool from the directory where the certificates and keys are located, you need to specify the full path to directory where these items are located, as follows:

```
smkeytool.bat -addPrivkey -password keypswd -alias privkey1 -keyfile "c:\program
files\ca\siteminder\certs\sampleprivkey.pkcs8"
-certfile "c:\program files\ca\siteminder\certs\samplecert.crt"
```

Example: Add an trusted CA certificate

This example shows the commands required to add a trusted certificate authority certificate:

Important! Before adding a trusted certificate, obtain a CA certificate from a certificate authority.

To add a trusted CA certificate:

1. Check whether it already exists in the consuming authority database by entering:
   smkeytool.sh -listCerts
2. To add the CA certificate enter:
   smkeytool.bat -addCert "c:\program files\ca\siteminder\certs\sampleCARoot.crt" -trustcacert

Migrate AM.keystore and Update smkeydatabase

Prior to SiteMinder 6.0 SP 5/6.x QMR 5, SiteMinder had the following PKI infrastructure:

- AM.keystore

  This store resided on the Web Agent at the consuming authority. The AM.keystore held Certificate Authority (CA) certificates and client certificates.

- smkeydatabase

  This store resided on the producing and consuming Policy Server systems. The certificates in this key database did not have corresponding aliases.

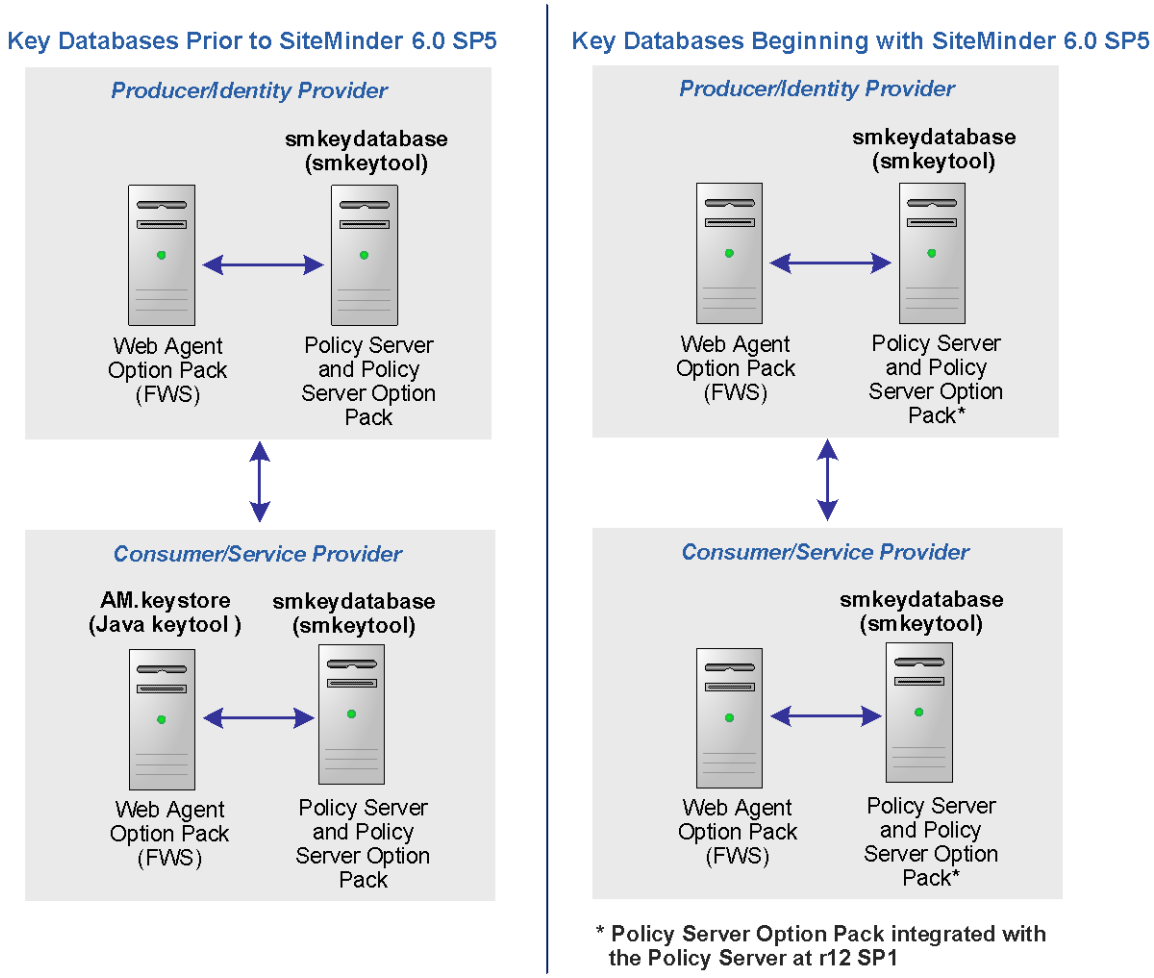
Beginning with SiteMinder 6.0 SP 5/6.x QMR 5, all data currently stored in the AM.keystore is now stored in the smkeydatabase at the consuming authority. Additionally, all certificates must have aliases.

If you are upgrading from versions prior to 6.0 SP 5/6.x QMR 5, you *must* do the following:

1. Copy private keys and certificates from the AM.keystore to the smkeydatabase on the consuming authority's Policy Server.
2. Migrate an existing smkeydatabase so aliases an be added to the certificates in the database.

The migratekeystore utility enables you to perform these tasks.

The following picture shows the changes in the PKI infrastructure.



More Information:

Run the migratekeystore Tool (see page 495)

Considerations Before Migrating Key Databases

Important! Before you migrate the AM.keystore, back up the previous AM.keystore file and the smkeydatabase.properties file. The AM.keystore file is in the location you specified when you first created it.

The smkeydatabase.properties file is in one of the following directories:

Windows: *policy_server_home*\config\properties

UNIX: *policy_server_home*/config/properties

policy_server_home

Indicates the installation directory of the policy server.

Before you migrate, consider the following:

- Understand the purpose of aliases in the smkeydatabase

  Aliases enable you to reference any private key/certificate pair in the smkeydatabase. Beginning with 6.0 SP 5/6.x QMR 5, every private key/certificate pair in the smkeydatabase must have a unique alias.

  If you are upgrading from a release prior to 6.0 SP 5/6.x QMR 5, your existing smkeydatabase must be migrated to the new model using the migratekeystore tool.

  When you run the tool the first time, an alias data store is created and aliases are added to this store. For existing private key/certificate entries in the smkeydatabase, an alias is created based on the CN value of the certificate subject DN. If the CN attribute does not exist, the first attribute value of the certificate's subject DN is chosen as the alias. If there are duplicate entries, the alias name is calculated using a combination of multiple attribute values from the subject DN.

  Note: You can change an alias value using the renameAlias option of the smkeytool utility.

- Know the Order that SiteMinder Looks for Keys

  The Policy Server at the producing authority uses an enterprise private key to sign SAML messages and to decrypt encrypted SAML messages received from the consuming authority.

  When SiteMinder looks for a private key in the database, it searches using the following order of preference:

  1. Looks for the key associated with the signing alias, if a signing alias is configured
  2. Looks for the default enterprise private key.Typically, the default enterprise key is the first private key found in the smkeydatabase.
  3. If there is no default enterprise private key, SiteMinder looks for the first private key in the database.

  If you copy data from an AM.keystore to a 6.0 SP 5 smkeydatabase, additional private keys and client certificates get added to the smkeydatabase. This may change the order of private keys already in the smkeydatabase. As a result, when you run the migratekeystore tool, it adds an alias named *defaultEnterprisePrivateKey* for the first private key it finds in the database. If a signing alias is not configured, the Policy Server will use the *defaultEnterprisePrivateKey* alias as the key for digital signing.

More Information

Run the migratekeystore Tool (see page 495)

How To Migrate the Key Databases

Use the migratekeystore tool to update your pre 6.0 SP5/6.x QMR 5 PKI infrastructure.

1. Do the following prior to running the migratekeystore tool:
   - Copy the AM.keystore file from the Web Agent machine to the Policy Server with the smkeydatabase.
   - Gather any passwords associated with client certificates that were in the AM.keystore. You will need to specify these passwords during the migration.
2. Run the migratekeytool utility.

Run the migratekeystore Tool

This procedure accomplishes two tasks:

- migrating an AM.keystore to an smkeydatabase
- updating an existing smkeydatabase so certificates have aliases.

Note: If you have a clustered Policy Server environment, perform this procedure one time on one system then copy the entire smkeydatabase directory to the other machines in the cluster.

To migrate the AM.keystore and update existing smkeydatabase certificates

1. Back up your existing databases.
2. Open a command window.
3. Copy the AM.keystore file from the machine where the Web Agent Option Pack is installed and place the file on the machine with the Policy Server installed.

   Important! If you are only updating certificates in an existing smkeydatabase, skip to Step 4.

   The location of the AM.keystore is:

   web_agent_home/affwebservices/AM.keystore

   Copy the file to:

   policy_server_home/siteminder/smkeydatabase

   If the smkeydatabase does not exist, create a database using the smkeytool -createDatabase command.

4. Enter one of the following commands to complete the migration and update:

   Windows:

   migratekeystore.bat *java_keystore_location java_keystore_password*

   UNIX:

   migratekeystore.sh *java_keystore_location java_keystore_password*

   java_keystore_location

   location of the am.keystore file

   java_keystore_password

   password to access the contents of the am.keystore file. Passwords are shown in clear text.

As the tool processes the command, you are prompted to answer a series of questions about the data you want to copy. After answering the questions, the data is copied and the smkeydatabase is updated.

Note: Any migrated data will be encrypted using FIPS-compliant algorithms.

Chapter 21: Configuration Settings that Must Use the Same Values

This section contains the following topics:

How to Use the Configuration Settings Tables

When configuring a federated environment, there are many instances where you must configure matching parameter values at both sides of a transaction.

The tables that follow explicitly describe each matching set of parameters. Each cell in a row describes a setting that must be matched with the corresponding value or values described in the other cell(s) in the row.

Note: The information is only applicable in an all-SiteMinder environment. That is, where both the producing authority and the consuming authority are SiteMinder systems.

SAML 1.x Matching Configuration Settings

The following table lists SiteMinder configuration settings that must be set to the same value at the SAML 1.x producer and consumer. The table also indicates the dialog box or file where these settings are located. Most of these settings are in the FSS Administrative UI; however, some parameters are in a properties file or part of a link.

Important! If you have to enter a URL as a value for a setting, the URL string that comes after the colon, for example, "http:" is case sensitive. Therefore, the case of the URLs in all Audience-related settings and Assertion Consumer URL-related settings must match.

These Settings at the SAML 1.x Consumer...	Must Match These Settings at the SAML 1.x Producer...
<AffiliateName> AffiliateConfig.xml file for SAML Affiliate Agent OR **Affiliate Name** field Scheme Setup tab of the Authentication Scheme Properties dialog (Artifact and POST profiles)	**Name** field Affiliate Properties dialog; value must be lowercase **NAME** query parameter in intersite transfer URL links at the producer.
Verify Password field (SAML Artifact auth. scheme only) Scheme Setup tab of the Authentication Scheme Properties dialog	**Confirm Password** field Affiliate Properties dialog
<AssertionAudience> setting AffiliateConfig.xml file; SAML Affiliate Agent is the consumer **Audience** field any other SAML consumer; Scheme Setup tab of the Authentication Scheme Properties dialog	**Audience** field Assertions tab of the Affiliate Properties dialog
Assertion Consumer URL field (SAML POST auth. scheme only) Scheme Setup tab of the Authentication Scheme Properties dialog	**Assertion Consumer URL** field Assertions tab of the Affiliate Properties dialog **SMCONSUMERURL** query parameter intersite transfer URL links at the producer
Issuer field Scheme Setup tab--Authentication Scheme Properties dialog	**AssertionIssuerID** parameter AMAssertionGenerator.properties file at the producer
Version from SAML Version drop down list (SAML Artifact auth. scheme only)	**Version from SAML Version drop down list** Assertions tab--Affiliate Properties dialog
Company Source ID field (SAML Artifact auth. scheme only)	**SourceID** parameter AMAssertionGenerator.properties file at the producer

SAML 2.0 Matching Configuration Settings

The following table lists SiteMinder configuration settings that must be set to the same value at the SAML 2.0 Identity Provider and Service Provider. The table also indicates the dialog box or file where these settings are located. Most of these settings are in the FSS Administrative UI; however, some parameters are in a properties file or part of a link.

Important! If you have to enter a URL as a value for a setting, the URL string that comes after the colon, for example, "http:" is case sensitive. Therefore, the case of all SP ID- and IdP ID-related settings must match.

These Settings at the Service Provider...	Must Match These Settings at the Identity Provider...
SP Name field Backchannel tab of the SAML 2.0 Auth Scheme Properties dialog This value must be in lowercase.	**Name** field Service Provider dialog This value must be in lowercase.
SP ID field Scheme Setup tab--Authentication Scheme Properties dialog For Service Provider-initiated SSO-- **ProviderID** query parameter in hard-coded links to the Identity Provider	**SP ID** field General tab--Service Provider dialog
IdP ID field Scheme Setup tab--Authentication Scheme Properties dialog	**IdP ID** field General tab--Service Provider dialog For Identity Provider-initiated SSO--**SPID** query parameter in an unsolicited response
Local Name field Add/Edit Attribute dialog accessed from the Attributes tab of the SAML 2.0 Auth. Scheme Properties dialog **Local Name** Federation Attribute Variable Properties dialog for creating a Federation Attribute variable at the SAML Requester (Service Provider).	None

These Settings at the Service Provider...	Must Match These Settings at the Identity Provider...
Attribute Name Add/Edit Attribute dialog accessed from the Attributes tab of the SAML 2.0 Auth. Scheme Properties dialog	**Variable Name** Attribute Fields group box--SAML Service Provider Attribute dialog

WS-Federation Configuration Settings

The following table lists SiteMinder configuration settings that must be set to the same value at the WS-Federation Account Partner and Resource Partner. Read the table as follows:

- The first column, "Setting at Resource Partner", describes a setting that must be configured in the FSS Administrative UI at the Resource Partner.
- The second column, "Setting at the Account Partner", describes a setting that must be configured in the FSS Administrative UI at the Account Partner and must match the setting at the consumer.
- The third column, "Other Settings Requiring Matching Value", describes other configuration settings (at the Resource or Account Partner, as specified) that also require a matching setting

Important! If you have to enter a URL as a value for a setting, the URL string that comes after the colon, for example, "http:" is case sensitive. Therefore, the case of all RP ID- and AP ID-related settings must match.

These Settings at the Resource Partner...	Must Match These Settings at the Account Partner...
Resource Partner ID Scheme Setup tab--Authentication Scheme Properties dialog	**Resource Partner ID** field General tab Resource Partner Properties dialog wtrealm query parameter should be set to Resource Partner ID for the hard-coded link to trigger Account Partner-initiated SSO.
Account Partner ID Scheme Setup tab--Authentication Scheme Properties dialog	**Account Partner ID** field General tab of the Resource Partner Properties dialog

Chapter 22: Federation Web Services URLs Used in SiteMinder Configuration

This section contains the following topics:

Federation Services URLs

The Federation Web Services application installed by the Web Agent Option Pack or the SPS federation gateway contains many services to implement SiteMinder Federation Security Services. When configuring single sign-on, single logout, or identity provider discovery profile via the FSS Administrative UI, you are required to specify URLs that reference the different services.

The following service descriptions each include:

- A brief description of the service
- The URL for the service
- The field in the FSS Administrative UI where you enter the URL
- Associated servlet and servlet mapping in the Web.xml file

The Web.xml file is one of the deployment descriptors for the Federation Web Services application. It lists servlets and URL mappings.

URLs for Services the Producing Authority Provides

The Federation Web Services application supplies the following services:

- Intersite Transfer Service (see page 504) (SAML 1.x producer)
- Assertion Retrieval Service (SAML 1.x producer)
- Artifact Resolution Service (see page 506) (SAML 2.0 IdP)
- Single sign-on Service (see page 507) (SAML 2.0 IdP)
- Single logout Service (see page 509) (SAML 2.0 IdP)

- Single sign-on Service (see page 510) (WS-Federation)
- Signout Service (see page 508) (WS-Federation)

Although these services are provided at the Identity Provider/Producer, you may be entering the URL for the service at the Service Provider.

Intersite Transfer Service (SAML 1.x)

For SAML 1.x POST and artifact profiles, the intersite transfer URL is a producer-side component that transfers a user from the producer site to a consumer site.

- Default URL for this Service:

  http://*producer_server:port*/affwebservices/public/intersitetransfer

  producer_server:port

  Identifies the web server and port number of the system at the producer hosting the Web Agent Option Pack or the SPS federation gateway.

- URL Entered: include URL in a hard-coded link on a page at the producer
- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>intersiteTransferService</servlet-name>
 <display-name>Intersite Transfer Service</display-name>
 <description>This servlet acts as the Intersite Transfer URL.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
  IntersiteTransferService
 </servlet-class>
</servlet>


<servlet-mapping>
 <servlet-name>intersiteTransferService</servlet-name>
 <url-pattern>/public/intersitetransfer/*</url-pattern>
</servlet-mapping>
```

Assertion Retrieval Service (SAML 1.x)

The Assertion Retrieval Service retrieves an assertion for a SAML. 1.x consumer site.

- Default URLs for this Service:
  - If you are using Basic or Basic over SSL to protect this service, the URL is: *https://producer_server:port*/affwebservices/assertionretriever
  - If you are using client certificate authentication to protect this service, the URL is: *https://producer_server:port*/affwebservices/certassertionretriever

  producer_server:port

  Identifies the web server and port number of the system at the producer hosting the Web Agent Option Pack or the SPS federation gateway.

- Field Where URL Entered: Assertion Retrieval URL

  The Assertion Retrieval URL field is on the SAML Artifact Template dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>assertionretriever</servlet-name>
 <display-name>SAML Assertion Retrieval servlet</display-name>
 <description>This servlet processes the HTTP post based SAML requests and returns the SAML
Response elements. Both SAML Request and Response elements are SOAP encoded.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
   AssertionRetriever</servlet-class>
</servlet>


<servlet-mapping>
 <servlet-name>assertionretriever</servlet-name>
 <url-pattern>/assertionretriever/*</url-pattern>
</servlet-mapping>
<servlet-mapping>

 <servlet-name>assertionretriever</servlet-name>
 <url-pattern>/certassertionretriever/*</url-pattern>
</servlet-mapping>
```

Artifact Resolution Service (SAML 2.0)

The Artifact Resolution Service is used to retrieve SAML 2.0 assertions for a Service Provider.

- Default URL for this Service:
  - If you are using Basic authentication to protect this service, the URL is:

    http://*idp_server:port*/affwebservices/saml2artifactresolution
  - If you are using Basic over SSL or X.509 client certificate authentication to protect this service, the URL is:

    https://*idp_server:port*/affwebservices/saml2certartifactresolution

idp_server:port

Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

- Field Where URL Entered: Resolution Service

  The Resolution Service field is on the SSO tab of the SAML 2.0 Auth. Scheme Properties dialog. You have to select HTTP-Artifact to make the field active.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>saml2artifactresolution</servlet-name>
 <display-name>SAML 2.0 Single Sign-On service</display-name>
 <description>This servlet is the SAML 2.0 Artifact Resolution
      service at an IdP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
  saml2.ArtifactResolution</servlet-class>
</servlet>


<servlet-mapping>
<servlet-name>saml2artifactresolution</servlet-name>
<url-pattern>/saml2artifactresolution/*</url-pattern>
</servlet-mapping>


<servlet-mapping>
<servlet-name>saml2artifactresolution</servlet-name>
<url-pattern>/saml2certartifactresolution/*</url-pattern>
</servlet-mapping>
```

Single Sign On Service (SAML 2.0)

Implements single sign-on for SAML 2.0.

- Default URL for this Service:

  http://*idp_server:port*/affwebservices/public/saml2sso

idp_server:port

Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

- Field Where URL Entered: SSO Service

  This SSO Service field is in the SSO tab of the SAML 2.0 Auth. Scheme Properties dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>saml2sso</servlet-name>
 <display-name>SAML 2.0 Single Sign-On service</display-name>
 <description>This servlet is the SAML 2.0 Single Sign-On service at an IdP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
saml2.SSO</servlet-class>
</servlet>


<servlet-mapping>
 <servlet-name>saml2sso</servlet-name>
 <url-pattern>/public/saml2sso/*</url-pattern>
</servlet-mapping>
```

Single Sign-on Service (WS-Federation)

Implements single sign-on for WS-Federation.

- Default URL for this Service:

  http://*ap_server:port*/affwebservices/public/wsfedsso

ap_server:port

Specifies the server and port number of the system at the Account Partner that is hosting the Web Agent Option Pack or the SPS federation gateway, depending on which component is installed in your federation network.

- Field Where URL Entered: SSO Service

  This SSO Service field is in the SSO tab of the WS-Federation Auth. Scheme Properties dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
<servlet-name>wsfedsso</servlet-name>
<display-name>WSFED Single Sign-On service</display-name>
<description>This servlet is the WSFED Single Sign-On service at an Account Partner.</description>
<servlet-class>com.netegrity.affiliateminder.webservices.wsfed.SSO
  </servlet-class>
</servlet>


<servlet-mapping>
<servlet-name>wsfedsso</servlet-name>
<url-pattern>/public/wsfedsso/*</url-pattern>
</servlet-mapping>
```

Single Logout Service at the IdP (SAML 2.0)

This service implements single logout for SAML 2.0.

- Default URL for this Service:

  http://*idp_server:port*/affwebservices/public/saml2slo

idp_server:port

Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

- Fields Where URL Entered: SLO Location URL and the SLO Response Location URL

  At the Identity Provider, these fields are on the SLO tab of the Service Provider Properties dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>saml2slo</servlet-name>
 <display-name>SAML 2.0 Single Logout service</display-name>
 <description>This servlet is the SAML 2.0 Single Logout service at an IdP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
   saml2.SLOService</servlet-class>
</servlet>

<servlet-mapping>
 <servlet-name>saml2slo</servlet-name>
 <url-pattern>/public/saml2slo/*</url-pattern>
</servlet-mapping>
```

Signout Service at the AP (WS-Federation)

This service implements sign out service for WS-Federation.

- Default URL for this Service:

  http://*ap_server:port*/affwebservices/public/wsfedsignout

ap_server:port

Specifies the server and port number of the system at the Account Partner that is hosting the Web Agent Option Pack or the SPS federation gateway, depending on which component is installed in your federation network.

- Fields Where URL Entered: Signout Cleanup URL and the Signout URL

  At the Account Partner, these fields are on the Signout tab of the Resource Partner Properties dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>wsfedsignout</servlet-name>
 <display-name>WS-Federation Signout Service</display-name>
 <description>This servlet is the WS-Federation Signout service
      at an AP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.wsfed.
    SignoutService</servlet-class>
</servlet>


<servlet-mapping>
<servlet-name>wsfedsignout</servlet-name>
<url-pattern>/public/wsfedsignout/*</url-pattern>
</servlet-mapping>
```

Identity Provider Discovery Profile Service (SAML 2.0)

This service implements the Identity Provider Discovery Profile.

- Default URL for this Service:

  https://*idp_server:port*/affwebservices/public/saml2ipd/*

idp_server:port

Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

- Field Where URL Entered: Service URL

  This Service URL is on the IPD tab in the SAML Service Provider Properties dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>saml2ipd</servlet-name>
 <display-name>SAML 2.X Identity Provider Discovery Profile
  service</display-name>
 <description>This servlet is the SAML 2.X Identity Provider Discovery Profile service at an SP or
IdP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
  saml2.IPDService</servlet-class>
</servlet>


<servlet-mapping>
 <servlet-name>saml2ipd</servlet-name>
 <url-pattern>/public/saml2ipd/*</url-pattern>
</servlet-mapping>
```

Attribute Service

The Attribute Service enables an Identity Provider acting as an Attribute Authority to respond to attribute queries from a Service Provider acting as a SAML Requester.

- Default URL for this Service:

  http://*idp_server:port*/affwebservices/public/saml2attributeservice

idp_server:port

Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

- Fields Where URL Entered:

  At the Service Provider, the Attributes tab of the SAML 2.0 Auth. Scheme Properties dialog.

- Associated Servlet and Servlet Mapping in the Web.xml file

```
<servlet>
  <servlet-name>saml2attributeservice</servlet-name>
  <display-name>SAML 2.0 Attribute service</display-name>
  <description>This servlet is the SAML 2.0 Attribute Service
       at an IdP.</description>
  <servlet-class>com.netegrity.affiliateminder.webservices.saml2.
      AttributeService</servlet-class>
</servlet>


<servlet-mapping>
 <servlet-name>saml2attributeservice</servlet-name>
 <url-pattern>/saml2attributeservice/*</url-pattern>
</servlet-mapping>

<servlet-mapping>
 <servlet-name>saml2attributeservice</servlet-name>
 <url-pattern>/saml2certattributeservice/*</url-pattern>
</servlet-mapping>
```

WSFedDispatcher Service at the AP

The WSFedDispatcher Service services receives all incoming WS-Federation messages and forwards the request processing to other services based on the query parameter data.

- Default URL for this Service:

  https://*ap_server:port*/affwebservices/public/wsfeddispatcher

ap_server:port

Specifies the server and port number of the system at the Account Partner that is hosting the Web Agent Option Pack or the SPS federation gateway, depending on which component is installed in your federation network.

- Field Where URL Entered: Not applicable
- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>wsfeddispatcher</servlet-name>
 <display-name>WS-Federation Dispatcher service</display-name>
 <description>This servlet is the WS-Federation Dispatcher service for all WS-Federation
services.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.wsfed.
     dispatcher</servlet-class>
</servlet>


<<servlet-mapping>
<servlet-name>wsfeddispatcher</servlet-name>
<url-pattern>/public/wsfeddispatcher/*</url-pattern>
</servlet-mapping>
```

URLs for Services Provided By the Consuming Authority

The following services are provided by the SiteMinder consuming authority:

- SAML credential collector (SAML 1.x)
- AuthnRequest service (SAML 2.0)
- Assertion Consumer Service (SAML 2.0)
- Security Token Consumer Service (WS-Federation)
- Single Logout Service (SAML 2.0)
- Signout Service (WS-Federation)

Although these services are provided at the consuming authority, you may be entering the URL for the service at the producing authority.

SAML Credential Collector (SAML 1.x)

This service assists in consuming the SAML 1.x assertion.

- Default URL for this Service:

  https://*consumer_server:port*/affwebservices/public/samlcc

  consumer_server:port

  Identifies the web server and port hosting the Web Agent Option Pack or SPS federation gateway.

- Field Where URL Entered: Assertion Consumer URL

  This field is on the Assertions tab of the Affiliate Properties dialog and the SAML POST Template dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>samlcredentialcollector</servlet-name>
 <display-name>SAML Credential Collector</display-name>
 <description>This servlet acts as the SAML Credential Collector.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
   SAMLCredentialCollector</servlet-class>
</servlet>

<servlet-mapping>
 <servlet-name>samlcredentialcollector</servlet-name>
 <url-pattern>/public/samlcc/*</url-pattern>
</servlet-mapping>
```

AuthnRequest (SAML 2.0)

This service helps implement single sign-on for artifact or POST profile.

- Default URL for this Service:

  https://*sp_server:por*t/affwebservices/public/saml2authnrequest

sp_server:port

Specifies the server and port number at the Service Provider that is hosting the Web Agent Option Pack or the SPS federation gateway.

- Field Where URL Entered: link in an application at the Service Provider

  This link initiates single sign-on. It should be included in an application.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>saml2authnrequest</servlet-name>
 <display-name>SAML 2.0 AuthnRequest service</display-name>
 <description>This servlet is the SAML 2.0 AuthnRequest service at an SP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
  saml2.AuthnRequest</servlet-class>
</servlet>

<servlet-mapping>
 <servlet-name>saml2authnrequest</servlet-name>
 <url-pattern>/public/saml2authnrequest/*</url-pattern>
</servlet-mapping>
```

Assertion Consumer Service (SAML 2.0)

This service enables the consumption of assertions.

- Default URL for this Service:

  https://*sp_server:port*/affwebservices/public/saml2assertionconsumer

sp_server:port

Specifies the server and port number at the Service Provider that is hosting the Web Agent Option Pack or the SPS federation gateway.

- Field Where URL Entered: Assertion Consumer URL

  This Assertion Consumer URL is on the SSO tab of the SAML Service Provider Properties dialog at the Identity Provider.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>saml2assertionconsumer</servlet-name>
 <display-name>SAML 2.0 Assertion Consumer service</display-name>
 <description>This servlet is the SAML 2.0 Assertion Consumer service at an SP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
  saml2.AssertionConsumer</servlet-class>
</servlet>


<servlet-mapping>
 <servlet-name>saml2assertionconsumer</servlet-name>
 <url-pattern>/public/saml2assertionconsumer/*</url-pattern>
</servlet-mapping>
```

Security Token Consumer Service (WS-Federation)

The Security Token Consumer Service enables the consumption of assertions at the Resource Partner.

- Default URL for this Service:

  https://*rp_server:port*/affwebservices/public/wsfedsecuritytokenconsumer

  rp_server:port

  Identifies the web server and port at the Resource Partner hosting the Web Agent Option Pack or SPS federation gateway.

- Field Where URL Entered: Security Token Consumer Service

  This Security Token Consumer Service field is on the SSO tab of the Resource Partner Properties dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>wsfedsecuritytokenconsumer</servlet-name>
 <display-name>Security Token Consumer service</display-name>
 <description>This servlet is the WS-Federation Security Token
    Consumer service at an RP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.wsfed.
    SecurityTokenConsumer</servlet-class>
</servlet>


<<servlet-mapping>
<servlet-name>wsfedsecuritytokenconsumer</servlet-name>
<url-pattern>/public/wsfedsecuritytokenconsumer/*</url-pattern>
</servlet-mapping>
```

Single Logout Service at the SP (SAML 2.0)

This service implements single logout for SAML 2.0.

- Default URL for this Service:

  http://*sp_server:port*/affwebservices/public/saml2slo

sp_server:port

Specifies the server and port number at the Service Provider that is hosting the Web Agent Option Pack or the SPS federation gateway.

- Fields Where URL Entered: SLO Location URL and SLO Response Location URL

  At the Service Provider, these fields are on the SLO tab of the SAML 2.0 Auth. Scheme Properties dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>saml2slo</servlet-name>
 <display-name>SAML 2.0 Single Logout service</display-name>
 <description>This servlet is the SAML 2.0 Single Logout service at an SP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.
   saml2.SLOService</servlet-class>
</servlet>

<servlet-mapping>
 <servlet-name>saml2slo</servlet-name>
 <url-pattern>/public/saml2slo/*</url-pattern>
</servlet-mapping>
```

Signout Service at the RP (WS-Federation)

This service implements sign out service for WS-Federation.

- Default URL for this Service:

  http://*rp_server:port*/affwebservices/public/wsfedsignout

  rp_server:port

  Identifies the web server and port at the Resource Partner hosting the Web Agent Option Pack or SPS federation gateway.

- Fields Where URL Entered: Signout Cleanup URL and Signout URL

  At the Resource Partner, these fields are on the Signout tab of the WS-Federation Auth. Scheme Properties dialog.

- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>wsfedsignout</servlet-name>
 <display-name>WS-Federation Signout Service</display-name>
 <description>This servlet is the WS-Federation Signout service
      at an RP.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.wsfed.
    SignoutService</servlet-class>
</servlet>


<servlet-mapping>
<servlet-name>wsfedsignout</servlet-name>
<url-pattern>/public/wsfedsignout/*</url-pattern>
</servlet-mapping>
```

WSFedDispatcher Service at the RP

The WSFedDispatcher Service services receives all incoming WS-Federation messages and forwards the request processing to other services based on the query parameter data.

- Default URL for this Service:

  https://*rp_server:port*/affwebservices/public/wsfeddispatcher

  rp_server:port

  Identifies the web server and port at the Resource Partner hosting the Web Agent Option Pack or SPS federation gateway.

- Field Where URL Entered: Not applicable
- Associated Servlet and Servlet Mapping in Web.xml file

```
<servlet>
 <servlet-name>wsfeddispatcher</servlet-name>
 <display-name>WS-Federation Dispatcher service</display-name>
 <description>This servlet is the WS-Federation Dispatcher service for all WS-Federation
services.</description>
 <servlet-class>com.netegrity.affiliateminder.webservices.wsfed.
    dispatcher</servlet-class>
</servlet>


<<servlet-mapping>
<servlet-name>wsfeddispatcher</servlet-name>
<url-pattern>/public/wsfeddispatcher/*</url-pattern>
</servlet-mapping>
```

The Web.xml File

The Web.xml file lists servlets and URL mappings for the Federation Web Services application.

You should not need to change most of this file, but you can modify the URL mappings.

To view the Web.xml file, go to the appropriate file location:

- *web_agent_home*/affwebservices/WEB-INF
- *sps_home*/secure-proxy/Tomcat/webapps/affwebservices/WEB-INF

Chapter 23: Troubleshooting

This section contains the following topics:

General Issues

The following troubleshooting topics apply to SAML 1.x and SAML 2.0.

Web Agent Option Pack Fails to Initialize Due to Invalid smjavaagent.dll

Symptom:

The Web Agent Option Pack fails to initialize with "Java Agent API initialization FAILED" or "unsatisfied link error" messages on a system with other CA products, such as IdentityManager or SOA Security Manager. Error messages similar to the following appear in the Federation Web Service log file:

11:04:46 AM[29959477:E] Exception while reading the WebAgent configuration information: javaagent_api_getConfig
11:04:46 AM[29959477:E] Java Agent API initialization FAILED.

Solution:

You may have an invalid version of smjavaagentapi.dll in the system path. Ensure that all installed products are compatible with one another and of compatible versions.

To check versions

1. Log in to the Technical Support site.
2. Search for the SiteMinder Platform Support Matrix for r12 SP1

Cookie Domain Mismatch Errors

Symptom:

After successful SAML authentication at consumer/SP site, user is still challenged by consumer/SP Web Agent because of cookie domain mismatch.

Solution:

Ensure that the producer/IdP and consumer/SP are not in the same cookie domain -- Federation Security Services does not support federation within the same cookie domain; it requires the use of separate cookie domains at the producer/IdP and consumer/SP sites. Additionally, you should ensure that the CookieDomainScope Web Agent parameter is set to the appropriate value for your environment (see information about single sign-on in the *SiteMinder Web Agent Configuration Guide*.

If separate cookie domains are in use, ensure that the cookie domain specified in the Agent configuration matches the domain name specified in the requested target URL.

Error After Successful Authentication at Consumer/SP

Symptom:

After successful authentication at consumer site, an HTTP 404 "Page Not Found" error code is returned to user's browser.

Solution:

Ensure that the target page exists in the web server's document root. Check the FWS trace log to verify that the user is being redirected to the correct URL.

HTTP 404 Error When Trying to Retrieve Assertion at the Consumer

Symptom:

When consumer/SP site attempts to retrieve an assertion from the producer/IdP site, an HTTP 404 "Page Not Found" error code is returned to the user's browser.

Solution:

Ensure that the Federation Web Services application is deployed as a Web application using the ServletExec servlet engine, WebLogic Server, or WebSphere Application Server.

More Information:

Deploy Federation Web Services as a Web Application (see page 217)

Federation Web Services Fails to Send SAML Request to Producer/IdP

Symptom:

The Federation Web Services application at the consumer/SP fails to send a SAML request message to the producer/IdP, as it fails to trust the Web server's certificate.

Solution:

Add the certificate of the Certificate Authority that issued the client certificate to the Web server's key database at the producer/IdP.

Matching Parameter Case-Sensitivity Configuration Issues

Symptom:

Problems occur due to conflicts between configuration parameters that must correspond on producer/Identity Provider and consumer/Service Provider, even though the parameters appear to match.

Solution:

The URL string that comes after the colon, for example, after "http:" in a web address, is case sensitive. Therefore, the case of the URLs in all corresponding settings must match.

For parameter values that should match between the Identity Provider/producer and Service Provider/consumer, refer to Configuration Settings that Must Use the Same Values (see page 497).

Error Message When Viewing FederationWSCustomUserStore

Symptom:

On Windows 2000 SP4 Japanese OS system, SiteMinder displays the error, "Search operation failed: Siteminder Administration Error: User directory error. (Error 60)" when you display the properties of the FederationWSCustomUserStore user directory and click the View Contents button. This error occurs if no affiliate domain has been created.

Solution:

Ensure an affiliate domain has been created.

Policy Server System Fails After Logoff

Symptom:

In some environments, when you log off from a system where the SiteMinder Policy Server service is running, the Policy Server service fails because of a JVM issue.

Solution:

Add the -Xrs command to its own command line in the JVMOptions.txt file. This command is case-sensitive, so add it as shown. This command reduces usage of operating system signals by the JVM.

The JVMOptions.txt file is located in *policy_server_home*/config/.

Encrypted Private Key Fails to Be Imported into SMkeydatabase

Symptom:

When you try to import an encrypted private key in the smkeydatabase, the import fails.

Solution:

Private keys can be encrypted using only the following encryption algorithms:

- PKCS#12: PBE-SHA1-RC4-128, PBE-SHA1-RC4-40, PBE-SHA1-3DES, PBE-SHA1-2DES, PBE-SHA1-RC2-128, PBE-SHA1-RC2-40
- PKCS#5 v1 PBE-MD5-DES

Multibyte Characters in Assertions are Not Handled Properly

Symptom:

When you include a multibyte character in an assertion, problems can occur.

Solution:

Set the LANG setting for your operating system to UTF-8, as follows:

LANG=xx_xx.UTF-8

For example, for Japanese, the entry would be:

LANG=ja_JP.UTF-8

Trace Logs Not Appearing for IIS Web Server Using ServletExec

Symptom:

You have enabled trace logging in the LoggerConfig.properties file, but the affwebservices.log and FWStrace.log files are not being written to the WEB-INF/classes directory.

Solution:

Ensure that the anonymous user account associated with ServletExec has correct permissions to write to the Windows file system. If the user account does not have the right to act as part of the operating system, ServletExec cannot write the log files.

More information:

Enable ServletExec to Write to the IIS File System (see page 220)

Error During Initialization of JVM

Symptom:

If you receive the following error message in the Policy Server log (figure out which log):

Error occurred during initialization of JVM
Could not reserve enough space for object heap.

The Web Agent Option Pack functionality is not working due to a JVM initialization failure.

Solution:

Restrict the object heap memory size.

To restrict the memory size

1. Open the JVMOptions.txt file, located in the *web_agent_home*/WEB-INF/properties file
2. Add the following entry to the file just as it is written here:

   -Xms128M
3. Save the file.
4. Restart the Policy Server.

SAML 1.x-Only Issues

The following issues apply only to SAML 1.x features.

SAML 1.x Artifact Profile Single Sign-On Failing

Symptom:

In an environment in which single sign-on with the SAML 1.x artifact profile is configured, the consumer site fails to send SAML request messages to the producer. Error messages similar to the following appear in the Federation Web Service log file:

May 23, 2006 4:20:44.234 PM[28349544:E] Dispatcher object thrown unknown exception while processing the request message. Message: java.net.ConnectException: Connection refused: connect.

May 23, 2006 4:20:44.234 PM[28349544:E] Exception caught. Message: com.netegrity.affiliateminder.webservices.m: Exception occurred while message dispatcher(srca) object trying to send SOAP request message to the SAML producer.

Solution:

Ensure that the Web server hosting the Assertion Retrieval Service is running with a configured SSL port.

Consumer Not Authenticating When Accessing Assertion Retrieval Service

Symptom:

In an environment using SAML 1.x artifact single sign-on, the consumer fails authentication when trying to access the Assertion Retrieval Service at the producer.

Solution:

Depends upon the configured authentication:

- If Basic authentication is configured to protect the Assertion Retrieval Service, ensure that the Name and Password values specified in the Affiliate Properties dialog at the producer site match the Affiliate Name and Password values configured for the SAML Artifact authentication scheme at the consumer site.
- If client certificate authentication is configured to protect the Assertion Retrieval Service, ensure that the consumer's client certificate is valid and that it is present in the consumer's AM.keystore database. Additionally, ensure that the certificate of the Certificate Authority that issued the client certificate is present in the Web server key database at the producer.

Authentication Fails After Modifying Authentication Method

Symptom:

If you change the authentication method that protects the SAML 1.x Assertion Retrieval Service from Basic to Client Cert (or vice versa), subsequent authentication requests may fail.

Solution:

Restart the Web server after the authentication method is changed.

More Information:

Access the Assertion Retrieval Service with a Client Certificate (optional) (see page 294)

Client Authentication Fails for SAML Artifact Single Sign-on

Symptom:

Client certificate authentication for SAML 1.x artifact single sign-on fails at the producer and gives following error in the web-agent trace logs:
Setting HTTP response variable HTTP_consumer_name=from SiteMinder

For example, if the Attribute Name in the response is configured as "name" for an LDAP User Directory, the response will fail.

Solution:

Ensure that a Web Agent response is created under the domain FederationWebServicesDomain. The response should be as follows:

Attribute type

WebAgent HTTP Header variable

Attribute Kind

User Attribute

Variable Name

consumer_name

Attribute Name

uid (for LDAP) or name (for ODBC)

SAML 2.0-Only Issues

The following issues apply only to SAML 2.0 features.

SP Not Authenticating When Accessing Assertion Retrieval Service

Solution:

In an environment using SAML 2.0 artifact single sign-on, the Service Provider fails to authenticate when attempting to access the Artifact Resolution Service at the Identity Provider.

Error messages similar to the following appear in the Federation Web Service log file:

May 23, 2005 4:43:51.479 PM[31538514:E] SAML producer returned error http status code. HTTP return status: 401. Message: <HTML><HEAD><TITLE>401: Access Denied</TITLE></HEAD><BODY><H1>401: Access Denied</H1>
Proper authorization is required for this area. Either your browser does not perform authorization, or your authorization has failed.</BODY></HTML>

Solution:

Depends upon the configured authentication:

- If Basic authentication is configured, ensure that the Name and Password values specified in the Service Provider Properties dialog at the IdP match the Affiliate Name and Password values configured for the SAML 2.0 authentication scheme at the SP.
- If client certificate authentication is configured to protect the Artifact Resolution Service, ensure that the Service Provider's client certificate is valid and that it is in the Service Provider's AM.keystore database. Additionally, ensure that the Certificate Authority that issued the client certificate is in the Web server's own key database at the Identity Provider.
- If no authentication is configured, ensure that the Artifact Resolution Service URL is *not* protected.

ODBC Errors Deleting Expiry Data From Session Server

Symptom:

On a Policy Server upgraded from an earlier version, ODBC errors occur when deleting expiry data from session server.

Solution:

Upgrade the session server schema as described in the *SiteMinder Upgrade Guide*.

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