CA Federation Manager

Federation Manager Guide

r12.5

CA Technologies Product References

This document references the following CA Technologies products:

- SiteMinder®

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Contents

Chapter 7: Federation Partnerships 135

Chapter 1: Federation Manager Introduction

This section contains the following topics:

Overview

Enterprise applications and services continue to become increasingly distributed across organizations. As a result, the need for secure but seamless access to services from one domain to another has increased. Federated partnerships address this need by enabling identity information to be flexible and portable, offering secure single sign-on and single logout across a network of trusted business partners.

CA Federation Manager enables customers to establish federated partnerships in a flexible way, together with or independent of a Web access management system. Federation Manager offers an easy-to-deploy solution for standards-based federation. Using Federation Manager, an organization can act as the asserting party or the relying party. The asserting party provides user authentication and assertion of identity. The relying party consumes a user identity to allow access to web resources and services.

Federation Manager offers the following features:

- SAML 1.1 and SAML 2.0 protocol support.
- Support for FIPS 140-2 compatible encryption.
- A simple installation and network deployment.
- A standalone product that does not require the existence of any federation software on the target system.
- The ability to generate SAML assertions, which can include identity information and attributes from a user store.
- The capability to send the assertion to the relevant federated partner.

- For the artifact profile, the ability to store a SAML assertion until the relying party retrieves the assertion.
- The ability to be deployed as a standalone entity or together with CA SiteMinder Web Access Manager for federation and access control.
- An intuitive user interface.
- The ability to pass identity data to a target application as an encrypted cookie or header.

Federation Manager Components

Federation Manager includes the following components:

- Secure proxy engine

  Forwards traffic to backend servers. This engine employs web server, servlet engine, proxy server and federation web services features.

  The secure proxy engine includes the following components:

  - Apache Web Server

    Acts as the HTTP listener, handling HTTP traffic for incoming requests, and can handle HTTPS traffic, once properly configured.

  - Tomcat server

    Provides a servlet container for the operation of the Federation Manager UI. The Apache web server communicates to the Tomcat server via a Tomcat connector called mod_jk.

- Federation server

  Enables user directory connectivity, authentication functions, and session store abilities.

- Extensible policy store

  Stores all Federation Manager data objects.

- Web-based user interface

  Administers the configuration of federation entities and partnerships, private keys and certificates, and various server settings.

FIPS 140-2 Support Offered by Federation Manager

Federation Manager uses certified Federal Information Processing Standard (FIPS) 140-2 compliant cryptographic libraries. These libraries provide a FIPS mode of operation when an environment uses only FIPS-compliant Advanced Encryption Standard (AES) algorithms to encrypt sensitive data.

You can install Federation Manager in one of the following FIPS modes of operation:

FIPS_COMPAT

FIPS_COMPAT (compatibility) mode is the default FIPS mode of operation during installation. In FIPS_COMPAT mode, Federation Manager continues to support the current set of non-FIPS algorithms as well as the supported FIPS-compliant algorithms.

FIPS_COMPAT mode is compatible with previous versions Federation Manager. This compatibility enables environments with a version of Federation Manager earlier than r12.5 to interoperate with r12.5. FIPS_COMPAT is also suitable for any clients who are satisfied with the degree of security available in the current Federation Manager implementation.

If your organization does not require the use of FIPS, install Federation Manager in FIPS_COMPAT mode. No further configuration is required.

FIPS_ONLY

In FIPS_ONLY mode, the environment uses only FIPS-compliant algorithms to encrypt sensitive data.

Install Federation Manager in FIPS_ONLY mode for new installations where you want to use only FIPS-compliant algorithms.

An appendix (see page 333) in this guide lists the specific encryption and decryption algorithms that Federation Manager uses when operating in different FIPS modes.

Important! An r12.5 installation running in FIPS_ONLY mode cannot interoperate with, or be backward compatible to, earlier versions of Federation Manager, including any previous versions of APIs that Federation Manager exposes. Re-link all such software with the r12.5 versions of the respective SDKs to achieve the required support for full FIPS_ONLY mode.

Programmerless Federation

Programmerless federation is an HTTP-based approach for allowing the secure authentication, user disambiguation, inspection, and modification of SAML assertions. The advantage of programmerless federation is that applications can accomplish these tasks without having to use a language-specific SDK or other bindings.

Programmerless federation relies on HTTP/HTTPS requests and responses. These requests and responses are accessible through URLs and HTML-based protocols using web services that are an implementation of Representational State Transfer (REST) system architecture.

Any application that can issue HTTP requests, read HTTP responses, and parse XML to take advantage of the Federation Manager programmerless functionality.

An essential part of programmerless federation is its ability to secure the exchange of data. To secure data, Federation Manager uses an open format cookie. The open format cookie is a well-defined cookie format that supports strong encryption algorithms. The encrypted cookie secures the response to a request between Federation Manager and the local or remote applications, which can be written in any programming language that supports the same encryption and decryption algorithms that the open format cookie uses, such as Perl or Ruby.

Federation Manager SDKs also support the open format cookie, allowing a mix of applications.

The following Federation Manager features implement the programmerless federation model:

Delegated Authentication

Delegated authentication lets Federation Manager use a third-party web access management (WAM) system to perform the authentication of any user who requests a protected federated resource. The third-party WAM performs the authentication and then sends the federated user identity to Federation Manager.

Communication for delegated authentication is handled by HTTP/HTTPS requests and responses.

Provisioning at the Relying Party

Provisioning is the process of creating client accounts with the necessary account rights and access privileges for accessing data and applications. Federation Manager provisioning can establish a new account for a user, or populate an existing user account with information sent in a SAML assertion.

Remote provisioning is one of the Federation Manager provisioning methods. Remote provisioning uses an independent provisioning application to establish a user record. To pass assertion data, Federation Manager creates an encrypted cookie containing the data. This cookie is sent to the remote provisioning application, which is responsible for creating the user account.

Communication for provisioning is handled by HTTP/HTTPS requests and responses.

Intended Audience

This guide assumes that you understand the following concepts:

- Basic SAML fundamentals
- SAML bindings POST and artifact
- SAML profiles, such as Single Sign-on (SSO), Single logout (SLO), and Enhanced Client or Proxy (ECP)
- Public Key Infrastructure (PKI) fundamentals
- Secure Socket Layer communication basics

Terminology Used in this Guide

The following terms are used in this guide:

Asserting Party

A SAML authority that generates an assertion for use by a relying party. The asserting party creates, maintains, and manages identity information for users and provides user authentication to other relying parties. For SAML 1.1, the asserting party is known as the Producer. For SAML 2.0, the asserting party is known as the Identity Provider.

Important! In this guide, the term *asserting party* is used to mean a producer or an Identity Provider.

Assertion Consumer Service (SAML 1.1 and 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 Federation Manager session cookies, and if you are integrating with SiteMinder, a SiteMinder session cookie.

Assertion Retrieval Service (SAML 1.1)

A Producer-side service that handles SAML 1.1 authentication using HTTP Artifact binding. This service retrieves the assertion stored at the Producer.

Artifact Resolution Service (SAML 2.0)

An Identity Provider-side service that performs SAML 2.0 authentication using the HTTP Artifact binding. This service retrieves the assertion stored at the Identity Provider.

AuthnRequest Service (SAML 2.0)

A service that enables a Service Provider to generate an AuthnRequest message for cross-domain single sign-on. This message contains information that enables Federation Manager to redirect the browser to the Single Sign-on Service at the Identity Provider. The AuthnRequest service is used for single sign-on using POST and 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.

Delegated Authentication

A feature that allows Federation Manager to use a third-party Web Access Management system to authenticate users and then redirect the users back to Federation Manager to proceed with the federation process.

Legacy Cookie

(Formerly the FEDPROFILE cookie) A cookie that contains user identity information. This cookie supports only PBE encryption algorithms, which are not FIPS-compliant.

At the asserting party, a Java SDK creates the legacy cookie and Federation Manager reads it. At the relying party, Federation Manager creates the legacy cookie for use by Java-based end-user applications. The applications use the Java SDK to read the cookie.

Open Format Cookie

A cookie that contains user identity information. The open format cookie can be encrypted using FIPS or non-FIPS compatible algorithms, depending on how you generate it. You can create an open format cookie using a Federation Manager SDK or create it manually using any programming language that supports UTF-8 encoding.

If you require a FIPS-encrypted open format cookie, use a Federation Manager SDK to create the cookie and to read the cookie. The Federation Manager Java SDK can encrypt the cookie using a FIPS-compliant (AES) algorithm or a non-FIPS (PBE) algorithm. The Federation Manager .NET SDK can encrypt the cookie using only a FIPS-compatible algorithm.

Relying Party

A SAML entity that uses information from a SAML authority to provide access to services. The relying party uses assertions it receives from an asserting party to authenticate a user. For SAML 1.1, the relying party is known as the Consumer. For SAML 2.0, the relying party is known as the Service Provider.

Important! In this guide, the term *relying party* is used to mean a consumer or a Service Provider.

Single Logout Service (SAML 2.0)

This service allows a user to log out of all applications in the federation simultaneously with a single logout event. An Identity Provider or a Service Provider can initiate single logout.

Single Sign-on Service (SAML 1.1 and SAML 2.0)

For SAML 1.1, the SSO service enables a Producer to process Producer-initiated requests for federated resources.

For SAML 2.0, the SSO service enables an Identity Provider to process IdP-or SP-initiated requests for federated resources.

The Producer/IdP gathers the necessary information from the Consumer/SP to generate an assertion, which it passes back to the Consumer/SP. The Consumer/SP then uses the assertion for authentication.

Unified Expression Language

The Unified Expression Language (UEL) is a special Java expression syntax used primarily by Java web applications. You can use the UEL for embedding expressions into web pages. For Federation Manager, the UEL is the language you must use to define mappings between assertion attributes and application attributes at the relying party.

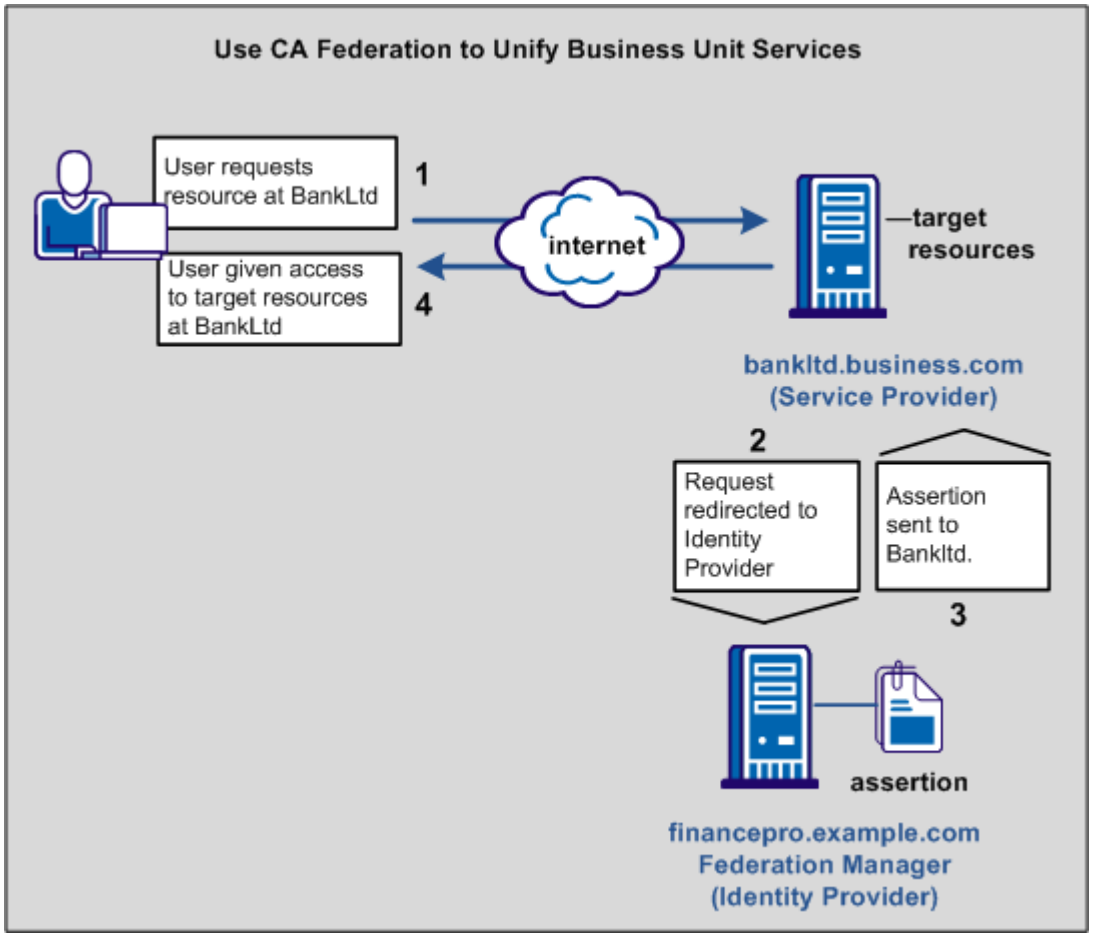
Federation in Your Enterprise

A sample business case best illustrates how Federation Manager can solve a common business problem.

In this business case, Financepro is a financial planning firm that recently bought the banking firm BankLtd to provide private banking to its clients. These two companies have different information infrastructures, but they want to appear as one company to their customers. To solve this problem, they set up a federated partnership.

By establishing a federated relationship, the two companies can provide a seamless customer experience using single sign-on. Customers can travel between Financepro and BankLtd without constantly being challenged to authenticate. Additionally, the sharing of customer identities and customer information can further customize the user experience and cross-promote the financial products of each partner.

The following illustration shows the federated partnership between Financepro and BankLtd. The flow of communication is based on Service Provider-initiated single sign-on.



The illustration describes the following information flow:

1. The user tries to access a federated resource at BankLtd.
2. The user is redirected to the Financepro for authentication and the assertion is generated.
3. The assertion is passed back to BankLtd.
4. Single sign-on occurs based on either a SAML HTTP-Artifact or HTTP-POST. The user gets access to the target resource.

For this partnership to work, decide how the partnership functions before implementing the relationship using Federation Manager.

The issues to consider include:

- How users are identified across the partnership.
- What attributes get sent in an assertion and for what purpose.
- Which federation binding to use (SAML POST or Artifact).

Your decisions help structure the business partnership.

User Identification Across the Partnership

Business partners have their own method of defining user identity in their respective user stores. How users are identified determines how one partner can map its users to the other partner.

Consider the following scenarios:

- The User ID is the same at the user store of each site.

  Account linking is the method of user identification.

- The User ID is unique at the user store of each site.

  Identity mapping is the method of user identification. At FinancePro, a customer is identified as JohnDoe, while at BankLtd this same customer is identified as DoeJ. The partners must agree on a user attribute profile to use for identity mapping.

- The User ID does not exist at the relying party.

  Account provisioning is the method for user identification. Provisioning an account can require creating an account for a user or simply populating an existing user account with information in the SAML assertion.

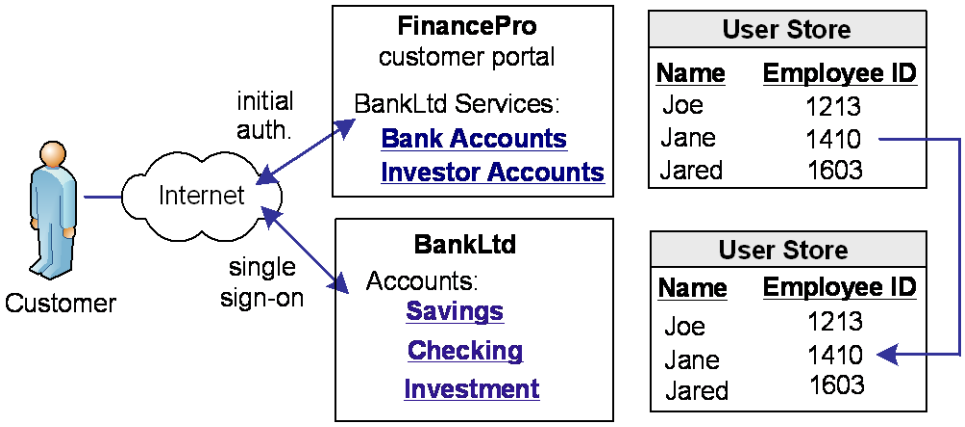
The user identification decision determines what information is sent as the user identity in the assertion.

Account Linking to Establish a Federated Identity

When a customer at FinancePro accesses a resource at BankLtd, the NameID is always in the assertion. This identifier allows BankLtd to determine who the customer is and the level of access to allow for that customer.

The NameID can establish a federated identity when the user store at each partner identifies the users in the same way with the same ID.

The following figure shows the user store at each site with the same employee IDs.



Federation Manager lets you configure account linking as part of the partnership configuration process. You specify a NameID format and Name ID type, which determines the type of value that defines the Name. You associate the specific Name ID type, with a static, user, or DN attribute from a user directory. The NameID that Federation Manager includes in the assertion conforms to the configuration you define.

When the relying party receives the assertion, the user disambiguation process at BankLtd occurs. The process links the NameID value in the assertion to a record in its user store.

Identity Mapping to Establish a Federated Identity

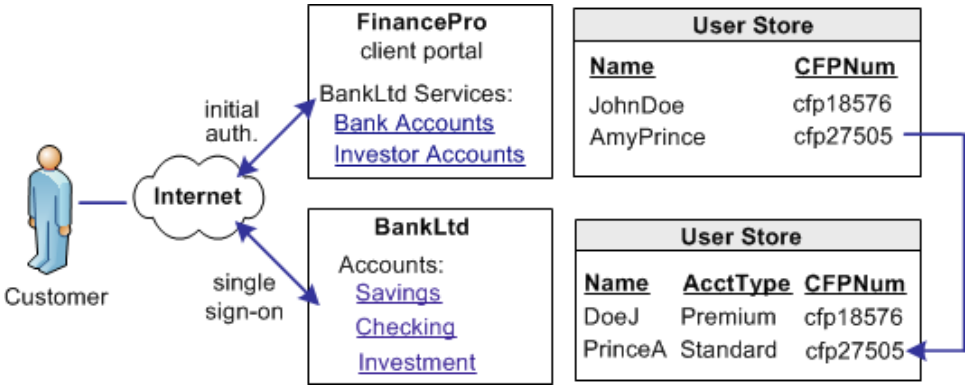
An investor at Financepro authenticates and selects a link to access information at BankLtd. The investor is taken directly to the accounts area of the BankLtd website without having to sign on.

BankLtd maintains user identities for all customers at Financepro, but the identities differ from the identities at FinancePro. For example, at FinancePro, JohnDoe is a customer. At BankLtd, this same customer is identified as DoeJ. Regardless, BankLtd must control access to sensitive portions of the company website. To establish the federated identity, the partners agree on an attribute that maps to the appropriate identity for a single customer at either site.

The partners agree on which attribute to use during an out-of-band exchange of information, meaning that the agreement is not part of any communication in any message over a channel. For this example, the attribute that the partners agree upon is a certified financial planner license number, referred to as the CFPNum in each user store.

When a customer tries accessing the federated resource at BankLtd, the request triggers the single sign-on process. The assertion that is generated at FinancePro contains the CFPNum attribute. When BankLtd receives the assertion, an application at its site has to perform the user disambiguation process. The process relies on the attribute to determine which profile identity is used for the request.

The following illustration shows how the same users are identified differently at each partner.



Federation Manager lets you configure identity mapping as part of the partnership configuration process. For the NameID and attribute configuration, you define an attribute called CFPID. Associate this attribute with the user attribute CFPNum, which is the name of the attribute in the user store at each partner.

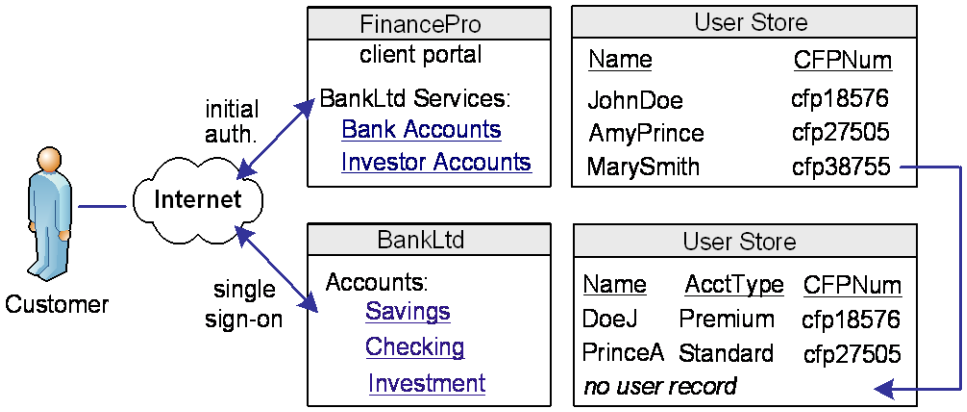
Federation Manager includes the attribute in the assertion. When BankLtd receives the assertion, the user disambiguation process links the attribute in the assertion to the appropriate record in its user store.

User Provisioning to Establish a Federated Identity

An investor at Financepro, Mary Smith, authenticates and clicks a link to access information at BankLtd. Initially, BankLtd cannot find a user account for Mary Smith. BankLtd wants to protect sensitive portions of its website while allowing new customers.

BankLtd has configured Federation Manager to implement provisioning to establish the new federated identity for Mary Smith. Federation Manager redirects Mary Smith to the provisioning server at BankLtd. The provisioning application, using identity information from Federation Manager, creates a user account in the user store.

The following illustration shows the user stores at FinancePro and BankLtd.



Federation Manager lets you configure provisioning as part of the partnership configuration at the relying party. In this example, you select remote provisioning and determine how assertion data is delivered to the BankLtd provisioning server. This configuration enables the dynamic creation of a user entry in the user store.

Attributes for Customizing an Application

Federation Manager offers two ways of using attributes to customize target applications.

Attributes Added to Assertions at the Asserting Party

You can include attributes from a user store record in an assertion to identify a user for the purpose of customizing an application.

Servlets, web applications, and other custom applications can use attributes to display customized content or enable and disable other custom features. When used with web applications, attributes can implement fine-grained access control by limiting user activity at the target site. For example, you send an attribute variable named Account Balance and set it to reflect the account holdings of the user at BankLtd.

Attributes take the form of name/value pairs. When the relying party receives the assertion, it makes the attribute values available to applications.

Attribute Mapping at the Relying Party

The relying party receives a set of assertion attributes, which can be mapped to a set of application attributes being delivered to the target application.

For example, FinancePro includes an assertion attribute CellNo=5555555555. At BankLtd, this attribute name is transformed to an application attribute Mobile=5555555555. The attribute name is converted but the value remains the same.

Multiple assertion attributes can also be transformed into a single application attribute. For example, FinancePro sends an incoming assertion with the attributes Acct=Savings and Type=Retirement and transformed at BankLtd into FundType= Retirement Savings.

More information:

Federation Partnerships (see page 135)

SAML Profile Decision for Single Sign-on

Determining the SAML profile for a partnership depends on the SAML binding that each side can support.

For a new federation, there are no legacy requirements for either partner. Therefore, the recommended profile to use for single sign-on is SAML 2.0 POST profile. SAML 2.0 POST profile offers secure transmission of assertion data and the configuration process is simpler than SAML Artifact profile. If, however, the agreement of two partners requires SAML Artifact, this binding can also be implemented.

Federation Manager Partnership Model

The Federation Manager partnership model can establish a federation between Financepro and BankLtd to ease the experience of moving between the sites of each company and to verify that they appear as one company.

The Federation Manager UI focuses on partnership creation and identifying each side of the partnership to accomplish single sign-on.

These steps include:

1. Configuring a Partnership—Names the partnership and identifies the two entities that make up the partnership.
2. Establishing the Federation Users/User Identification—Specifies the users for which the asserting party generates assertions and the relying party authenticates.

3. NameID and Attributes—Determines how a federated identity is established and lets you add attributes to identify and customize the content of the assertion.

   Using NameID and attributes, you can verify that the appropriate information is available to the application at the relying party. This is where account linking and identity mapping would be configured.

4. SSO—Defines Single Sign-on (Artifact or POST binding), including the location of the service consuming assertions at the relying party. For SAML 2.0, additional features, such as single logout (SLO), Enhanced Client or Proxy (ECP) profile, and Identity Provider Discovery profile can be configured.

5. Signature and Encryption—Defines the signature and encryption options for secure exchange of assertions, authentication requests, and for SAML 2.0 single logout requests and responses.

6. Application Integration—Enables you to configure redirection to the target application, lets you set up provisioning of user records, and define relying-party side attribute mapping. You can also set up redirects for failed user authentication.

Chapter 2: Federation Manager User Interface

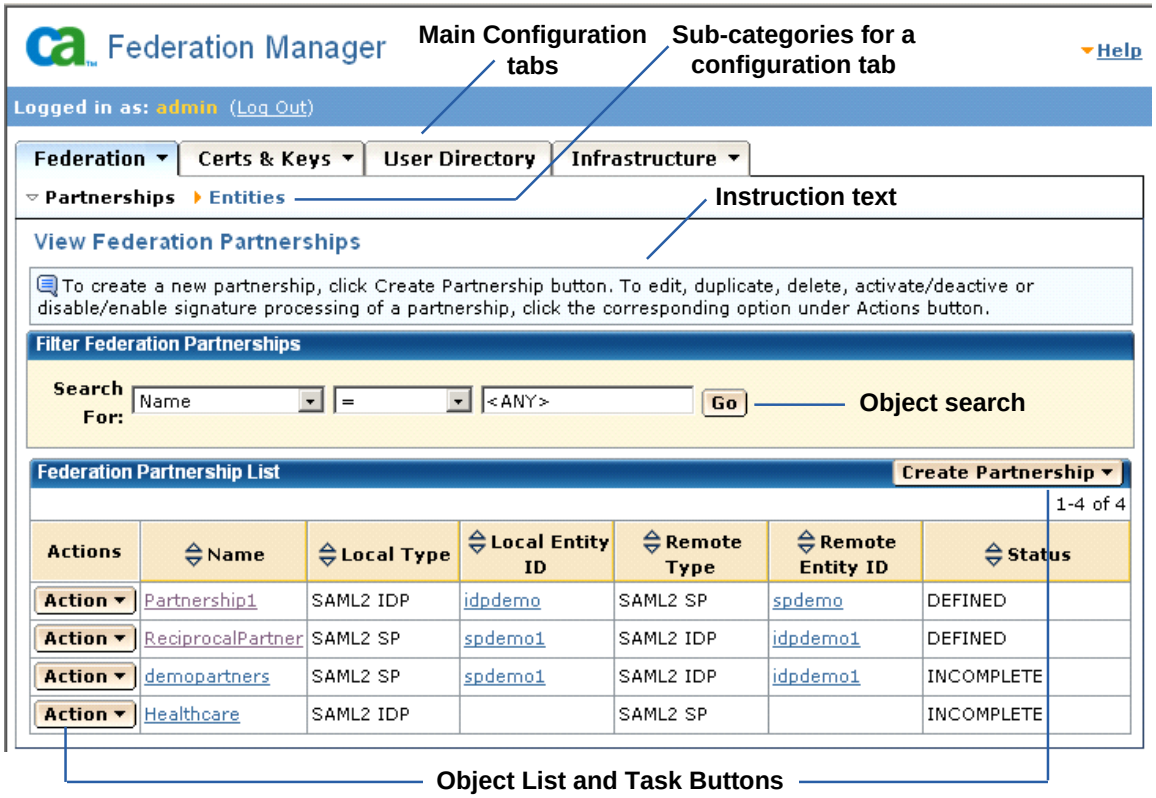
This section contains the following topics:

Federation Manager User Interface Overview

Federation Manager configuration is managed through the Federation Manager User Interface (UI). The Administrative UI is a web application that provides an administrator with access to all the system management functions of the product.

An administrator is a user who has privileges and responsibilities for managing a federated solution. Multiple administrators can be responsible for manaing Federation Manager. Review the procedures for configuring multiple administrators (see page 277).

The Federation Manager UI is organized into configuration tabs, sub-categories, lists and task buttons, as the following figure shows.



When navigating the UI, be aware of the following:

- Main configuration categories are reflected by the following tabs:
  - Federation
  - Certs & Keys
  - User Directory
  - Infrastructure

  You navigate to one of these tabs first when configuring an object.
- Sub-categories within each main configuration tab can be selected to configure specific aspects of the federation setup.
- Lists of objects are displayed for most sub-categories. These lists contain contextual links to access existing objects and task buttons to create or modify objects.

Object Management

The Federation Manager UI lets you create, view, modify, and delete objects. Although the details of each task differ by object, the general methods are similar. For example, the procedure for deleting a federation entity is similar to the procedure for deleting a user directory connection.

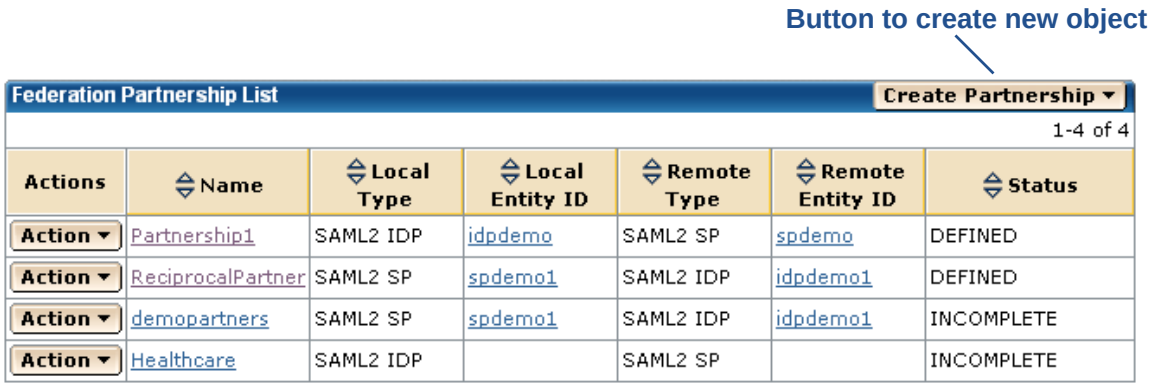
The lists within each sub-category let you manipulate an object. You can do one of the following:

- Create a new object.
- Select an existing object from a list of objects and modify it.
- Use the Action button to perform a task on an object.

New Object Creation

After you select a sub category from one of the configuration tabs, a window is displayed that shows an object list. From an object list, you can create a new object.

The following figure shows the button you can use to create a new object.



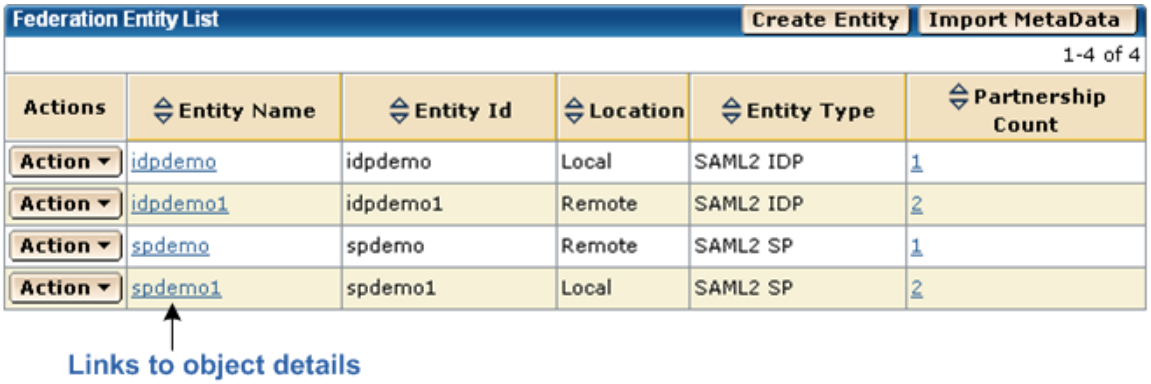
For example, to establish a new partnership, select the Federation tab to display the View Federation Partnerships window. Click Create Partnership in the Federation Partnership List.

After you click on a button to create a new object, the appropriate dialog or configuration wizard is displayed to guide you through the procedure.

Federation Manager Objects Lists

When you view a configuration tab or sub-category in the UI, Federation Manager presents a list of associated objects. You can click the link of any object in the list to see detailed information about that object.

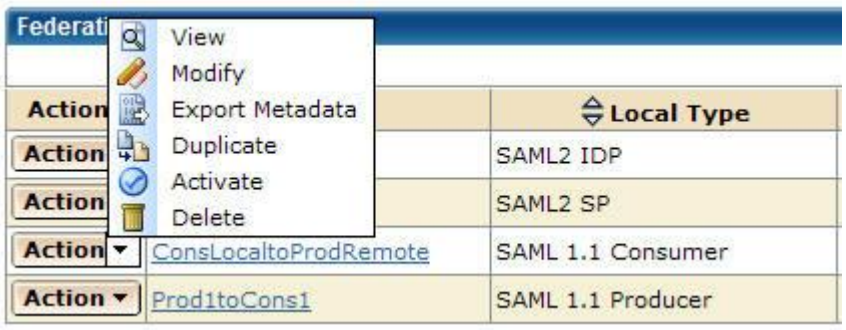
For example, from the Federation tab you can select Entities and the View Federation Entities dialog opens. You will see a dialog with a list of federation entities similar to the one shown.



To change how the list is displayed, click on the column heading to toggle between ascending and descending order. The up arrow will be shaded when the list is in ascending order and the down arrow will be shaded when the list is in descending order.

Action Button for Object Lists

The Action button lies to the left of any object in an object list. It displays a menu of tasks you can perform on an object, as shown:

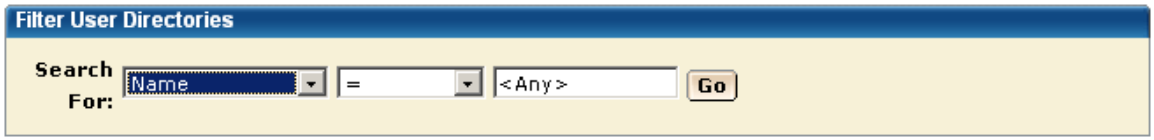


The Action button offers different tasks depending on the object.

Filtering Object Lists

If an object type has a particularly long list of configured entries, you can filter which entries are displayed, making the list easier to read. For example, you can search for all configured partnerships whose status is active, and these will appear in the Federation Partnership List.

The following figure shows the filter group box:



To specify a search filter

1. Click a main configuration tab.

   The Filter and List group boxes are displayed.

2. Configure the search in the **Filter** *object* group box, using the following guidelines:

   a. Select what you want to search on in the Search For field.

      Examples: For a certificate, you may select Alias as the operand. For a federation entity, you may select Entity Type as the operand.

   b. Choose an operator selected from the pull-down menu in the middle field.

      Examples: =, begins with, contains, ends with; on or before (only option for Expiration Date)

   c. Do one of the following:

      - For operands except Expiration Date, enter a string (do not use quotes) in the last field. This is the value of the search filter.
      - For Expiration Date, select the calendar icon to the right of the field and choose a date. You can enter the date manually, but selecting a date from the calendar ensures the correct date format.

      Notes:

      - To retrieve the full list, leave the third field blank. You may also enter <ANY> or an asterisk (*).
      - You cannot use the asterisk as an embedded wildcard character. For example, you can enter the asterisk on its own, but you cannot enter **partner*** as a value.

3. Click Go to initiate the search.

Page Displays

When you view a list for any object in the UI, only ten records are displayed by default. To the bottom right of the list, choose the greater-than symbol (>) to move to the next page. Choose the double greater-than (>>) symbol to go to the end of the list.

Note: You cannot change the default number of ten records displayed per page.

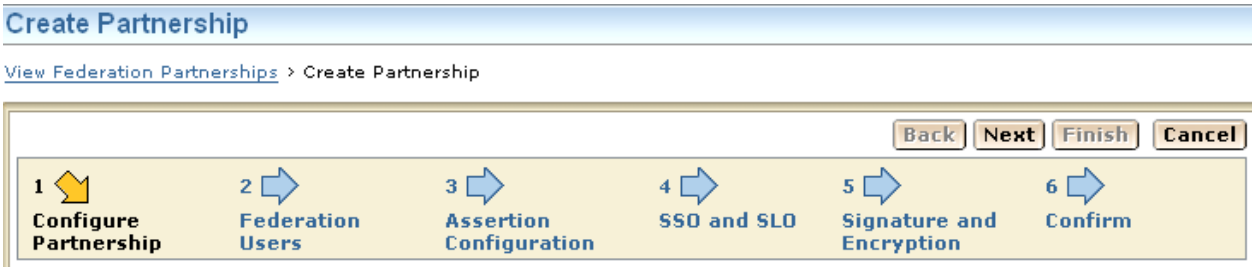
You can select the Show All link in the top right corner of the list to display all entries in one window.

Wizards for Configuring Objects

Federation Manager provides configuration wizards for many objects in the UI. Wizards are visible when you create or edit an entity or partnership, when you import a certificate, and when you import a metadata file.

The UI wizards help guide you through the steps for configuring a particular object. If you do not fill in the required settings for a given step, you receive a message toward the top of the dialog, which tells you to fill in the missing information. You cannot move to the next step until all required fields are complete.

The following figure shows a wizard for creating a partnership.



Log in to the Federation Manager User Interface

An administrator configures federation entities through the Administrative UI. You can configure multiple administrators with different privilege levels to access the Administrative UI. Review instructions for configuring multiple administrators (see page 277).

To log in to the Federation Manager UI

1. Enable Java Script in the browser. JavaScript is required to open the Federation Manager UI.
2. Follow the instructions for your platform:

   Windows

   Select Start, All Programs, CA, FederationManager, Federation Manager Admin UI.

   UNIX

   Open a web browser and enter the following URL:
   http://*fedmgr_server:ui_port*/ca/federation/adminui

   fedmgr_server:ui_port

   Specifies the fully qualified domain name of the server where Federation Manager is installed, including the port for the UI. The default port is 8888.

   Example:

   http://fedmgr1.ca.com:8888/ca/federation/adminui

   The login window appears.
3. Enter the user name and password and click Log in.

   Important! The user name for the default administrator is always **admin**. You cannot change it. The default administrator password is set during installation.

The Federation Manager UI launches.

UI Login Password Conditions with Active Directory

If you configure Active Directory as the user store for administrative authentication, note the following password conditions when logging in to the Administrative UI.

- When the user is Disabled, the Administrative UI does not allow the user to log in. The system displays a message saying "Error: Invalid user name or password."
- When the user is Expired, the Administrative UI does not allow the user to log in. The system displays a message saying "Error: Invalid user name or password."
- When the user has the attribute "User must change password at next logon" set, the Administrative UI allows the user to log in. The Administrative UI does not handle password management.

Chapter 3: Getting Started with a Simple Partnership

This section contains the following topics:

Basic SAML 2.0 Partnership

One way to get started with Federation Manager is by configuring a partnership. This chapter describes how to set up a basic SAML 2.0 federation partnership—single sign-on with SAML 2.0 POST profile. By starting with a basic configuration, you can complete the least number of steps to see how Federation Manager works.

Note: This partnership focuses on SAML 2.0; however, the overall process is the same for SAML 1.1. The configuration settings at each step of the partnership can differ depending on the SAML protocol.

The chapter also describes the configuration of additional features, such as digital signing and single logout to reflect a real production environment. You can also add the Artifact binding to the configuration.

The sample network used in this chapter presupposes that Federation Manager is installed at both sites in the partnership. However, you can have Federation Manager at one site and a different SAML-compliant product at the other site and still engage in a partnership.

With Federation Manager at both sites, you have to understand the perspective from which you are configuring a partnership. To configure a complete partnership, you begin by defining a *partnership definition* at each site, one for each direction of communication from a given site. For example, if the local site is the Identity Provider (IdP), you configure the local IdP-to-remote SP partnership. This configuration is one partnership definition. To complete the partnership configuration, you configure the reciprocal local SP-to-remote IdP partnership at the SP, at the local SP.

The partnership definition always distinguishes the local and remote entities. The local entity is the entity at the site from where you are configuring Federation Manager. It is not necessarily the same system on which Federation Manager is installed, but the same domain. The remote entity is the entity at a partner that resides in a different domain from where you are configuring Federation Manager.

The following process shows the steps for creating the basic Federation Manager partnership when Federation Manager is at both sites:

1. Establish a user directory connection.
2. Create the local and remote entities.
3. Configure the local IdP-to-SP partnership definition at the IdP site.
4. Configure the local SP-to-IdP partnership definition at the SP site.
5. Activate the partnership.
6. Test the partnership.

Sample Federation Network

The initial partnership you are creating represents the following sample network:

The Business Partners

- Identity Provider named IdP1
- Service Provider named SP1

SAML Profiles and Features

- SAML 2.0 with POST profile
- Single sign-on
- No signature processing
- FIPS_COMPAT mode

Federation Manager Deployment Mode

Standalone—no SiteMinder Connector

SSO Service URL at the IdP

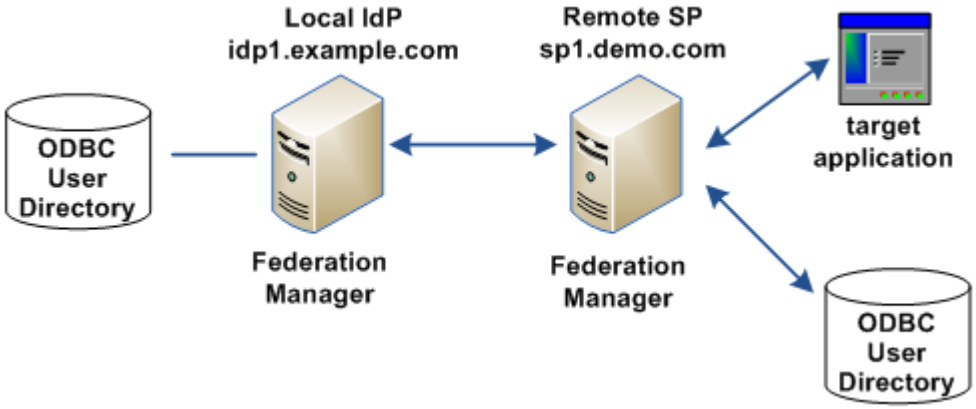
http://idp1.example.com:9090/affwebservices/public/saml2sso

Assertion Consumer Service URL at the SP

http://sp1.demo.com:9091/affwebservices/public/saml2assertionconsumer

Note: You need two systems with Federation Manager installed to implement this sample network.

The following figure shows the sample partnership.



Configure the IdP Partner

The configuration process that follows is from the perspective of an administrator at IdP1. Therefore, IdP1 is the local IdP.

The following process establishes the IdP partner:

1. Log on to the Federation Manager UI.
2. Establish a user directory connection.
3. Identify the IdP and SP entities.
4. Click Create Partnership, SAML2 IdP->SP.
5. Follow the Partnership wizard and configure the minimum required settings.

Establish a User Directory Connection

Before you can establish a partnership, define a connection to a user directory.

The procedures that follow illustrate a connection to an ODBC user directory using the default data source that is installed with Federation Manager.

Important! The CA FedManager Data Source is where Federation Manager policies are stored. For this example, use this data source as a user directory; however, in a production environment use a different data source.

To use this data source:

- Set up the schema for the sample users for the data source.
- Establish a connection to the directory.

Set up the Sample Users for the Data Source

Set up the sample users for the data store by importing the ODBC schema and sample data.

The product provides script files to create the schema and data for storing sample users in the CA FedManager data source. You can store this data in the same SQL Server or Oracle database that you specified when installing Federation Manager.

Follow these steps:

1. Navigate to the following directory:

   Windows (default location): *federation_mgr_home*\siteminder\db\SQL

   UNIX: *federation_mgr_home*/siteminder/db/sql

2. Import the necessary schema files to populate the database with sample users. Use the tool for your database to perform the import.

   Import the following files:

   - smsampleusers_sqlserver.sql

     Creates the schema for sample users in a SQL server database and populates the database with sample users.

   - smsampleusers_oracle.sql

     Creates the schema for sample users in an Oracle database and populates the database with sample users.

   For example, if you look in the script, you can see a sample user named GeorgeC with a password of siteminder.

3. After the schema is imported, connect to the directory.

Connect to the ODBC Directory

After you import the proper schema to populate the ODBC user directory, establish the connection to the user directory.

Follow these steps:

1. Log in to the Federation Manager UI by opening up a web browser and entering the following URL:

   http://idp1.example.com:8888/ca/federation/adminui

   Federation Manager is installed with idp1.example.com as the server name. In the browser, map this host name to the IP address where Federation Manager is installed.

   Note: Verify that JavaScript is enabled in the browser to open the Federation Manager UI.

2. Select the User Directory tab from the Federation Manager UI.

   The View User Directories dialog displays.

3. Click Connect to ODBC.

   The Connect to ODBC dialog opens.

4. Complete the following required fields in the Configure ODBC User Directory group section:

   Directory Name

   FedMgrSQL

   Data Source

   CA FedManager Data Source

5. Complete the following fields in the Connection Credentials group section:

   Require Credentials to Connect

   Select check box

   User Name

   Enter the name used to access your database.

   Password

   Enter the password used to access your database.

   Confirm Password

   Enter the database password again.

6. Complete the following field in the Directory Fields group section:

   Universal ID Column

   Enter the name of the ODBC directory attribute used as the Universal ID. This value can be passed to other applications that communicate with Federation Manager to maintain the identity of the user. This field is required when the SiteMinder Connector is enabled.

7. Click Save.

   You return to the View User Directories dialog.

8. Select Action, Test Connection to help ensure that Federation Manager can connect to the user directory.

   You receive a message indicating whether the connection is successful.

Continue by configuring the IdP and SP entities.

Configure the Partnership Entities

After establishing the user directory connection, you should identify the local and remote sides of the partnership. In the Federation Manager UI, each partner is referred to as an entity.

The following procedures tell you what values to provide for the local and remote entities. However, in a real network configuration, it may be common that each side creates a local entity, exports the local entity to a metadata file, then exchanges the files so that each side can define the remote entity.

Follow these steps:

1. From the Federation tab, select Entities.

   The View Federation Entities window opens.

2. Click Create Entity.

   The Create Entity dialog displays.

3. Make the following selections in the first step of the entity wizard then click Next.

   Entity Location

   Local

   New Entity Type

   SAML2 IDP

4. Complete the fields in the second step of the wizard as follows then click Next.

   Entity ID

   idp1

   This value identifies the entity to the partner.

   Entity Name

   idp1

   This value identifies the entity object internally in the Federation Manager database. The partner is not aware of this value.

   Base URL

   http://idp1.example.com:9090

   Leave the other settings as they are.

   Note: The Entity Name can be the same value as the Entity ID, but the value must then not be shared with any other entity at the site.

5. Review the settings in the last step and click Finish.

You return to the View Federation Entities window. Configure the remote partner.

To create the Remote SP Entity

1. Begin at the View Federation Entities window.
2. Click Create Entity in the Federation Entity List.

   The Create Entity dialog displays.

3. Make the following selections in the first step of the entity wizard then click Next.

   Entity Location

   Remote

   New Entity Type

   SAML2 SP

4. Complete the fields in the second step of the wizard as follows then click Next.

   Entity ID

   sp1

   This value identifies the entity to the partner.

   Entity Name

   sp1

   This value identifies the entity object internally in the Federation Manager database. The partner is not aware of this value.

Assertion Consumer Service URL Group Box

Index

0

Binding

HTTP-Post

URL

http://sp1.demo.com:9091/affwebservices/public/saml2assertionconsumer

Default

Select the checkbox in this column for the entry row.

Leave the other settings as they are.

5. Review the settings in the last step and click Finish.

The remote SP entity is configured.

After the local and remote entity are configured, you can now create a partnership.

Create the IdP-to-SP Partnership

After creating the partnership entities, follow the partnership wizard to configure the IdP ->SP partnership. The first is to provide the name and other basic information for the partnership.

Follow these steps:

1. Select the Federation tab.

   The View Federation Partnerships dialog is displayed.

2. Click Create Partnership, SAML2 IdP -> SP.

   Selecting this option indicates that you are the local IdP.

   You come to the first step in the partnership wizard.

3. Complete the fields with the following values:

   Partnership Name

   TestPartnership

   Local IDP ID

   idp1

   (selected from the pull-down list)

   Remote SP ID

   sp1

   (selected from the pull-down list)

   Base URL

   http://idp1.example.com:9090

   This value should be provided by default.

   Skew Time (Seconds)

   Accept the default

4. Move the ODBC directory (FedMgrSQL) from the Available Directories box to the Selected Directories box.
5. Click Next to go to the Federation Users step.

Specify Federation Users for Assertion Generation

In the Federation Users dialog, select the users for which the IdP generates assertions.

Follow these steps:

1. Accept the defaults.
2. Click Next to continue.

By accepting the defaults, you indicate that SiteMinder can generate assertions for all users in the user directory.

Add a Name ID to the Assertion

The Assertion Configuration step lets you specify the format and value of the NameID and the attributes that identify a user. These attributes are included in the assertion.

Note: NameID is always included in the assertion.

In this configuration, specify only the Name ID. Do not add any other attributes.

Follow these steps:

1. From the Assertion Configuration step, enter values for the following fields:

   Name ID Format

   Unspecified

   Name ID Type

   Static

   Value

   GeorgeC

2. Click Next to move on and set up single sign-on (SSO).

Set Up Single Sign-on

To establish single sign-on between partners, configure the SSO settings.

Follow these steps:

1. Begin at the SSO and SLO step in the partnership wizard.
2. Accept the default (Basic) for the Local Authentication Type and Authentication Class fields.
3. Select HTTP-POST for the SSO Binding field.
4. Assuming you created the remote SP entity already, the value for the Assertion Consumer URL is filled in.
5. Click Next to move to the Signature and Encryption step.

Disable Signature Processing

For the purposes of this simple partnership, disable signature processing. However, in a production environment, the Identity Provider must sign assertions.

Follow these steps:

1. From the Signature and Encryption step, select Disable Signature Processing.
2. Click Next to move to the next step.

Confirm the IdP-to-SP Partnership Settings

You have completed the partnership definition for one side of the federation partnership. Verify the settings.

Follow these steps:

1. In the Confirm dialog, review the settings for the partnership.
2. To modify a setting, click Modify in any of the sections.
3. Click Finish when you are satisfied with the configuration.

The IdP side of the partnership is complete. Define the SP side of the partnership on a different system than the IdP system.

Configure the SP Partner

The configuration process that follows is from the perspective of an administrator at the SP, in this example, SP1. Therefore, SP1 is the local SP.

The following process establishes the SP partner.

1. Log on to the Federation Manager UI.
2. Establish a user directory connection.
3. Identify the IdP and SP entities.
4. Click Create Partnership, SAML2 SP->IdP.
5. Follow the Partnership wizard and configure the minimum required settings.

Establish a User Directory Connection

Before you can establish a partnership, define a connection to a user directory.

The procedures that follow illustrate a connection to an ODBC user directory using the default data source that is installed with Federation Manager.

Important! The CA FedManager Data Source is where Federation Manager policies are stored. For this example, use this data source as a user directory; however, in a production environment use a different data source.

To use this data source:

- Set up the schema for the sample users for the data source.
- Establish a connection to the directory.

Set up the Sample Users for the Data Source

Set up the sample users for the data store by importing the ODBC schema and sample data.

The product provides script files to create the schema and data for storing sample users in the CA FedManager data source. You can store this data in the same SQL Server or Oracle database that you specified when installing Federation Manager.

Follow these steps:

1. Navigate to the following directory:

   Windows (default location): *federation_mgr_home*\siteminder\db\SQL

   UNIX: *federation_mgr_home*/siteminder/db/sql

2. Import the necessary schema files to populate the database with sample users. Use the tool for your database to perform the import.

   Import the following files:

   - smsampleusers_sqlserver.sql

     Creates the schema for sample users in a SQL server database and populates the database with sample users.

   - smsampleusers_oracle.sql

     Creates the schema for sample users in an Oracle database and populates the database with sample users.

   For example, if you look in the script, you can see a sample user named GeorgeC with a password of siteminder.

3. After the schema is imported, connect to the directory.

Connect to the ODBC Directory

After you import the proper schema to populate the ODBC user directory, establish the connection to the user directory.

Follow these steps:

1. Log in to the Federation Manager UI by opening up a web browser and entering the following URL:

   http://idp1.example.com:8888/ca/federation/adminui

   Federation Manager is installed with idp1.example.com as the server name. In the browser, map this host name to the IP address where Federation Manager is installed.

   Note: Verify that JavaScript is enabled in the browser to open the Federation Manager UI.

2. Select the User Directory tab from the Federation Manager UI.

   The View User Directories dialog displays.

3. Click Connect to ODBC.

   The Connect to ODBC dialog opens.

4. Complete the following required fields in the Configure ODBC User Directory group section:

   Directory Name

   FedMgrSQL

   Data Source

   CA FedManager Data Source

5. Complete the following fields in the Connection Credentials group section:

   Require Credentials to Connect

   Select check box

   User Name

   Enter the name used to access your database.

   Password

   Enter the password used to access your database.

   Confirm Password

   Enter the database password again.

6. Complete the following field in the Directory Fields group section:

   Universal ID Column

   Enter the name of the ODBC directory attribute used as the Universal ID. This value can be passed to other applications that communicate with Federation Manager to maintain the identity of the user. This field is required when the SiteMinder Connector is enabled.

7. Click Save.

   You return to the View User Directories dialog.

8. Select Action, Test Connection to help ensure that Federation Manager can connect to the user directory.

   You receive a message indicating whether the connection is successful.

Continue by configuring the IdP and SP entities.

Identify the Partnership Entities

After establishing the user directory connection, you should identify the local and remote sides of the partnership. In the Federation Manager UI, each partner is referred to as an entity.

The following procedures tell you what values to provide for the local and remote entities. However, in a real network configuration it may be common that each side creates a local entity, exports the local entity to a metadata file, then exchanges the files so that each side can define the remote entity.

Follow these steps:

1. From the Federation tab, select Entities.

   The View Federation Entities window opens.

2. Click Create Entity.

   The Create Entity dialog displays.

3. Make the following selections in the first step of the entity wizard then click Next.

   Entity Location

   Local

   New Entity Type

   SAML2 SP

4. Complete the fields in the second step as follows then click Next.

   Entity ID

   sp1

   This value identifies the entity to the partner.

   Entity Name

   sp1

   This value identifies the entity object internally in the Federation Manager database. The partner is not aware of this value.

   Base URL

   http://sp1.demo.com:9091

   Note: The entity ID and name must be the same as you specified for the remote SP entity at the Identity Provider.

5. Review the settings and click Finish.

You return to the View Federation Entities window. Configure the remote partner.

To create the remote IdP

1. Begin at the View Federation Partnerships window.
2. Click Create Entity in the Federation Entity List.

   The Create Entity dialog displays.

3. Make the following selections in the first step of the entity wizard then click Next.

   Entity Location

   Remote

   New Entity Type

   SAML2 IDP

4. Complete the fields in the second step of the wizard as follows:

   Entity ID

   idp1

   This value identifies the entity to the partner.

   Entity Name

   idp1

   This value identifies the entity object internally in the Federation Manager database. The partner is not aware of this value.

   Note: The entity ID and name must be the same as on the Identity Provider side.

SSO Service URL Group Box

Binding

HTTP-Redirect

URL

http://idp1.example.com:9090/affwebservices/public/saml2sso

5. Review the settings and click Finish.

After the local entity and remote entity are configured, you can create a partnership.

Create the SP-to-IdP Partnership

After creating the partnership entities, follow the Partnership wizard to configure the necessary components of the SP -> IdP partnership.

Follow these steps:

1. Select the Federation tab.

   The View Federation Partnerships dialog is displayed.

2. Click Create Partnership, SAML2 SP->IdP.

   You come to the first step in the Partnership wizard.

3. Complete the fields with the following values:

   Partnership Name

   DemoPartnership

   Local SP ID

   sp1

   Remote IDP ID

   idp1

   Skew Time (Seconds)

   Accept the default

4. Move the ODBC directory (FedMgrSQL) from the Available Directories box to the Selected Directories box.

5. Click Next to go to the User Identification step.

Specify the User Identification Attribute

Designate which attribute from the assertion should be used to identify a user. This identity attribute value is used in the user disambiguation process, that is, the process of locating the user record in the SP's user directory.

Follow these steps:

1. Go to the User Identification step.
2. Accept the default, Use Name ID, in the Choose Identity Attribute from Assertion group box.
3. In the Map Identity Attribute to User Directories group box, enter the following:

   ODBC Search Specification

   Name=%s

   This entry instructs Federation Manager to replace the variable (%s) with the value of the Name ID attribute from the assertion and match it with the Name column in the sample users database. If a match is found, the user is disambiguated and allowed to access the target resource.
4. Click Next to configure single sign-on.

Configure Single Sign-on

To establish single sign-on between partners, configure the SSO settings.

Follow these steps:

1. Begin at the SSO and SLO step.
2. Select HTTP-POST for the SSO Binding field.
3. Specify the target resource at the SP in the Target field.

   In this sample partnership, this target is http://spapp.demo.com:80/spsample/welcome.html
4. Select No Data for the Redirect Mode field.
5. Assuming you have created the remote IdP, the value for the SSO Service URL is filled in.
6. Click Next to move to the Signature and Encryption step.

Disable Signature Processing

For the purposes of this simple partnership, disable signature processing. However, in a production environment, the Identity Provider must sign assertions.

Follow these steps:

1. From the Signature and Encryption step, select Disable Signature Processing.
2. Click Next to move to the next step.

Confirm the SP Partner Settings

You have completed the partnership for the local SP side of the federation partnership.

Follow these steps:

1. In the Confirm dialog, review the settings for the SP partner.
2. To modify a setting, click Modify in the appropriate section.
3. Click Finish when you are satisfied with the configuration.

The SP side of the partnership is now configured.

Activate the Partnership

With each side of the partnership defined, you can now activate the partnership.

Federation Manager is installed at both sites in the partnership so you must activate the partnership at the IdP and SP.

Follow these steps:

1. From the Federation tab, select Partnerships

   The View Federation Partnerships window displays.
2. Find the entry in the Federation Partnership List that you want to activate. Ensure the value in the Status column is DEFINED If the status is INCOMPLETE, you have to edit the partnership and ensure that all the required settings are configured.
3. Select Action, Activate next to the partnership entry that you want to activate.

   The Confirm Activate dialog displays.
4. Click Yes in the Confirm Activate dialog.

   The partnership is activated and the value in the Status column should now be ACTIVE.

Test the Partnership (POST Profile)

After the partnership is configured, test single sign-on between the two partners.

Testing involves:

- Creating a web page to initiate single sign-on.
- Creating a target web page that serves as the requested federated resource.
- Testing single sign-on.

After you test the basic partnership, you can make more changes to the sample configuration.

Create a Web Page to Initiate Single Sign-on

For testing purposes, create your own html page with a link that initiates single sign-on. You can initiate single sign-on from the IdP or SP. This example illustrates SP-initiated single sign-on.

Follow these steps:

1. Create the sample HTML page at the SP site. Include a hard-coded link to the AuthnRequest service at the SP, as follows:

   <a href="http://sp1.demo.com:9091/affwebservices/public/
   saml2authnrequest?ProviderID=idp1.example.com>
   Link to Test POST Single Sign-on

   This link instructs the AuthnRequest Service to redirect the user to the specified Identity Provider to retrieve the authentication context.

2. Save the web page under the name testsso.html.
3. Copy testsso.html to the web server document root directory, under a subfolder named /spsample.

   For this sample network, the target web server is http://spapp.demo:80.

Create a Target Resource

The last step that is required to test single sign-on is to create a target resource.

Follow these steps:

1. Create the sample HTML page at the SP site and include a message, such as:

   Welcome to SP1

   Single Sign-on is successful

2. Save the web page under the name welcome.html.
3. Copy welcome.html to the web server document root directory, under the subfolder /spsample.

   For this sample network, the target web server is http://spapp.demo.com:80.

Test POST Single Sign-on

After you have set up the sample web pages, test single sign-on and verify that that partnership configuration is successful.

Follow these steps:

1. Be sure that both sides of the partnership are activated in the Federation Manager UI.
2. Open up a browser.
3. Enter the URL for the web page that includes the link to trigger single sign-on. For this example, enter the following url:

   http://spapp.demo.com:80/spsample/testsso.html

   Note: In this sample network, Federation Manager is deployed in standalone mode, therefore, the target web server is a different server than the one where Federation Manager resides.

   Upon entering the URL, a page appears with a link that reads Link to Test POST Single Sign-on.
4. Click **Link to Test POST Single Sign-on**.

   Single sign-on is initiated. The user is redirected from the AuthnRequest Service at the SP to the Single Sign-on Service at the Identity Provider.

After the Identity Provider authenticates the user and establishes a session, it directs the user back to the target resource at the Service Provider, which is welcome.html. The sample welcome page that you created at the SP, lets you know the single sign-on was successful.

Enable Signature Processing

Digitally signing assertions is required in a SAML 2.0 POST single sign-on. For signing and verification tasks, a private key/certificate pair is used.

Before any transaction or runtime actions, an administrator at IdP1 sends a file with certificate data to SP1. This file contains a certificate (public key) associated with the private key that the IdP1 uses to sign assertions. An administrator at SP1 adds the certificate to its certificate data store.

When the single sign-on transaction occurs, IdP1 signs the assertion with its private key. SP1 receives the assertion and verifies the assertion signature using the certificate in the certificate data store.

The following procedures explain how to set up signing at each site.

Configure Signature Processing at the IdP

For POST single sign-on, Idp1 is required to sign assertions. It uses the private key in the certificate data store to sign assertions.

Note: The example assumes that you have a file from which you to import keys and certificates, or that you already have private keys and certificates for signing and verification tasks.

Follow these steps:

1. From the UI, click the Federation tab and select Partnerships.

   The View Federation Partnerships window displays.

2. Select Action, Deactivate next to the entry for TestPartnership, which is the IdP ->SP partnership.

   Deactivate a partnership before editing it.

3. Click Action, Modify next to the entry for TestPartnership.

   The dialog for the first step of the Partnership wizard opens.

4. Click the Signature and Encryption step in the partnership wizard.

5. In the Signature group box:

   a. Deselect Disable Signature Processing.

   b. Click Import next to the Signing Private Key Alias field.

      The Import Certificate/Private Key window opens.

6. Complete the import wizard as follows:

   a. Select the file from where you are importing the private key/certificate pair.

   b. If the file is a pkcs#12 file, supply the password to encrypt the file.

   c. Select the certificate entry from the file that you want to import and enter a value for the Alias, such as cert1.

   d. Confirm the selection and click Finish.

   You return to the View Federation Partnerships window.

7. Select Action, Modify for the partnership entry.

8. Go to the Signature and Encryption step. In the dialog, the key/certificate that you imported is now available from the Signing Private Key Alias drop-down list.
9. Select the alias for cert1 and click Next.
10. Review the settings in the Confirm dialog and click Finish.

    You return to the View Federation Partnerships window.
11. Reactivate the partnership by selecting Action, Activate next to the TestPartnership entry in the Federation Partnership List.
12. Restart the federation services according to your operating environment.

    - **Windows**

      Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

      a. Start, All Programs, CA, FederationManager, Stop services

      b. Start, All Programs, CA, FederationManager, Start services

    - **UNIX**

      a. Open a command window.

      b. Run the following scripts:

      federation_mgr_home/fedmanager.sh stop

      federation_mgr_home/fedmanager.sh start

      Note: Do not stop and start the services as the root user.

    Restarting the federation services makes the system aware of the changes to signing.

Signature processing is now configured at the IdP.

Configure Signature Processing at the SP

SP1 is required to verify the signature of an assertion. Before a transaction, SP1 has to have the certificate (public key) from IdP1. This is the certificate that is associated with the private key that IdP1 uses to sign the assertion.

This certificate must be imported into SP1 certificate data store.

Follow these steps:

1. From the Administrative UI, click the Federation tab and select Partnerships.

   The View Federation Partnerships window displays.

2. Select Action, Deactivate next to the entry for DemoPartnership.

   Deactivate a partnership before editing it.

3. Click Action, Modify next to the entry for DemoPartnership.

   The dialog for the first step of the Partnership wizard opens.

4. Click the Signature and Encryption step in the Partnership wizard.

5. In the Signature group box:

   a. Deselect Disable Signature Processing.

   b. Click Import next to the Verification Certificate Alias field.

      The Import Certificate/Private Key window opens.

6. Complete the import wizard as follows:

   a. Select the file from where you are importing the certificate.

   b. Select the certificate entry from the file that you want to import and enter a value for the Alias, such as cert1.

   c. Confirm the selection and click Finish.

   You return to the View Federation Partnerships window.

7. Select Action, Modify for the partnership entry.

8. Go to the Signature and Encryption step. In the dialog, the key/certificate that you imported is now available from the Signing Private Key Alias drop-down list.

9. Select the alias, cert1 for the certificate and click Next.

10. Review the settings in the Confirm dialog and click Finish.

    You return to the View Federation Partnerships window.

11. Reactivate the partnership by selecting Action, Activate next to the DemoPartnership entry in the Federation Partnership List.
12. Restart the federation services according to your operating environment.
    - **Windows**

      Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

      a. Start, All Programs, CA, FederationManager, Stop services

      b. Start, All Programs, CA, FederationManager, Start services
    - **UNIX**

      a. Open a command window.

      b. Run the following scripts:

      federation_mgr_home/fedmanager.sh stop

      federation_mgr_home/fedmanager.sh start

      Note: Do not stop and start the services as the root user.

    Restarting federation services makes the system aware of the changes to signing.

Signature verification is now configured at the SP.

Add Single Logout

The single logout protocol (SLO) results in the simultaneous end of all user sessions for the browser that initiated the logout. Configuring single logout helps ensure that no sessions are left open for unauthorized users to gain access to resources at the Service Provider.

Configure Single Logout at the IdP

Configure single logout at Idp1.

Follow these steps:

1. From the Federation Manager UI, select Federation, Partnerships.

   The View Federation Partnerships window displays.
2. Select Action, Deactivate next to the entry for TestPartnership.

   Deactivation is required before editing.

3. Click Action, Modify next to the entry for TestPartnership.

   The dialog for the first step of the partnership opens.

4. Click the SSO and SLO step.

5. In the SLO section, select the HTTP-redirect for the SLO Bindings to enable single logout.

6. Click Add Row in the SLO Service URLs table and complete the following:

   SLO Location URL

   http://sp1.demo.com:9091/affwebservices/public/saml2slo

   This link indicates that the single logout request is sent to the remote SP.

   SLO Confirm URL

   http://idp1.example.com:9090/idpsample/SLOConfirm.html

   This link is the confirmation page at the site that initiated single logout, in this case, IdP1. The user is redirected to this page when single logout completes successfully.

7. Select the row you configured by clicking the option button in the Select column.

8. Click the Confirm step in the wizard and review the configuration.

9. Click Finish.

   You return to the View Federation Partnerships window.

10. Reactivate the partnership by selecting Action, Activate next to the TestPartnership entry in the Federation Partnership List.

Single logout is now added to the configuration at IdP1.

Configure Single Logout at the SP

Configure single logout at SP1.

Follow these steps:

1. From the Federation Manager UI, select Federation, Partnerships.

   The View Federation Partnerships window displays.

2. Select Action, Deactivate next to the entry for Demo Partnership.

   You must deactivate a partnership prior to editing it.

3. Click Action, Modify next to the entry for DemoPartnership.

   The dialog for the first step of the partnership wizard opens.

4. Click the SSO and SLO step.

5. In the SLO group box, select the HTTP-redirect for the SLO Bindings to enable single logout.
6. Click Add Row in the SLO Service URLs table, if there is no row available complete the following:

   SLO Location URL

   http://idp1.example.com:9090/affwebservices/public/saml2slo

   This is the link where the single logout request will be sent.

   SLO Confirm URL

   http://sp1.demo.com:9091/spsample/SLOConfirm.html

   This is the single logout confirmation page at the site that initiated the logout.
7. Select the row you just configured by clicking the radio button in the Select column.
8. Click the Confirm step in the wizard and review the configuration.
9. Click Finish.

   You return to the View Federation Partnerships window.
10. Reactivate the partnership by selecting Action, Activate next to the DemoPartnership entry in the Federation Partnership List.

Single logout is now configured at the SP.

Test Single Logout

After you configure single logout, test it. For this test, single logout is initiated at SP1.

Initiating single logout from the SP requires that you have two web pages to initiate and confirm single logout.

- Using welcome.html, add a link to this page that directs the browser to the Single Logout Service at IdP1. This link has the following syntax:

  Log Me Out
- Create a confirmation page named SLOConfirm.html with a logout confirmation message, such as:

  You have successfully logged out

Copy both these pages to your web server root directory under the subfolder /spsample.

Note: Complete an SSO transaction so you can test SLO.

Follow these steps:

1. Verify that both sides of the partnership are activated in the Federation Manager UI.
2. Configure and test single sign-on according to the previously documented instructions.

   If single sign-on is successful, the welcome page is displayed in the browser.
3. Keep the browser open and click the link **Log Me Out** on the welcome page.

   If successful, you are redirected to the confirmation page that displays the message:

   You have successfully logged out.

Set Up the Artifact Profile for SSO

The basic partnership began with HTTP-POST binding for single sign-on. However, your partnership can use the SAML 2.0 Artifact profile.

The configuration for the HTTP-Artifact binding is the same as the configuration for POST binding, until the SSO and SLO steps in the wizard.

Configure Artifact SSO at the IdP

This procedure shows you how to configure HTTP-Artifact profile for SSO.

Follow these steps:

1. From the Federation Manager UI, click the Federation tab and select Partnerships.

   The View Federation Partnerships window displays.
2. Select Action, Deactivate next to the entry for TestPartnership.

   Deactivation is required before editing.
3. Click Action, Modify next to the entry for TestPartnership.

   The dialog for the first step of the partnership wizard opens.
4. Click the SSO and SLO step.
5. Keep the existing settings in the Authentication group box.
6. In the SSO group box, do the following:
   a. Check HTTP-Artifact for the SSO Binding field.
   b. Change the binding in the Assertion Consumer Service URLs table to HTTP-Artifact. The URL can remain the same as was used for POST profile.

7. In the Back Channel group box, select the following:

   Authentication Method

   No Auth

8. Skip the SLO and IDP Discovery group boxes.
9. Click the Confirm step and review the configuration.
10. Click Finish to complete the configuration.

Artifact binding is now configured at Idp1.

Configure Artifact SSO at the SP

This procedure describes how to configure the HTTP-Artifact profile for SSO.

Follow these steps:

1. From the Federation Manager UI, click the Federation tab and select Partnerships.

   The View Federation Partnerships window displays.

2. Select Action, Deactivate next to the entry for Demo Partnership.

   Deactivate a partnership before you edit it.

3. Click Action, Modify next to the entry for DemoPartnership.

   The dialog for the first step of the Partnership wizard opens.

4. Click the SSO and SLO step.
5. In the SSO group box, do the following tasks:
   a. Check HTTP-Artifact for the SSO Binding field.
   b. Select No Data for the Redirect Mode field. The URL can remain the same as was used for POST profile.
   c. Do not change the settings for the SSO Service URL.
6. In the SOAP Artifact Resolution URLs group box, click Add Row and enter the following URL to indicate that no authentication is required for the back channel:

   http://idp1.example.com:9090/affwebservices/saml2artifactresolutionnoauth

   Be sure to select this entry by clicking the radio button in the Select column of the table.

7. In the Back Channel group box, select the following option:

   Authentication Method

   No Auth

8. Skip the SLO and Status Redirect URL group boxes.
9. Click the Confirm step and review the configuration.
10. Click Finish to complete the configuration.

Artifact binding is configured at SP1.

Test the Partnership (Artifact SSO)

When each side of the partnership is operating, test single sign-on between the two partners.

When IdP1 receives the request, it generates the artifact. The artifact is then sent to the SP1.

After SP1 receives the artifact, it redirects the request back to IdP1. The IdP retrieves the assertion and returns it to SP1.

Create a Web page to Initiate Single Sign-on (Artifact)

For testing purposes, create your own html page with a link that initiates single sign-on. You can initiate single sign-on from the IdP or SP. This example illustrates SP-initiated single sign-on.

Follow these steps:

1. Create the sample HTML page at the SP site and include a hard-coded link to the AuthnRequest service at the SP, as follows:

   <a href="http://sp1.demo.com:9091/affwebservices/public/
   saml2authnrequest?ProviderID=idp1.example.com:9090&
   ProtocolBinding=urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact>
   Link for ARTIFACT Single Sign-on

   This link instructs the AuthnRequest Service to redirect the user to the specified Identity Provider to retrieve the user authentication context.
2. Save the web page under the name testartifact.html.
3. Copy testartifact.html to the web server document root directory, under the subfolder /spsample.

   For this sample network, the target web server is http://spapp.demo:80.

Create a Target Resource

The last step that is required to test single sign-on is to create a target resource.

Follow these steps:

1. Create the sample HTML page at the SP site and include a message, such as:

   Welcome to SP1

   Single Sign-on is successful

2. Save the web page under the name welcome.html.
3. Copy welcome.html to the web server document root directory, under the subfolder /spsample.

   For this sample network, the target web server is http://spapp.demo.com:80.

Test Artifact Single Sign-on

After you have set up the sample web pages, test single sign-on and verify that the partnership configuration is successful.

Follow these steps:

1. Verify that both sides of the partnership are activated.
2. Open up a browser.
3. Enter the URL for the web page that triggers single sign-on, as follows:

   http://spapp.demo.com:80/spsample/testartifact.html

   Note: In this sample network, Federation Manager is deployed in standalone mode, therefore, the target web server is a different server than the one where Federation Manager resides.

   When entering the URL, a page is displayed with a link that reads Link to Test ARTIFACT Single Sign-on.

4. Click **Link to Test ARTIFACT Single Sign-on** and single sign-on is initiated.

   The user is redirected from the AuthnRequest Service at the SP to the Single Sign-on Service at the Identity Provider.

After the Identity Provider establishes a session, it directs the user back to the target resource at the Service Provider, which is welcome.html. You see the sample welcome page you created at the SP, letting you know that single sign-on was successful.

Configuration Procedures Beyond the Simple Partnership

The simple partnership described in this chapter gives you an overview of configuring federated partnerships using Federation Manager.

The remaining chapters in the guide provide detailed procedures for every task you can perform with Federation Manager. For detailed configuration instructions, use these procedures as well as the Help in the Federation Manager UI.

More information:

Federation Entity Configuration (see page 99)
User Directory Connections for Authentication (see page 67)
Federation Partnerships (see page 135)

Chapter 4: User Directory Connections for Authentication

This section contains the following topics:

User Directory Management Overview

Directory connections resolve how Federation Manager establishes a context for user identities. Federation Manager uses these connections to verify user identities and retrieve user attributes contained in user stores.

The asserting party determines which users it can create assertions for by authenticating each user against a user directory. At the relying party, when the user's assertion is presented during authentication, the relying party looks in the user directory for the user record.

You configure connections to existing user directories through the User Directory tab in the Federation Manager UI. You are only establishing a connection to a user directory. You are not configuring a new user directory.

You can configure connections to more than one directory, and the directories do not have to be the same type (LDAP or ODBC).

Important! If you are using the SiteMinder Connector, the user directory must be configured to connect to the same directory that SiteMinder is pointing to, and it must be configured using the same name that SiteMinder uses for that directory.

LDAP Directory Connection

You can establish a connection to an LDAP directory so Federation Manager can use it as a user store for authentication.

To connect to an existing LDAP directory

1. Click the User Directory tab.

   The View User Directories dialog displays.

2. Click Connect to LDAP in the User Directory List section.

   The Connect to LDAP dialog displays.

3. Configure the settings in each section. Parameters marked by red dots are required.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Click Failover/Load Balancing if you want to set up either of these features.

5. Click Test Connection to verify the directory connection is valid.

6. Click Save.

   If your settings are valid, you are redirected to the View User Directories dialog.

The connection to the LDAP directory is configured.

Load Balancing and Failover for LDAP User Directories

Federation Manager can distribute LDAP user directory requests over multiple LDAP servers for failover and load balancing.

For load balancing, Federation Manager evenly spreads requests over the specified LDAP servers. Coupled with failover, load balancing provides faster, more efficient access to LDAP user directory information.

For failover, Federation Manager uses one LDAP server to fulfill requests until that server fails to respond. When the default server does not respond, Federation Manager routes the request to the next server configured for failover. This process can be repeated over multiple servers. After the default server is able to fulfill requests again, Federation Manager routes requests back to the original server.

To configure load balancing and failover

1. Select the User Directory tab in the UI.
2. Do one of the following:
   - Select Connect to LDAP to create an LDAP directory connection.
   - Select Action, Modify next to an existing LDAP entry you want to edit.

   The User Directory dialog opens.
3. Click Configure Load-balancing or Failover or both in the Configure LDAP User Directory section of the dialog.

   The LDAP Server Load-balancing and Failover table displays.
4. Enter the IP address and port number of in the form, *ip_address*:*port,* in the first Failover Node field. Add the addresses of subsequent directory servers in the remaining fields for failover.

   Note: If you are adding a server for failover, the failover directory must use the same type of communication (SSL or non-SSL) as the primary directory. Both directories share the same port number.

   If you only have one entry in the table, then Federation Manager only supports failover.
5. To configure another group for load balancing, click Add Row and complete the fields as you did in the previous step.

   You can add the same server multiple times for load balancing, which forces a single system to handle more requests. For example, consider two servers in a group: Server1 and Server2. Server1 is a high-performance server and Server2 is a lesser system. You can add Server1 to the load balancing list twice so that it processes two requests for each request processed by Server2.

Example: Load Balancing and Failover

In this example, a SiteMinder environment contains two user directories, A and B, which must meet the following requirements:

- User directory A must failover to user directory B and load balance with B.
- User directory B must failover to user directory A; and load balance with user directory A.

The configuration requires two load balancing groups.

1. Specify the address for user directory B for the first load balancing group and first failover node.
2. Add a load balancing group by clicking Add row.
3. List user directory B as the first server in the new load balancing group.
4. List user directory A as the second sever in the load balancing group.

The result is two load balancing groups with one server each for failover "A B" and "B A", which load balance each other. If both directories are available, load balancing occurs between the first directories in each group: A and B. If user directory A becomes unavailable, failover occurs to user directory B. This results in user directory B handling all the requests until user directory A becomes available.

How to Connect to an LDAP User Directory Over SSL

Configuring an LDAP user directory connection over SSL requires that you configure Federation Manager to use your certificate database files.

Complete the following steps to configure the connection over SSL:

1. Review the prerequisites for configuring a connection over SSL.
2. Install the Mozilla® Network Security Services (NSS) utility.
3. Create the certificate database files.
4. Add the root Certificate Authority (CA) to the certificate database.
5. Configure Federation Manager to use the certificate database.
6. Configure the user directory connection for SSL in the Federation Manager UI.

Note: CA Directory does not support this method of configuring SSL.

Prerequisites for an SSL-enabled LDAP Connection

Review the following before configuring an LDAP user directory connection over SSL:

- Verify that your directory server is SSL-enabled.

  Note: For information about configuring your directory server to communicate over SSL, refer to the vendor-specific documentation.

- Verify that you have a database of trusted CA certificate files in cert7.db format.

  Federation Manager uses a Netscape LDAP SDK to create a cert7-compatible database. The database contains a set of trusted CA certificates that Federation Manager uses for SSL communication to an LDAP directory. The database files must be in a Netscape file format cert7.db.

  Important! Do not use Microsoft Internet Explorer to install certificates into your cert7.db database file.

- Obtain a certificate utility to manage the SSL certificates.

  To manage the SSL certificates, use a third-party certificate utility that is compatible with Netscape. We recommend the Mozilla® Network Security Services (NSS) utility, version 3.2.2.

  Note: Version 3.2.2 is required to support the cert7.db format. Do not use later versions.

For user directory connections configured with the LDAP namespace, complete the procedures in the following sections to configure the connection over SSL.

Install the Network Security Services Utility

You install the Network Security Services (NSS) utility to manage your certificate database files. Install the utility on a system where the Netscape Portable Runtime (NSPR) component or Federation Manager is installed. Installing the utility on a system with either component helps ensure that the necessary DLLs or shared objects are available.

To install the NSS utility

1. Access the Mozilla NSS 3.2.2 FTP site.
2. Download the respective zip or tar for your operating system.

   Note: A zip is not available for Windows Server 2000 or 2003. Download the zip for Windows NT.
3. Extract the NSS utility to a temporary location on the system where you are managing your certificate database files.

Create the Certificate Database Files Using NSS

Federation Manager requires that the certificate database files be in the Netscape file format (cert7.db). Use the NSS utility to create the certificate database files.

Note: The following procedure details the specific options and arguments to complete the task. For a complete list of the NSS utility options and arguments, refer to the Mozilla documentation on the NSS project page.

To create the certificate database files

1. From a command prompt, navigate to the bin directory for the NSS utility.

   Example: C:\nss\bin

   Note: Windows has a native certutil utility. Verify that you are working from the bin directory of the NSS utility, or you can inadvertently run the Windows certutil utility.

2. Enter the following command:

   `certutil -N -d certificate_database_directory`

   -N

   Creates the cert7.db, key3.db, and secmod.db certificate database files.

   -d *certificate_database_directory*

   Specifies the directory where the NSS utility is to create the certificate database files.

   Note: If the file path contains spaces, bracket the path in quotes.

   The utility prompts for a password to encrypt the database key.

3. Enter and confirm the password.

   NSS creates the required certificate database files:

   - cert7.db
   - key3.db
   - secmod.db

Example: Create the Certificate Database Files

```
certutil -N -d C:\certdatabase
```

Add the Root Certificate Authority to the Certificate Database

Add the root Certificate Authority (CA) to make it available for SSL communication.

Note: The following procedure details the specific options and arguments to complete the task. For a complete list of the NSS utility options and arguments, refer to the Mozilla documentation on the NSS project page.

To add the root CA certificate to the certificate database

1. From a command prompt, navigate to the bin directory of the NSS utility.

   Example: C:\nss\bin

   Note: Windows has a native certutil utility. Verify that you are working from the bin directory of the NSS utility, or you can inadvertently run the Windows certutil utility.

2. Run the following command to add the root CA to the database file:

   `certutil -A -n alias -t trust_arguments -i root_CA_path -d certificate_database_directory`

   -A

   Adds a certificate to the certificate database.

   -n *alias*

   Specifies an alias for the certificate.

   Note: If the alias contains spaces, bracket the alias with quotes.

   -t *trust_arguments*

   Specify the trust attributes to apply to the certificate when adding it to the certificate database. There are three available trust categories for each certificate, which are expressed in this order: "SSL, email, object signing". Specify the appropriate trust arguments so that the root CA is trusted to issue SSL certificates. In each category position, you may use zero or more of the following attribute arguments.

   p

   Valid peer.

   P

   Trusted peer. This argument implies p.

   c

   Valid CA.

   T

   Trusted CA to issue client certificates. This argument implies c.

C

Trusted CA to issue server certificates (SSL only). This argument implies c.

Important! This argument is required for the SSL trust category.

u

Certificate can be used for authentication or signing.

-i *root_CA_path*

Specifies the path to the root CA file. Consider the following:

- The path must include the certificate name.
- Valid extensions for a certificate include cert, .cer, and .pem.

Note: If the file path contains spaces, bracket the path in quotes.

-d *certificate_database_directory*

Specifies the path to the directory that contains the certificate database.

Note: If the file path contains spaces, bracket the path in quotes.

NSS adds the root CA to the certificate database.

Example: Adding a Root CA to the Certificate Database

```
certutil -A -n "My Root CA"  -t "C,," -i C:\certificates\cacert.cer -d C:\certdatabase
```

Configure Federation Manager to Use the Certificate Database

Connecting to an LDAP user directory over SSL requires that Federation Manager point to the proper certificate database. This database must contain the cert7.db and key3.db files.

The XPSConfig tool, which is shipped with Federation Manager, enables you to specify the path to the certificate database using the LdapObjCertDbPath setting.

To specify the certificate database path for Federation Manager

1. Open a command window.
2. Navigate to *federation_mgr_home.*
3. Enter XPSConfig. The command is case-sensitive on UNIX platforms.

   The Products Menu displays.
4. Enter SM.

   The list of options displays.
5. Enter the number for the LdapObjCertDbPath setting.

   The Parameter Menu displays.

6. Enter C to change the value.
7. Specify the path to the certificate database for the Enter New Value prompt. For example:

   C:\Program Files\CA\FederationManager\ldaps\certdb
8. Enter Q until you exit from XPSConfig.

   The new value is saved.

Federation Manager is now using the correct certificate database.

Verify that the Certificates are in the Database

Verify that the certificate database contains all intermediate and root CA certificates that signed the SSL certificate used by the LDAP directory server.

Note: The following procedure details the specific options and arguments to complete the task. For a complete list of the NSS utility options and arguments, refer to the Mozilla documentation on the NSS project page.

To list the certificates in the certificate database

1. From a command prompt, navigate to the bin directory where you extracted the NSS utility.

   Example: C:\nss\bin

   Note: Windows has a native certutil utility. Verify that you are working from the bin directory of the NSS utility, or you can inadvertently run the Windows certutil utility.
2. Run the following command:

   `certutil -L -d certificate_database_directory`

   -L

   Lists all of the certificates in the certificate database.

   -d *certificate_database_directory*

   Specifies the path to the directory that contains the certificate database.

   Note: If the file path contains spaces, bracket the path in quotes.

   NSS displays the root CA alias and the trust attributes you specified when adding the certificate to the certificate database.

Example: List the Certificates in the Certificate Database

```
certutil -L -d C:\certdatabase
```

SSL-enable the LDAP User Directory Connection

After pointing Federation Manager to the correct certificate database, enable the SSL-secured connection to the LDAP user directory. SSL further secures the communication between Federation Manager and the user directory.

Note: The following procedure assumes that you have an LDAP connection working properly.

To configure SSL for the LDAP user directory connection

1. Log in to the Federation Manager UI.
2. Select the User Directory tab.

   The User Directory List is displayed.
3. Click Action, Modify next to the LDAP entry you want to SSL-enable.
4. Verify that the Server field in the Configure LDAP User Directory section contains the correct server and port value for the SSL connection. SSL often uses a different port than a non-SSL connection.
5. Select the Secured Connection check-box in the Connection Credentials section.
6. Click Save.

   You return to the User Directory dialog.
7. In the User Directory list, select Action, Test Connection next to the LDAP entry that is SSL-enabled.

   A message at the top of the dialog either confirms that the SSL is properly configured reports and error.

The user directory connection is configured to communicate over SSL.

Troubleshoot the SSL Connection to the LDAP User Directory

The list following specifies actions you can take when you encounter problems connecting to the LDAP user directory using SSL:

- Verify that you can connect to the user directory without using a secured connection.
- Verify that SSL is enabled for the LDAP server you are using.
- Verify that the SSL port of the LDAP server is reachable from the Federation Manager host.
- Verify that Federation Manager is pointing to the directory that contains the certificate database files.
- Verify that that the certificate database directory contains the cert7.db and the key3.db files.
- Verify that the LDAP server configuration (including port), the connection credentials and the search root are configured correctly in the Federation Manager UI.

ODBC Directory Connection

You can configure a directory connection to an existing ODBC user store (SQL or Oracle) so Federation Manager can use it for authentication.

Note: If you plan to connect to an ODBC data source on Solaris, configure the wire protocol driver for the data source. See the wire protocol driver instructions for details.

Follow these steps:

1. Click the User Directory tab.

   The View User Directories dialog displays.

2. Click Connect to ODBC in the User Directory List section.

   The Connect to ODBC dialog displays.

3. Configure the settings in this dialog. Parameters marked by red dots are required.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Click Failover if you want to set up additional ODBC directories for redundancy.
5. Click Test Connection to validate the connection.
6. Click Save.

   If your settings are valid, you are redirected to the View User Directories dialog.

The connection to the ODBC directory is configured.

More Information:

ODBC Data Source on Solaris Configuration Requirement (see page 79)
Configure the Oracle Wire Protocol Driver (see page 79)
Configure the SQL Server Wire Protocol Driver (see page 80)

ODBC Directory Failover Configuration

Federation Manager can distribute ODBC user directory requests over multiple data source servers for failover.

Note: Federation Manager does not support load balancing for ODBC user directories.

For failover, Federation Manager uses one ODBC directory to fulfill requests until that server where that store resides fails to respond. When the default directory does not respond, Federation Manager routes the request to the next store configured for failover. This process can be repeated over multiple servers. After the default server is able to fulfill requests again, Federation Manager routes requests back to the original server.

To configure ODBC failover

1. Select the User Directory tab in the UI.
2. Do one of the following:
   - Select Connect to ODBC to create an ODBC user directory connection.
   - Select Action, Modify next to an existing ODBC entry you want to edit.

   The User Directory dialog opens.
3. Click Configure Failover in the Configure ODBC User Directory section of the dialog.

   The ODBC Data Source Failover table displays.
4. Enter the data source name, in the first Failover Node field. Add the names of other data sources in the remaining fields for failover.

   Note: If you are adding a server for failover, the failover directory must use the same type of communication (SSL or non-SSL) as the primary directory. Both directories share the same port number.

   If you only have one entry in the table, then Federation Manager only supports failover.

Example: ODBC Failover

In this example, a SiteMinder environment contains two user directories, A and B, which must meet the following requirements:

- User directory A must failover to user directory B
- User directory B must failover to user directory A

This configuration requires two failover nodes: the data source name for user directory A and a data source name for user directory B.

ODBC Data Source on Solaris Configuration Requirement

If you are using an ODBC data source on a UNIX system as a user directory, configure the data source in the system_odbc.ini file.

The system_odbc.ini file, located in the *federation_mgr_home*/siteminder/db folder, contains all of the names of the available data sources. In addition, this file contains the attributes that are associated with these data sources. The first attribute is the ODBC driver allocated to Federation Manager. The remaining attributes are specific to the driver.

When you are updating the file to configure a new data source, you add a new section that describes the data source. You place entries for the SQL Server or Oracle drivers after the section that reads [CA FedManager Data Source]. Do not modify the original text.

Configure the Oracle Wire Protocol Driver

You configure the Oracle wire protocol driver to specify the settings Federation Manager uses to connect to the data source.

To configure the Oracle wire protocol driver

1. Navigate to the directory *federation_mgr_home*/siteminder/db.
2. Open the system_odbc.ini file in a text editor.
3. Select the section [CA FedManager Data Source] and make a copy of it directly under its current location.
4. Using the copy you created as a template, rename the heading in brackets to something appropriate for your data source.

5. Change the values in the LogonID, Password, HostName, and Service Name entries.

   The modified text for the Oracle data source appears as follows:

   ```
   Driver=federation_mgr_home/siteminder/odbc/lib/NSora23.so
   Description=DataDirect 5.3 Oracle Wire Protocol
   LogonID=uid
   Password=pwd
   HostName=servername
   PortNumber=1521
   ServiceName=servicename
   CatalogOptions=0
   ProcedureRetResults=0
   EnableDescribeParam=0
   EnableStaticCursorsForLongData=0
   ApplicationUsingThreads=1
   ```

6. Save the file.

   The Oracle wire protocol driver is configured.

Important! Do not modify other entries in the file, especially anything listed in the [CA FedManager Data Source] section.

Configure the SQL Server Wire Protocol Driver

You configure the SQL wire protocol driver to specify the settings Federation Manager uses to connect to the database.

To configure the SQL Server wire protocol driver

1. Navigate to the directory *federation_mgr_home*/siteminder/db.
2. Open the system_odbc.ini file in a text editor.
3. Select the section [CA FedManager Data Source] and make a copy of it directly under its current location.
4. Using the copy you created as a template, rename the heading in brackets to something appropriate for your data source.
5. Change the values and add new entries so that the modified text for the SQL Server data source appears as follows:

   ```
   Driver=federation_mgr_home/siteminder/odbc/lib/NSmass23.so
   Description=DataDirect 5.0 SQL Server Wire Protocol
   Database=database_instance
   Address=host_IP_address, port_number (default: 1433)
   QuotedId=No
   AnsiNPW=No
   ```

6. Save the file.

   The wire protocol driver is configured.

Important! Do not modify other settings in this file, especially anything listed in the [CA FedManager Data Source] section.

Test a User Directory Connection from the Directory List

You can test the connection to a user directory.

To test a user directory connection

1. Click the User Directory tab.

   The View User Directories list is displayed.

2. Select Test Connection from the Actions drop-down menu next to an entry in the list that you want to test.

A message at the top of the dialog verifies the connection or displays an error.

Note: You can also test the connection by clicking Test Connection in the Connection Credentials section of the Create or Modify User Directory dialog.

Create a Common View of the Same User Information Across Directories

Directory connections resolve how Federation Manager establishes a context for user identities. The asserting party determines which users it can create assertions for by authenticating each user against a user directory.

Multiple user directories in a federated environment often store the same type of user information, but each directory uses a different underlying schema and different user attribute names to identify the information. Therefore, Federation Manager receives a disparate view of the same user information. For example, an LDAP directory can use the attribute **uid** to represent a user name, whereas an ODBC directory can use the attribute **name** for the same information.

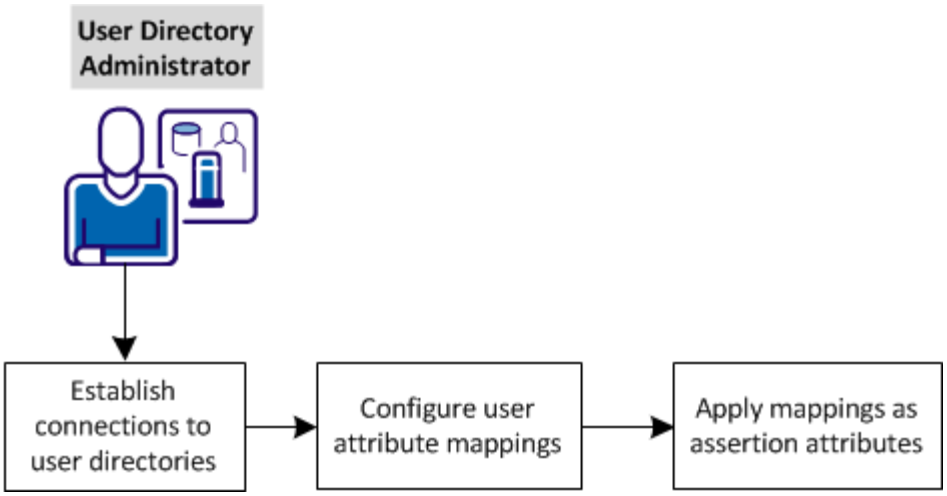
The purpose of user attribute mapping is to create a common view of the same information by defining a universal schema. The universal schema can resolve user information across multiple user directories. The system can reference user attributes without regard for the directory type, greatly reducing the number of configuration objects that are required for multiple user directories.

Each user attribute mapping is specific to the user directory in which it is defined.

After the connections to the user directories are configured, use one common name to reference the same information in different user directories.

The feature that you use to create a universal schema is called *user attribute mapping*. Configure this feature within the user directory configuration of the Administrative UI.

The following graphic shows the process for configuring user attribute mapping at the asserting party.



Complete the following tasks at the asserting party for user attribute mapping:

1. Establish connections to user directories (see page 82).
2. Configure user attribute mappings (see page 83).
3. Apply mappings as assertion attributes (see page 97).

Establish Connections to User Directories

Before you can establish user attribute mappings, establish connections to the user directories that store user records.

LDAP or ODBC are the two types of directories to which Federation Manager can connect.

Follow these steps:

1. Click the User Directory tab.

   The View User Directories dialog displays.
2. Click Connect to LDAP or ODBC.

3. Configure the settings in each section. Required parameters are marked by red dots.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Click Failover or Load Balancing if you want to set up either of these features.
5. Click Test Connection to verify that the connection is valid.
6. Click Save.

   If your settings are valid, you are redirected to the View User Directories dialog.

The connection to the directory is configured.

Configure User Attribute Mappings

Use one or more of the following mapping types to define attribute mappings:

- Alias
- Group Name
- Mask
- Constant
- Expression

The following table lists the type of data you can enter in the mapping definition. Define individual mappings for each user directory in your deployment.

Mapping Type	Map Common Name to...	Data Types	Access
Alias	A user attribute name in the directory.	String, Number, Boolean	Read/Write
Group name	An attribute that identifies whether a user belongs to a specific group.	Boolean	Read/Write
Mask	A user attribute that stores a bit pattern.	Boolean	Read/Write
Constant	A value that is the same or *constant* for every user in a directory.	String, Number, Boolean	Read
Expression	To an expression. For complete syntax information, see the Attributes and Expression Reference appendix in the *SiteMinder Policy Server Configuration Guide.* This guide is part of the SiteMinder bookshelf.	String, Number, Boolean	Read

The configuration procedures for each mapping type are basically the same. Refer to the use cases for each mapping type for implementation examples.

Follow these steps:

1. In the Administrative UI, navigate to the User Directory tab.
2. Select one of the *Connect to* options in the User Directory List.
3. Verify that a user directory connection is configured or configure one.
4. Scroll to the Directory Mapping Attribute section and select Create Mapping.
5. Complete the General fields:

   Name

   Specify the common name for this mapping. Common names must conform to the same rules as user attribute names.

   Description

   Enter a description of the attribute mapping.
6. Complete the Properties fields:

   Mapping type

   Select the mapping type that you want to configure.

   Definition

   Enter the mapping definition using the appropriate syntax. Refer to the previous table.
7. (Optional) Select Disabled to disable an attribute mapping.
8. Click Save.

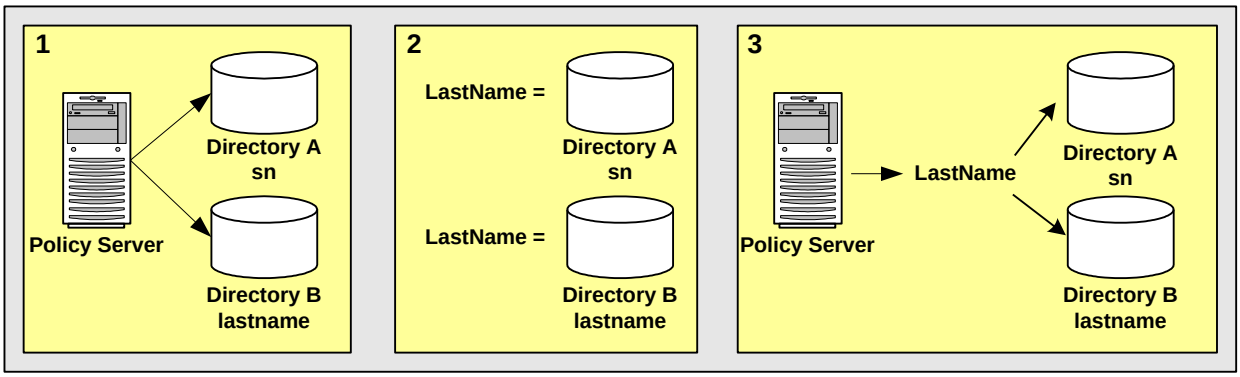
The new attribute mapping is submitted and then added to the list on the Attribute Mapping List table.

Alias Attribute Use Case

This use case shows two LDAP user directories, which identify the last name of users, but the directories have different underlying schema.

Note: Review the advanced user attribute mapping examples, which detail how to use different attribute mapping types to identify the same user attribute across different directory types.

The following illustration details how two alias attribute mappings can create a common view of the same user information.



1. Two user directories identify the last name of users differently:
   - Directory A identifies the last name of users with sn.
   - Directory B identifies the last name of users with lastname.

   This results in two different views of the same user information.
2. LastName is the common name or *alias* that is mapped to the underlying directory schema:
   - LastName is mapped to sn in Directory A.
   - LastName is mapped to lastname in Directory B.

LastName results in a common view of the same user information. Use LastName when defining assertion attributes or NameID attributes that use the last names. The system has no concern for the directory-specific schema because the directories are operationally identical.

More information:

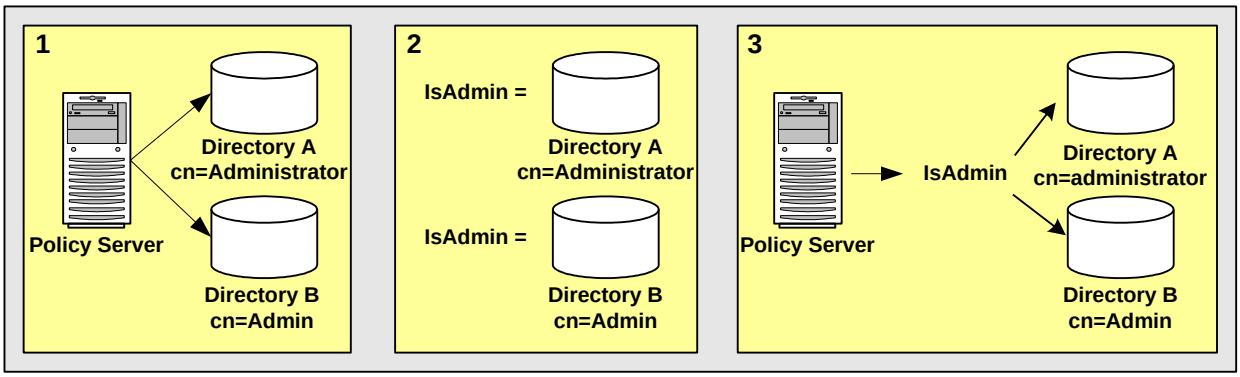
Advanced User Attribute Mapping Examples (see page 92)

Group Name Use Case

This use case shows two LDAP user directories, which use different underlying schema to identify users that belong to an Administrator group.

Note: Review the advanced user attribute mapping examples, which detail how to use different attribute mapping types to identify the same user attribute across different directory types.

The following illustration details how two group name attribute mappings can create a common view of the same user information.



1. Two user directories identify membership to the administrator group differently:
   - Directory A identifies membership in the administrator group as cn=Administrators,ou=groups,o=acme.com.
   - Directory B identifies membership in the administrator group as cn=Admin,ou=groups,o=acme.com.

   This results in two different views of the same user information.
2. IsAdmin is the common name that is mapped to the underlying directory schema:
   - IsAdmin is mapped to cn=Administrators,ou=groups,o=acme.com in Directory A.
   - IsAdmin is mapped to cn=Admin,ou=group,o=acme.com in Directory B.

IsAdmin results in a common view of the administrator group. You can reference IsAdmin when defining assertion attributes or NameID attributes that apply to the Administrator group. The system has no concern for the directory-specific schema because the directories are operationally identical.

More information:

Advanced User Attribute Mapping Examples (see page 92)

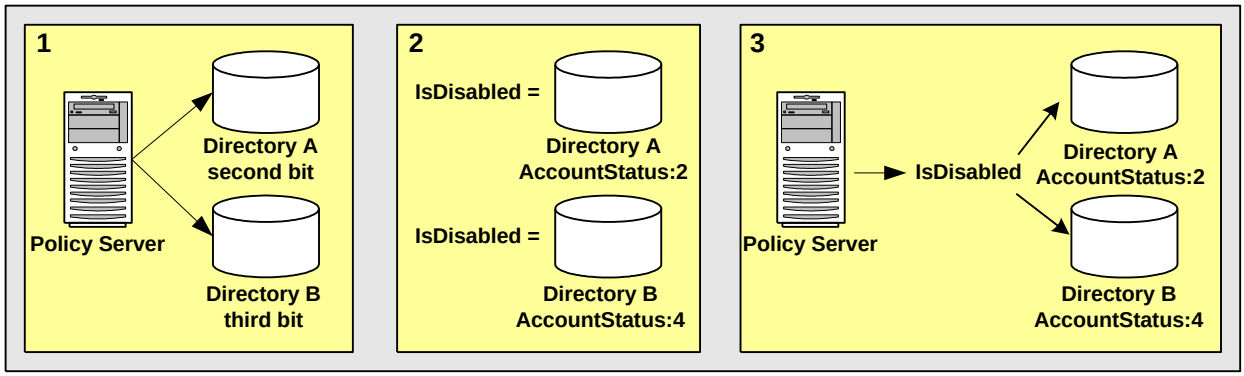
Mask Use Case

Some directory implementations use individual bits in an attribute to provide information about that attribute, such as the state of an account. You can apply a bit mask to an attribute.

This use case shows two Active Directory user stores that identify disabled user accounts. Each account has a different underlying schema.

Note: Review the advanced user attribute mapping examples, which detail how to use different attribute mapping types to identify the same user attribute across different directory types.

The following illustration details how two mask attribute mappings can create a common view of the same user information.



1. Two user directories contain a user attribute named AccountStatus. AccountStatus stores user information in a bit pattern, where each bit is a flag.
   - In Directory A, the second bit flags a disabled account. When the second bit equals 1, the account is disabled.
   - In Directory B, the third bit flags a disabled account. When the third bit equals 1, the account is disabled.

   This results in two different views of the same user information.
2. IsDisabled is the common name that is mapped to the underlying directory schema. In both directories, IsDisabled is mapped to AccountStatus.
   - In Directory A, the bit mask 2 (decimal) determines whether the second bit of AccountStatus is set and the account is disabled.
   - In Directory B, bit mask 4 (decimal) determines whether the third bit of AccountStatus is set and the account is disabled.

IsDisabled results in a common view of disabled user accounts. You can reference IsDisabled when defining assertion attributes or NameID attributes that require the account status of users. The system has no concern for the directory-specific schema because the directories are operationally identical.

More information:

Advanced User Attribute Mapping Examples (see page 92)

Bit Masks in Mask Attribute Mapping

A bit mask attribute mapping tests the value of one or more bits by masking the values of the other bits in a user attribute.

A mask attribute mapping is defined as follows:

```
user_attribute_name:bit_mask
```

For example, assume that the user attribute is named AccountStatus. The attribute AccountStatus stores the states of the following three flags in a bit pattern:

Bit Pattern	Flag
00?	account disabled?
0?0	password expired?
?00	gold member?

When a bit equals one, the flag is TRUE. The table shows the results:

Bit Pattern	Account Status
000 (0)	no flags are TRUE
001 (1)	account disabled
010 (2)	password expired
100 (4)	gold member
011 (3)	password expired, account disabled
101 (5)	gold member, account disabled
110 (6)	gold member, password expired
111 (7)	gold member, password expired, account disabled

Note: Equivalent decimal values are shown in parentheses.

Assume that you only want to test whether a user is a gold member. To test this bit, select the bit pattern that corresponds to a gold member as the bit mask or 100 (binary) and specify it as 4 (decimal). The resulting mask attribute mapping is defined as follows:

```
AccountStatus:4
```

A bitwise AND operation on AccountStatus is performed on the bit mask and tests whether the result is equal to the bit mask. An equal result means the value of the tested bit is one and the flag is TRUE. The following table shows the results:

Account Status	Bit Mask	Result of Bitwise AND	Gold Member?
000 (0)	100 (4)	000 (0)	FALSE
001 (1)	100 (4)	000 (0)	FALSE
010 (2)	100 (4)	000 (0)	FALSE
011 (3)	100 (4)	000 (0)	FALSE
100 (4)	100 (4)	100 (4)	TRUE
101 (5)	100 (4)	100 (4)	TRUE
110 (6)	100 (4)	100 (4)	TRUE
111 (7)	100 (4)	100 (4)	TRUE

Note: Equivalent decimal values are shown in parentheses.

You can also use a bit mask to test the value of a bit set or more than one bit at a time. Assume that you want to know whether the account is disabled and the password has expired. To test these bits, specify a bit mask of 011 (binary) or 3 (decimal). The resulting mask attribute mapping is defined as follows:

```
AccountStatus:3
```

A bitwise AND operation on AccountStatus is performed on the bit mask and tests whether the result is equal to the bit mask. An equal result means the value of both tested bits is one and both flags are TRUE. The following table shows the results:

Account Status	Bit Mask	Result of Bitwise AND	Both Flags Set?
000 (0)	011 (3)	000 (0)	FALSE
001 (1)	011 (3)	001 (1)	FALSE
010 (2)	011 (3)	010 (2)	FALSE
011 (3)	011 (3)	011 (3)	TRUE
100 (4)	011 (3)	000 (0)	FALSE

Account Status	Bit Mask	Result of Bitwise AND	Both Flags Set?
101 (5)	011 (3)	001 (1)	FALSE
110 (6)	011 (3)	010 (2)	FALSE
111 (7)	011 (3)	011 (3)	TRUE

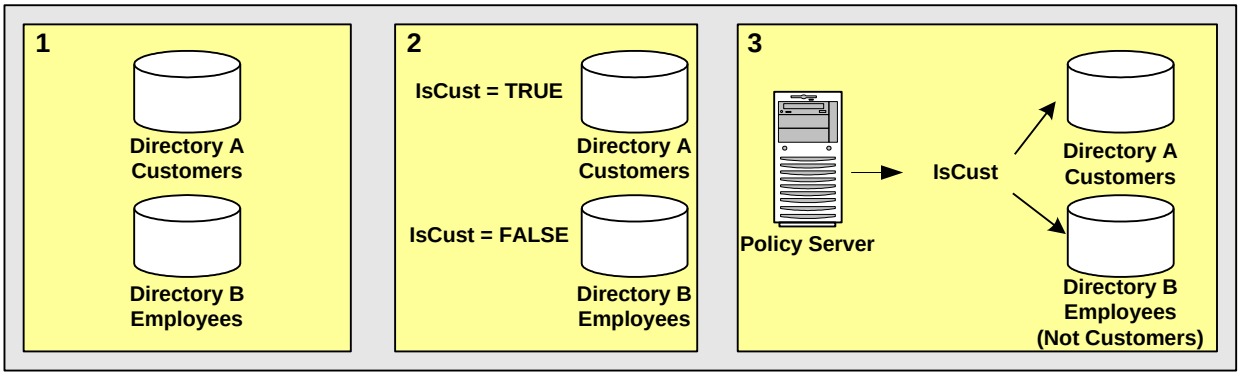
Note: Equivalent decimal values are shown in parentheses.

Constant Use Case

This use case represents a scenario in which one user directory stores only customers, while another user directory stores only employees.

Note: Review the advanced user attribute mapping examples, which detail how to use different attribute mapping types to identify the same user attribute across different directory types.

The following illustration details how two constant attribute mappings can represent different values for different user directories.



1. Directory A only stores customers. Directory B only stores employees.
2. IsCust is the common name that is mapped to different values in different directories:
   - IsCust is mapped to TRUE in Directory A.
   - IsCust is mapped to FALSE in Directory B.
3. Reference IsCust when defining assertion attributes or NameID attributes. The common name lets the system determine whether a user is a customer, without regard to the particular directory in which the user is stored. The mapping indicates that every user in Directory A is a customer, while every user in Directory B is not a customer.

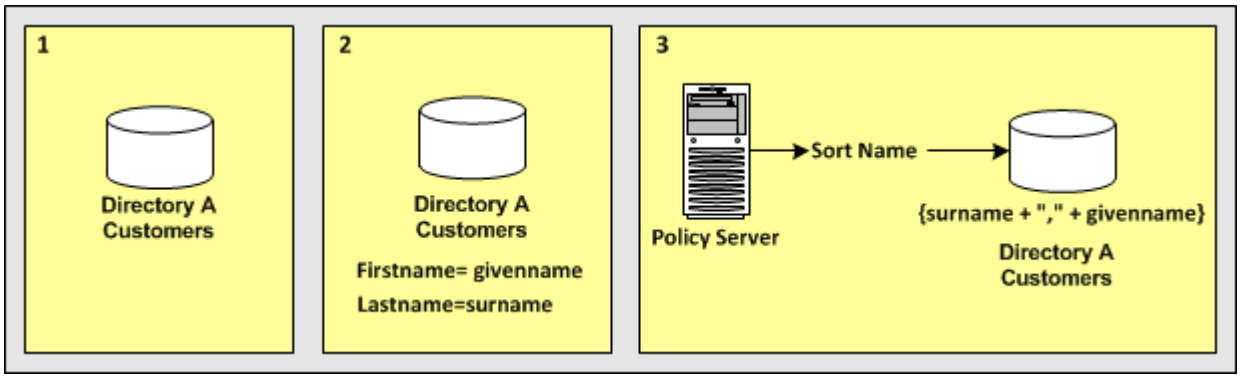
More information:

Advanced User Attribute Mapping Examples (see page 92)

Expression Use Case

This use case shows how you can use an expression attribute mapping to simplify references to multiple user attributes in one directory. A protected resource needs the *sort name* of each user (last name,first name). The user directory does not uniquely reference this attribute. Instead, the directory does store the last name of each user as surname and the first name of each user as givenname.

The following illustration details how an expression attribute mapping can create a common view of the same user information.



In the single user directory, a common name is mapped to an expression that creates the sort name using the user attribute names in the directory.

- Directory A contains all user records.
- The name of the mapping is **SortName**.
- The expression that defines SortName is:

  ```
  {surname + "," + givenname}
  ```

  Note: The expression conforms to the syntax rules of a SiteMinder expression. For complete syntax information, see the Attributes and Expression Reference appendix in the *SiteMinder Policy Server Configuration Guide in the* SiteMinder bookshelf.
- SortName is the common name that is mapped to the expression that includes the surname and the givenname attributes.

Reference SortName when defining assertion attributes or NameID attributes that require the sort name of users without concern for the directory-specific schema.

More information:

Advanced User Attribute Mapping Examples (see page 92)

Advanced User Attribute Mapping Examples

The following examples show more complex user attribute mapping configurations.

The example deployment is a retail clothing company that uses two user directories of different types:

Directory A

An internal LDAP user directory for employees only.

Directory B

An ODBC user directory for customers only.

Each user attribute mapping is specific to the user directory for which it is defined.

The following table details how Directory A and Directory B identify the same user information. The accompanying use cases explain how to use different attribute mappings to define a common view of the same user information. The common view serves as a universal schema, which makes the directories operationally identical.

Attribute Description	Directory A Attributes (LDAP)	Directory B Attributes (ODBC)
First name of each user	givenname	u_first_name
Last name of each user	surname	u_last_name
Sort name of each user (last name, first name)	The user directory does not uniquely store the user attribute.	sort_name
User as a customer	group:cn=customer,ou=groups,o=acme.com	Users are always customers.
Status of a user account	AccountStatus attribute (a set of flags). Second bit is a disabled account.	u_disabled

Map a First Name Attribute with an Alias Mapping Type

Use two alias attribute mappings to represent the first name user attribute in Directory A and Directory B.

Deployment

User Directory A identifies the first name of users with givenname. Directory B identifies the first name of users with u_first_name.

Solution

1. Create an alias attribute mapping for Directory A.

   Name

   FirstName

   Mapping Type

   Alias

   Definition

   givenname

2. Create an alias attribute mapping for Directory B.

   Name

   FirstName

   Mapping Type

   Alias

   Definition

   u_first_name

When referencing users in Directory A, the FirstName is mapped to givenname. When referencing users in Directory B, the FirstName maps to u_first_name.

Map a Last Name Attribute with an Alias Mapping Type

Use two alias attribute mappings to represent the last name user attribute in Directory A and Directory B.

Deployment

User Directory A identifies the last name of users with surname. Directory B identifies the last name of users with u_last_name.

Solution

1. Create an alias attribute mapping for Directory A.

   Name

   LastName

   Mapping Type

   Alias

   Definition

   surname

2. Create an alias attribute mapping for Directory B.

   Name

   LastName

   Mapping Type

   Alias

   Definition

   u_last_name

When referencing users in Directory A, the common view determines that the last name of users is identified by surname. When referencing users in Directory B, the common view determines that the last name is identified by u_last_name.

Map a Sort Name Attribute with Expression and Alias Mapping Types

Use an expression attribute mapping and an alias attribute mapping to represent the sort name of a user in Directory A and Directory B.

Deployment

- Directory A does not uniquely identify a the sort name for each user. For each user, Directory A stores the first name as givenname and a last name as surname for each user.
- Directory B identifies a sort name using sort_name.

Solution

1. Create an expression attribute mapping for Directory A:

   Name

   SortName

   Mapping Type

   Expression

   Definition

   ```
   (surname + "," + givenname)
   ```

   Note: The expression must conform to the syntax rules of an expression.

2. Create an alias attribute mapping for Directory B:

   Name

   SortName

   Mapping Type

   Alias

   Definition

   sort_name

When referencing users in Directory A, the sort name is calculated based on the specified expression. When referencing users in Directory B, the sort name is represented by the attribute sort_name.

Map Customers with Group and Constant Mapping Types

Use a group and a constant attribute mapping to identify customers in Directory A and Directory B.

Deployment

- Directory A stores employee. An employee of the company can also be a customer, so Directory A identifies customers as those employees that belong to the following group:

  `cn=Customers,ou=Groups,o=acme.com`

- Directory B only stores customers. Directory B does not have a user attribute that identifies customers because to store a user in Directory B implies that the user is a customer.

Solution

1. Create a group attribute mapping for Directory A.

   Name

   IsCustomer

   Mapping Type

   Group

   Definition

   `cn=Customers,ou=Groups,o=acme.com`

2. Create a constant attribute mapping for Directory B.

   Name

   IsCustomer

   Mapping Type

   Constant

   Definition

   TRUE

When referencing Directory A, a user is considered a customer if they belong to cn=Customers,ou=Groups,o=acme.com. When referencing Directory B, every user is a customer.

Map the Account Status with the Mask and Expression Mapping Types

Use a mask attribute mapping and an expression attribute mapping to identify user accounts that are disabled in Directory A and Directory B.

Deployment

- Directory A identifies disabled accounts with a user attribute named AccountStatus, which is a set of flags. The second bit indicates a disabled account.
- Directory B identifies disabled accounts with a user attribute named u_disabled. When u_disabled is equal to "y", the account is disabled. When u_disabled is equal to "n", the account is active.

Solution

1. Create a mask attribute mapping for Directory A.

   Name

   IsDisabled

   Mapping Type

   Mask

   Definition

   AccountStatus:2

   The definition indicates that the bit pattern is stored in AccountStatus, and the bit mask is 2 (decimal).

2. Create a expression attribute mapping for Directory B.

   Name

   IsDisabled

   Mapping Type

   Expression

   Definition

   ```
   (u_disabled = "y")
   ```

   u_disabled is a Boolean expression.

When referencing Directory A, the bit pattern determines if a user is disabled. When referencing Directory B, the expression determines if a user is disabled.

Apply Mappings to Assertion Attributes

After you define user attribute mappings for your user directories, add the user attribute mapping to the assertion configuration for the asserting-to-relying party partnership. The mapping helps the asserting party include the right attributes in the assertion, regardless of the different attributes for each directory type.

The Name ID type can be a user attribute in the assertion configuration.

Follow these steps:

1. Log on to the Administrative UI.
2. Select Federation, Partnerships.

   The Federation Partnership List displays.
3. Select Action, Modify for the local asserting party partnership.
4. Navigate to the Assertion Configuration tab.
5. In the Assertion Attributes section, click Add Row.
6. Enter the data from the user mappings into the fields as follows:

   Assertion Attribute

   Specify any name for the name/value pair of an assertion attribute.

   Format

   Choose the format that indicates how to interpret the attribute name.

Type

User attribute

Always select the user attribute type as the value for this field.

Value

Enter the value from the Name field in the user mapping section of the User Directory dialog.

Example: If the Name you assigned to a mapping is FullName, enter FullName in this field.

7. (Optional). The Name ID type can be a user attribute so make the Value field for the Name ID entry match the Value field in the assertion attribute entry. The assertion then uses the same user attribute for the Name ID and the assertion attribute that identifies the user.
8. Repeat the procedure in the previous step for all assertion attributes.
9. Navigate to the Confirm step and click Finish to save your changes.

Chapter 5: Federation Entity Configuration

This section contains the following topics:

Methods to Create an Entity

Each partner in a federation partnership is considered a *federation entity*. Before you establish a partnership, define a local entity that represents the local partner and a remote entity that represents the remote partner.

The two ways to configure a federation entity are:

- Create an entity without using metadata.
- Create an entity by importing metadata.

How to Create an Entity without Using Metadata

Create an entity without metadata by using the following process:

1. Indicate an entity type.
2. Configure the specifics about that entity type.
3. Confirm the entity configuration.

Entity Type Choice

The first step in configuring an entity is to establish the entity type and determine the entity role.

Follow these steps:

1. Log in to the Federation Manager UI.
2. From the Federation tab, select Entities.

   The Federation Entity List dialog opens.

3. Click Create Entity.

   The Create Entity dialog displays.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Select one of the following options:

   Local

   Indicates that you are creating an entity that is local to your site.

   Remote

   Indicates that you are configuring an entity that represents the partner at the remote site.

5. Identify whether you are configuring the asserting party or the relying party by setting the New Entity Type.
6. Click Next to configure specifics about the entity.

Detailed Local Entity Configuration

After you have specified the entity type, configure the details of the entity. For a local entity, define the following information:

- Identification information about the entity
- Signature and encryption options
- NameID and attribute information

Be aware of the following concepts:

Entity ID and Entity Name Settings

If the Entity ID represents a remote partner, the value must be unique. If the Entity ID represents a local partner, it can be reused on the same system.

The Entity Name identifies an entity object for in the Federation Manager database. The Entity Name must be a unique value. This value is for internal use only; the remote partner is not aware of this value.

Note: The Entity Name can be the same value as the Entity ID, but the value cannot be shared.

Signing and Encryption Features

For signing and encryption features, you must have the appropriate key/certificate entries in the database. If you do not have the appropriate key/certificate entries, click Import to import a private key/certificate pair from a file on your local system. You can also import trusted certificates.

Note: If you are using SAML 2.0 POST profile, signing assertions is required.

Assertion Attributes Configuration

You can configure the asserting party to include specific assertion attributes when it generates an assertion. The recommended method is to define these attributes at the entity level. The entity serves as a template for the partnership so any assertion attributes you define for the entity get propagated to the partnership. The benefit of defining assertion attributes at the entity is that it enables you to use an entity in more than one partnership.

If you want to add or remove assertion attributes for the partnership, make such modifications at the partnership level, not at the entity level.

Follow these steps:

1. Begin at the Configure Entity step.
2. Complete any required fields for features and services associated with the local entity type you are configuring.

   Note: Click Help for a description of fields, controls, and their respective requirements.
3. Click Next.

   The Confirm dialog is displayed.

Detailed Remote Entity Configuration

After you have specified the entity type, configure the details of the entity. For a remote entity type, define the following options:

- Identification information about the entity
- Signature and encryption options
- NameID and attribute information

Be aware of the following concepts:

Entity ID and Entity Name Settings

If the Entity ID represents a remote partner, the value must be unique. If the Entity ID represents a local partner, it can be reused on the same system.

The Entity Name identifies an entity object for in the Federation Manager database. The Entity Name must be a unique value. This value is for internal use only; the remote partner is not aware of this value.

Note: The Entity Name can be the same value as the Entity ID, but the value cannot be shared.

Signing and Encryption Features

For signing and encryption features, you must have the appropriate key/certificate entries in the database. If you do not have the appropriate key/certificate entries, click Import to import a private key/certificate pair from a file on your local system. You can also import trusted certificates.

Note: If you are using SAML 2.0 POST profile, signing assertions is required.

Assertion Attributes Configuration

You can configure the asserting party to include specific assertion attributes when it generates an assertion. The recommended method is to define these attributes at the entity level. The entity serves as a template for the partnership so any assertion attributes you define for the entity get propagated to the partnership. The benefit of defining assertion attributes at the entity is that it enables you to use an entity in more than one partnership.

If you want to add or remove assertion attributes for the partnership, make such modifications at the partnership level, not at the entity level.

Follow these steps:

1. Begin at the Configure Entity step.
2. Complete any required fields for features and services associated with the remote entity type you are configuring.

   Note: Click Help for a description of fields, controls, and their respective requirements.
3. Click Next.

The Confirm dialog is displayed.

Confirm the Entity Configuration

Review the entity configuration before saving it.

Follow these steps:

1. Review the settings in the entity dialog.
2. Click Back to modify any settings from this dialog.
3. Click Finish when you are satisfied with the configuration.

A new entity is configured.

Entity Configuration Changes from a Partnership

You can change an entity ID value for the remote entity from within the context of a single partnership configuration. However, changing the entity ID at the partnership level does not link the partnership to another entity, nor does it update the original entity. Modifications to an entity are a one-way propagation from the entity to the partnership. A change to the entity ID at the partnership level does not get propagated to the original entity.

Note: The entity ID you specify has to match what your remote partner is using.

Regard entity configurations as templates. Partnerships are created based on the entity templates so changing the partnership does not change the original entity template.

Refer to editing an entity from a partnership for more details about entities within a partnership.

How to Create an Entity by Importing Metadata

Import data from a metadata file to create a federation entity. Importing SAML metadata reduces the amount of configuration that is required to create a partnership.

Federation Manager lets you use metadata in the following ways:

- Import data from a remote partner to create a new remote entity
- Import data from a remote partner to update an existing remote entity
- Import data from a local entity to create a new local entity.

  This option is useful to facilitate a migration to Federation Manager from another federation product.

Note: Federation Manager does not support metadata imports to update or restore an existing partnership and local entity. To update an existing local entity, edit the entity and modify the settings that require change. Import metadata only to create a *new* local entity.

The process for creating a metadata-based entity is as follows:

1. Select a metadata file to serve as the basis for configuring a new entity.
2. Select an entity entry from the metadata file. The file can include several entities, but one entity per file is recommended.

3. (Optional) To configure an entity, select certificates in the metadata file to import.

   These certificates are for various federation functions, such as signing, verification, or single logout.

4. Confirm the entity configuration.

Details about these steps are described in the next sections.

Metadata File Selection

The first step to create a federation entity based on metadata is to select the metadata file.

Follow these steps:

1. Log in to the Federation Manager UI.
2. From the Federation tab, select Entities.

   The View Federation Entities list displays.

3. Click Import Metadata.

   The Import Metadata dialog opens.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Browse for the metadata file you want to use to create the entity.
5. Select whether to create a new local or remote entity, or update an existing remote entity.

   Note: Federation Manager does not support metadata imports to update an existing partnership and local entity. You can only create a new local entity. To update an existing local entity, edit the entity and modify the settings you want to change. You can update existing remote entities or create new remote entities.

6. Click Next to select entities from the file.

If you select a metadata file with expired entries, the next dialog that the UI displays contains a section listing the expired entries. You cannot select these expired entries; they are displayed for your reference. If all entities in a metadata file are expired, no entities are displayed. In this case, you must upload a new document.

Select an Entity to Import

This procedure assumes that you have already selected a metadata file to create an entity. Select the entity from the file.

Follow these steps:

1. Specify a name for the new entity in the Select Entity Defined in File dialog.

   If you are doing a local import to create an entity, define the partnership name.

2. Click on the option button to select the entity.

   Note: Click Help for a description of fields, controls, and their respective requirements.

3. Click Next.

   The Import Certificates dialog displays if importing metadata for a remote entity and the document includes certificate data.

   If the metadata file that you imported contains certificate entries, you can import these entries.

Certificate Imports

To verify signed assertions, import certificates if the metadata includes them. If the metadata does not include certificates, skit this step and go to the Confirm step.

Follow these steps:

1. From the Import Certificates step, select the certificate entry or entries from the metadata file that you want to import.

   If you select a certificate file with invalid entries, the next dialog contains a section listing the expired entries. You cannot select these expired entries. They are displayed for your reference. If all entries in the file are invalid, the import wizard skips the certificate selection step.

   Specify a unique alias for each entry that you chose.

2. Click Next

   The Confirm dialog displays showing a table of entries.

   You can select two entries from a metadata file that have the same certificate. For SAML 1.1 metadata, every entry shows Signing as the usage for the certificate because SAML 1.1 does not encrypt data.

For SAML 2.0, each entry can show a different usage for the certificate, for example, one for signing, one for encryption. When you get to the Confirm step, the window shows a table with a single certificate entry. The certificate usage is listed as Signing and Encryption. This entry is the combination of the two entries you chose previously. This entry also uses the first alias that you specified for the certificate entry you selected.

This situation occurs only if the same certificate was listed in the metadata file for both uses. If the file contains two separate certificates, the confirmation step shows both entries in the table.

For example, you select two entries from the metadata file and you do not realize they are the same certificate. The first usage is Signing and you assign it the alias **cert1.** The second usage is Encryption and you assign it the alias **cert2**. When you confirm the import, you see a table titled Selected Certificate Data with an entry similar to the following entry:

Alias	Issued To	Usage
cert1	Jane Doe	Signing and Encryption

If no usage is specified in the metadata file, then the usage defaults to Signing and Encryption.

3. Click Next to finish the configuration.

Confirm the Entity Configuration

Review the entity configuration before saving it.

Follow these steps:

1. Review the settings in the entity dialog.
2. Click Back to modify any settings from this dialog.
3. Click Finish when you are satisfied with the configuration.

A new entity is configured.

Exporting a Local Entity

You can use metadata as a basis for creating remote entities and forming a partnership. Metadata makes partnership configuration more efficient because many aspects of an entity are already defined in the metadata file. The metadata file can be imported to create a partnership or remote entity.

In the Federation Manager UI, you can export metadata from an existing local asserting or relying entity. When you export SAML 1.1 data, the terms used in the resulting metadata file are SAML 2.0 terms. This convention adheres to the SAML specification. When you import the SAML 1.1 data, the terms are imported correctly using SAML 1.1 terminology.

Follow these steps:

1. Log in to the Federation Manager UI.
2. From the Federation tab, click Entities.

   The View Federation Entities dialog displays.
3. Click the Action pull-down menu next to any local entity in the list and select Export Metadata.

   The Export Metadata dialog opens.

   Note: When you export metadata from a local entity, you are asked to specify a new partnership name.
4. Complete the fields on the dialog.

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. Click Export to finish.
6. A dialog prompting you to open or save the metadata file displays.

   Only open it to view it.
7. Save the data to an XML file on your local system.

The metadata is exported to the specified XML file. You can send this file to any partner.

Chapter 6: Key and Certificate Management to Secure Federation Messages

This section contains the following topics:

Certificate and Private Key Usage by Federation Manager

Private keys and certificates are required for the following tasks:

- Signing, verification, encryption, and decryption of entire assertions, or specific assertion content.
- Back-channel authentication for artifact single sign-on. Federation Manager uses client certificates for this purpose.
- Establishing SSL connections using SSL server certificates.

Private key/certificate pairs and single certificates for federation functions are stored in the certificate data store (CDS). The certificate data store is collocated with the policy store. Federation Manager systems that share a common view into the same policy store have access to the same keys, certificates, certificate revocation lists (CRL), and OCSP responders.

Manage the contents of the certificate data store using the Administrative UI.

SSL server certificates are stored on the web server where they are installed. SSL server certificates are not stored in the certificate data store.

Aliases to Reference Certificate Data Store Content

Each key/certificate pair, client certificate, and trusted certificate in the certificate data store must have a unique alias. The alias is the reference to any private key/certificate pair or single certificate in the certificate store. The certificate data store holds multiple key/certificate pairs and single certificates. In a federated environment there are multiple partners. For multiple partners, you can use a different pair for each partner.

If a signing alias is configured for signing assertions, the assertion generator uses the key associated with alias to sign assertions. If no signing alias is configured, the assertion generator uses the key with the following alias to sign assertions:

```
defaultenterpriseprivatekey
```

If the assertion generator does not find a default enterprise private key, it uses the first private key in the store to sign assertions.

Important! If you are going to store multiple keys, define the first key that you add with the following alias before adding subsequent keys:

```
defaultenterpriseprivatekey
```

A given Policy Server signs or signs and verifies responses. Add keys and certificates for signing and validation to the same certificate data store.

The following types of key/certificate pairs and single certificates are stored in the certificate data store:

Function	Private Key/Cert Pair	Certificate (public key)	CA Certificates	Client Certificate
Signs assertions, authentication requests, SLO requests and responses	X			
Verifies signed assertions, authentication requests, and SLO requests/responses		X		
Encrypts assertions, Name ID and attributes (SAML 2.0 only)		X		
Decrypts assertions, Name ID and attributes (SAML 2.0)	X			
Serves as a credential for client certificate authentication of the artifact back channel				X
Validates other certificates and certificate revocation lists			X	
Use SSL connections to resolve web services variables			X	

Signing and Verification Operations

Federation Manager uses a private key/certificate pair for signing and verification tasks. The private key/certificate pair signs the assertion, the assertion response, or authentication request, depending on the transaction taking place. Before any signing transaction, the partner signing the assertion sends the certificate (public key) associated with the private key/certificate pair to the partner. This exchange is done as part of an out-of-band communication. The partner uses the certificate to verify the signature.

When a transaction occurs, the asserting party includes the certificate in the assertion, by default. During verification, however, the partner uses the certificate that it stores at its site to validate the signature.

For SAML 2.0 single logout, the side that initiates the logout signs the request, and the side receiving the request validates the signature. Conversely, the receiving side signs the SLO response and the initiator validates the response.

Encryption and Decryption Operations

For SAML 2.0, you can configure Federation Manager to encrypt an entire assertion, the NameID, or other attributes. If you enable encryption, the asserting party uses the certificate (public key) the relying party sends to encrypt data. Before any transaction, the relying party sends the certificate to the asserting party in an out-of-band exchange. The relying party uses the private key/certificate pair to decrypt the data.

Note: SAML 1.1 does not support encryption of assertion data.

Certificates for SSL Connections

Enable SSL for the artifact back channel to secure the SSL connection and make back-channel communication secure.

To establish the SSL connection, the relying party has to associate the CA certificate with the signed SSL server certificate. The SSL server certificate secures the SSL connection, while the CA certificate verifies that the SSL server certificate is trusted.

Certificates to Secure the Artifact Back Channel

To implement single sign-on using the artifact binding, the relying party sends a request for an assertion to Federation Manager at the asserting party. The assertion request goes to the Assertion Retrieval Service (SAML 1.1) or the Artifact Resolution Service (SAML 2.0). The retrieval service takes the artifact supplied by the relying party and uses it to retrieve the assertion. Federation Manager sends the response back to the relying party over a back channel. The back channel is a secured connection between the asserting and relying party. In contrast, web browser communication occurs over the front channel.

Secure the back channel and the retrieval service from unauthorized access using one of the following authentication methods:

- Basic
- Basic over SSL
- X.509 Client Certificate

  If you use X.509 client certificate as the authentication method, the relying party must provide a client certificate as its credential. This credential lets the replying party gain access to the service at the asserting party that retrieves the assertion.

Consider the following items when choosing an authentication method:

- Consider using an SSL connection for the back channel. Secure the SSL connection with an SSL server certificate signed by a trusted CA.

  A default set of common root and intermediate CA certificates are shipped with the certificate data store. To use another server certificate signed by a CA, import the CA certificate into the store as a trusted CA certificate.

  Federation uses an SSL-client when processing back channel requests. You can configure the web server at the asserting party to use SSL versions TLSV1_1 and TSLV1_2 with the following ciphers:

  - RSA_With_AES_128_CBC_SHA256
  - RSA_With_AES_256_CBC_SHA256

  These ciphers are supported in both FIPS and non-FIPS mode. The determination whether to use SHA256 is made on the SP server side. Federation has no configuration for selecting the algorithm. Administrators must verify that the server at the asserting party is configured appropriately.

- If an X.509 client certificate is required to establish a connection, the relying party must have the key/certificate pair or client certificate authentication fails. Verify that the client certificate exists in the certificate data store at the asserting party. When the relying party sends the request for the assertion, the client certificate serves as the relying party credentials to access the retrieval service.

Obtain a Key/Certificate Pair for Federated Transactions

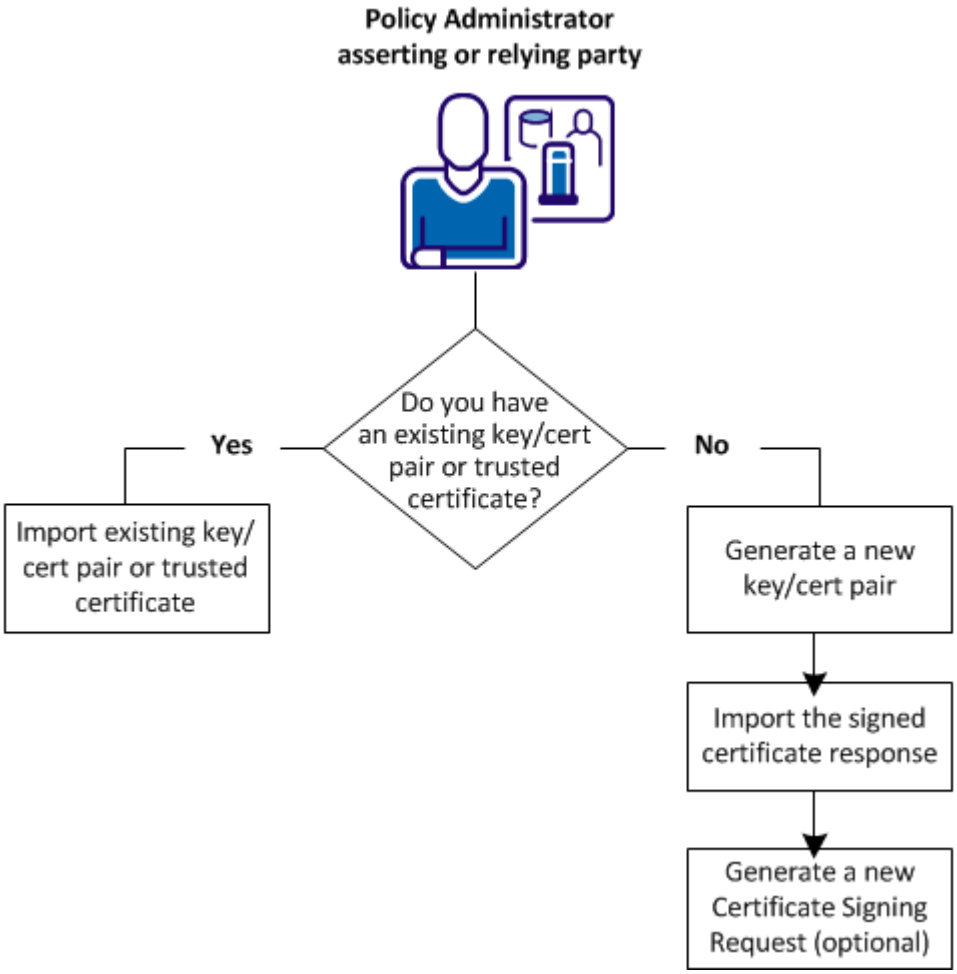
Federation Manager uses a key/certificate pair and trusted certificates for a number of functions. For Federation Manager to perform tasks that use keys and certificates, these items must be in the certificate data store.

If you do not have a key/certificate pair in the certificate data store, you have two options:

- Import a key/certificate pair from an existing file (.p12 or .pfx).
- Generate a key/certificate pair.

  To generate a new key/certificate pair, request a certificate from a trusted Certificate Authority and then import the signed certificate response that the authority returns.

The following figure shows the steps for each method of obtaining a key/certificate pair or trusted certificate.



Import a Key/Certificate Pair from an Existing File

If you do not have a key/certificate pair in the certificate data store, import one from an existing .p12 or .pfx file.

Federation Manager treats a certificate that you import as a trusted certificate. The exceptions are self-signed certificates:

- If Federation Manager identifies a V3 self-signed certificate as a CA certificate, Federation Manager treats it as a CA certificate. This behavior occurs even though you initiate the import from the Certificate/Private Key dialog.
- Federation Manager treats the certificate as a trusted certificate:
  - If Federation Manager does not identify a V3 self–signed certificate as a CA.
  - If the certificate is a V1 self–signed certificate.

Follow these steps:

1. Log in to the Administrative UI.
2. From the Certs & Keys tab, select Certificates and Private Keys.

   The View Certificates and Private Keys dialog opens.
3. Click Import New and follow the wizard.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Be aware of the following items as you complete the wizard:

   - You can import a single file with a key and certificate in it or separate key and certificate files. Select the appropriate radio button for the file you are using.
   - For a trusted certificate file in DER (binary) format, the file can contain one or more certificate entries. For a trusted certificate file in PEM (base 64) format, Federation Manager expects one certificate per file.

     The standard extension for a file in DER or PEM format is *.crt or *.cer.
   - If you are using a .p12 file, you are required to fill in a password. Federation Manager processes a .p12 or .pfx file as a file containing key/certificate pairs.
   - For each entry you plan to add to the certificate data store, enter the alias you want to associate with that entry. If you select multiple entries, each requires a unique alias.
4. At the Confirm step, review the information and click Finish.

The key/certificate pair is imported into the certificate data store.

How to Generate a Key/Certificate Pair

If you do not have a key/certificate pair in the certificate data store, you can generate a new key/certificate pair.

Perform the following steps:

1. Generate a certificate request and send the request to a trusted Certificate Authority.
2. Import the signed certificate response from the authority.

Generate a Certificate Request

If you do not have a key/certificate pair in the certificate data store, request one from a trusted Certificate Authority. When the CA returns a signed certificate response, import it into the certificate data store.

When you generate a certificate request, Federation Manager generates a private key and a self–signed certificate pair. Federation Manager stores this pair in the certificate data store. Using the generated request, contact a Certificate Authority and fill out the CA certificate request form, pasting the contents of the generated request into the form.

The CA issues a signed certificate response, usually in PKCS #7 format. You can import the signed certificate response into the certificate data store. After the signed certificate response is imported, the existing self–signed certificate entry of the same alias is replaced.

Follow these steps:

1. Log in to the Administrative UI.
2. From the Certs & Keys tab, select Certificate and Private Keys.

   The View Certificates and Private Keys dialog opens.
3. Click Request Certificate.

   The Request Certificate dialog opens.
4. Complete the required fields.

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. Click Save.

A file that conforms to the PKCS #10 specification is generated.

The browser prompts you to save or open the file, which contains the certificate request. If you do not save this file (or open it and extract the text), Federation Manager still generates the private key and self–signed certificate pair. Generate a new certificate signing request, using the Generate CSR feature, to get a new request file for the private key.

Import a Signed Certificate Response

After completing a certificate request and sending it to the Certificate Authority, the Certificate Authority issues a signed certificate response.

Import the signed certificate into the certificate data store to replace the existing self-signed certificate entry of the same alias.

Follow these steps:

1. From the Certs & Keys tab, select Certificate and Private Keys.

   The View Certificates and Private Keys dialog opens.

2. Search for the self-signed entry with the same alias.

3. Select Action, Update Certificate next to the entry that contains the self-signed certificate.

   The wizard for importing certificates and keys displays.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Browse to the file you want. You can use a:

   - .p7 or .p7b file that contains the signed certificate and the corresponding certificate chain.
   - .cer or .crt file (base64 PEM file) with the signed certificate without the certificate chain.

5. Select the appropriate entry.

6. At the Confirm step, review the certificate information and click Finish.

The signed certificate is imported into the certificate data store and the self-signed certificate is replaced.

Generate a New Certificate Signing Request

A certificate signing request (CSR) is a message that you send to a Certificate Authority to apply for a identity certificate. Before you can generate a CSR, Federation Manager has to generate a key/certificate pair. The certificate is then placed in the CSR.

Generate a new request for an existing private key because:

- You no longer have the original request that Federation Manager generated for the private key/self-signed certificate pair.
- You need a new certificate for an expiring one, which requires a new copy of a CSR to submit to a Certificate Authority.

You can generate a new CSR for a self-signed or CA-signed private key/certificate pair. The private key always generates an identical CSR without modifying the existing private key.

Follow these steps:

1. From the Certs & Keys tab, select Certificate and Private Keys.

   The Certificate and Private Key List displays.

2. Select Action, Generate CSR for the private key entry for which you want a new CSR.

   A file that conforms to the PKCS #10 specification is generated and Federation Manager prompts you to save the CSR.

3. Click Save.

4. (Optional) If you require a CA-signed certificate, contact a Certificate Authority and follow the procedure the Certificate Authority requires for submitting a request. Use the PKCS#10 file you saved in the previous step for the request.

After you complete the certificate request process, the Certificate Authority issues a signed certificate response that you import into the certificate data store. Federation Manager replaces the existing certificate entry of the same alias with the newly imported certificate.

How to Verify that Certificates are Valid Using CRLs

A Certificate Revocation List (CRL) is issued by a Certificate Authority to its subscribers. The list contains serial numbers of certificates that are invalid or have been revoked. When a request to access a server is received, the server allows or denies access based on the CRL.

Federation Manager can leverage CRLs for its certificate functions. For Federation Manager to use a CRL, the certificate data store must point to a current CRL. If Federation Manager tries using a revoked partner certificate, you see an error message. For legacy federation, the error message is in the SAML assertion. The message indicates that authentication failed.

Federation Manager supports the following CRL features:

- File-based CRLs or LDAP CRLs

  Federation Manager stores CRLs in the certificate data store. File-based CRLs must be in Base64 or binary encoding. LDAP CRLs must be in binary encoding. Additionally, LDAP CRLs must include CRL data in one of the following attributes:

  - certificateRevocationList;binary
  - authorityRevocationList;binary

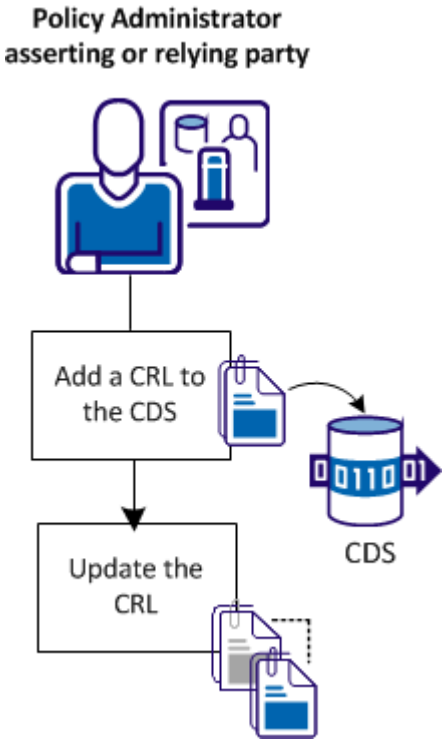
  When a Certificate Authority publishes an LDAP CRL, it must return the CRL data in binary format, in accordance with RFC4522 and RFC4523. Otherwise, Federation Manager cannot use it.

- PEM and DER encoding formats for a file CRL
- DER encoding format for an LDAP CRL

Federation Manager does not validate an SSL server certificate against a CRL. The web server where Federation Manager is installed manages the SSL server certificate.

You are not required to have a CRL for each root CA in the system. If there is no CRL for the root CA, Federation Manager assumes that all certificates signed by that CA are trusted certificates.

The following figure shows the procedures for managing CRLs.



The CRL configuration steps are as follows:

1. Add a CRL to the CDS. (see page 119)
2. Update a CRL (see page 120).

Add a CRL to the CDS

Ensure that only valid certificates are being used for federation-related PKI functions by using CRLs against which certificates can be checked.

Important! Federation Manager explicitly requests LDAP CRLs in binary transfer encoding, using the certificateRevocationList;binary LDAP attribute. This means that the CRL data must be stored in this attribute. 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.

For Federation Manager to use a CRL, specify the CRL location.

Follow these steps:

1. Go to the Certs and Keys tab.
2. Select the Revocation Lists (CRL).

   The list of available CRL locations is displayed.
3. Click Add.

   The Add Certificate Revocation List is displayed.

   Note: You can click Help for a description of fields, controls, and their respective requirements.
4. Specify an alias for the issuer of the CRL and the location (URL) of the certificate revocation list.

   The location has to be a file path for a file CRL and an LDAP search path for an LDAP CRL.
5. Click Save.

The CRL is now added to the certificate data store.

Update a CRL

Update a CRL to verify that the certificate data in use is current.

Follow these steps:

1. Log in to the Administrative UI.
2. Select the Certs and Keys tab.
3. Select CDS Settings.

   The Certificate Settings dialog displays.
4. Complete one of the following steps
   - If a stored CRL file does not contain a NextUpdate value, set the CRL Update Period to specify the frequency that the next CRL is issued.
   - To change the frequency at which the udpater checks for updates, modify the CRL Updater Sleep Period.

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. In the CRL Updater section, select Enabled in the CRL Updater State field.
6. Click Save.

Manage Certificate Cache Refresh and Grace Period

You can complete two other tasks to manage certificate validity checking (CRL or OCSP):

- Modify the certificate cache refresh to improve performance

  The certificate cache refresh period indicates how often the certificate data store updates the certificate data in the policy store. Certificate data is cached in memory to improve SiteMinder performance. Refresh the information in memory so that the data is current.

- Modify the default revocation grace period

  The default revocation grace period is the delay from when a certificate is revoked and the time the certificate becomes invalid. During the grace period, the system can use a revoked certificate before it becomes invalid. After the certificate becomes invalid, it is no longer active and Federation Manager cannot use it.

  If you do not specify a value for the CRL or OCSP responder grace period when adding these components, Federation Manager uses the default grace period. The individual grace period settings for a CRL or OCSP take precedence over this default grace period value.

Follow these steps:

1. Log in to the Administrative UI.
2. Select the Certs and Keys tab.
3. Select CDS Settings.

   The Certificate Settings dialog displays.
4. You can modify the following settings:
   - Certificate Cache Refresh Period
   - Revocation Grace Period
   - LDAP Access Timeout

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. Click Save.

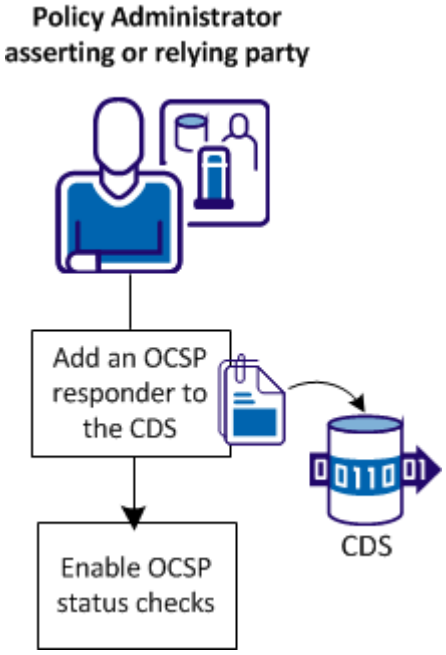
How to Verify that Certificates are Valid using OCSP

Specific federation tasks require validation for certificates in the certificate data store. These tasks include protecting the HTTP-Artifact back channel, verifying SAML messages, and encrypting SAML messages.

To check the validity of certificates, the certificate data store can use an OCSP service. OCSP uses an HTTP service that is provided by a Certificate Authority (CA) to supply the certificate revocation status on demand.

By default, Federation Manager does not check the revocation status of a certificate in the certificate data store. To check the revocation status through an OCSP responder, enable OCSP through the Administrative UI. When enabled, the OCSP service checks the revocation status for configured OCSP responders every 5 minutes. This default frequency is configurable.

The following figure shows the OCSP configuration steps:



The configuration process is as follows:

1. Add an OCSP responder to the CDS. (see page 123)
2. Enable OCSP status checking. (see page 124)

OCSP Prerequisites

Set up the following components to use OCSP for certificate validation:

- Set up an OCSP responder.
- Store an OCSP trusted responder certificate in the certificate data store. The responder certificate validates the signature of an OCSP response returned to Federation Manager. This certificate is a single trusted verification certificate or a collection of certificates.

  Obtain these certificates from your CA in a communication that is separate from an OCSP transaction.

  Federation Manager can work with any OCSP response that is signed using SHA-1 and the SHA-2 family of algorithms (SHA224, SHA256, SHA384, SHA512).

  The OCSP responder can include the signature verification certificate with the response. Federation Manager then validates the certificate and the response signature with the trusted certificate in the certificate data store.

  If a signature verification certificate is not in the response, Federation Manager verifies the signature with the certificate or collection of certificates in the certificate data store.

  You configure OCSP in the Administrative UI and are required to specify the location of the certificate or the collection of certificates.
- Store the CA certificate that issued the user certificate in certificate data store. This CA certificate validates the user certificate.
- (Optional) Store the private key/certificate pair that Federation Manager uses to sign the OCSP request is in the certificate data store.

Add an OCSP Responder to the CDS

Add an OCSP responder record to the certificate data store for each responder with which Federation Manager interacts.

Follow these steps:

1. Log in to the Administrative UI.
2. Navigate to the Certs and Keys tab.
3. Select the OCSP Configuration option.

   The OCSP Configuration List displays.

4. Click Add.
5. Complete the fields to add an OCSP responder configuration.

   Note: Click Help for a description of fields, controls, and their respective requirements.
6. Click Save.
7. Repeat this process for each OCSP responders you want to configure.

An OCSP responder record is now in the certificate data store.

Enable OCSP Status Checks

Add an OCSP responder record to the certificate data store for each responder with which Federation Manager interacts.

Follow these steps:

1. Log in to the Administrative UI.
2. Navigate to the Certs and Keys tab.
3. Select the CDS Settings option.

   The CDS Configuration List displays.
4. In the OCSP Updater section, select Enabled for the OCSP Updater State field.
5. Click Save.

OCSP status checks are enabled.

Manage Certificate Cache Refresh and Grace Period

You can complete two other tasks to manage certificate validity checking (CRL or OCSP):

- Modify the certificate cache refresh to improve performance

  The certificate cache refresh period indicates how often the certificate data store updates the certificate data in the policy store. Certificate data is cached in memory to improve SiteMinder performance. Refresh the information in memory so that the data is current.

- Modify the default revocation grace period

  The default revocation grace period is the delay from when a certificate is revoked and the time the certificate becomes invalid. During the grace period, the system can use a revoked certificate before it becomes invalid. After the certificate becomes invalid, it is no longer active and Federation Manager cannot use it.

  If you do not specify a value for the CRL or OCSP responder grace period when adding these components, Federation Manager uses the default grace period. The individual grace period settings for a CRL or OCSP take precedence over this default grace period value.

Follow these steps:

1. Log in to the Administrative UI.
2. Select the Certs and Keys tab.
3. Select CDS Settings.

   The Certificate Settings dialog displays.
4. You can modify the following settings:
   - Certificate Cache Refresh Period
   - Revocation Grace Period
   - LDAP Access Timeout

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. Click Save.

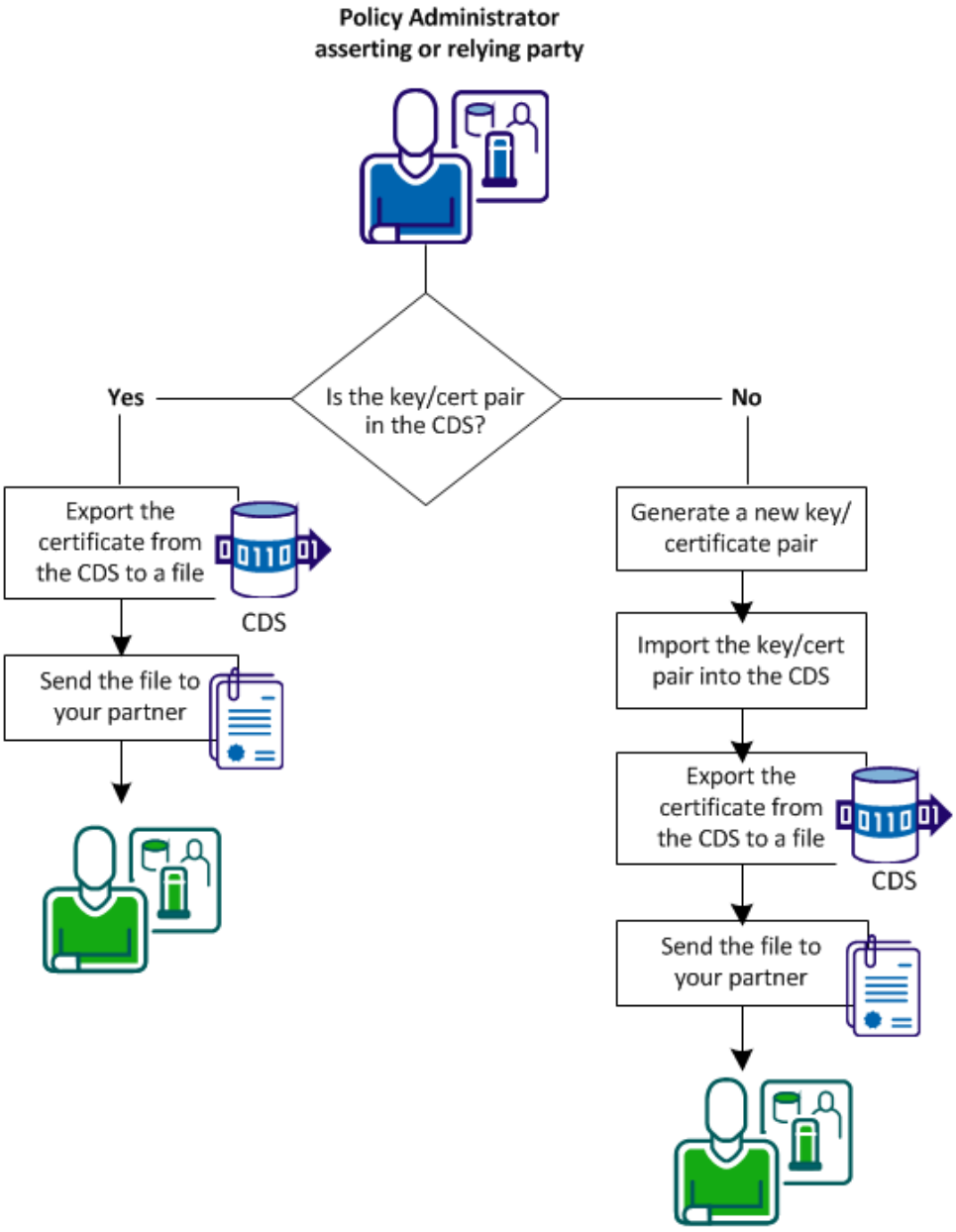
How to Send Certificates to Your Partner

The partner that signs a message has to send the associated certificate (public key) to the other partner so that partner can verify the message.

The partner that encrypts a message has to receive the certificate (public key) to from the partner expected to decrypt the message.

The procedure for sending the required certificate file to a partner depends on whether the key/certificate pair is already in the CDS.

The following figure shows the steps for sharing certificate files.



Follow these steps:

1. Generate a new key/certificate pair (see page 127).
2. Import the key/certificate pair into the CDS (see page 128).
3. Export the certificate from the CDS to a file (see page 130).
4. Send the certificate file to your partner. (see page 130)

Generate a New Key/Certificate Pair Using the UI or a Third-party Tool

If you do not have a key/certificate pair in the certificate data store, request one from a trusted Certificate Authority. When the CA returns a signed certificate response, import it into the certificate data store.

Generate a certificate request using the Federation Manager UI or using a third-party tool.

When you create a request using the Administrative UI, Federation Manager generates a private key and a self–signed certificate pair. Federation Manager stores this pair in the certificate data store. Using the generated request, contact a Certificate Authority and fill out the CA certificate request form, pasting the contents of the generated request into the form.

The CA issues a signed certificate response, usually in PKCS #7 format. You can import the signed certificate response into the certificate data store. After the signed certificate response is imported, the existing self–signed certificate entry of the same alias is replaced.

Follow these steps:

1. Log in to the Administrative UI.
2. From the Certs & Keys tab, select Certificate and Private Keys.

   The View Certificates and Private Keys dialog opens.
3. Click Request Certificate.

   The Request Certificate dialog opens.
4. Complete the required fields.

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. Click Save.

A file that conforms to the PKCS #10 specification is generated.

The browser prompts you to save or open the file, which contains the certificate request. If you do not save this file (or open it and extract the text), Federation Manager still generates the private key and self–signed certificate pair. Generate a new certificate signing request, using the Generate CSR feature, to get a new request file for the private key.

Import the Key/Cert Pair into the CDS

The procedure for importing the key/certificate pair varies. Refer to the appropriate procedure:

- Import a key/cert pair from an existing file (see page 114).

  You have a local file on your system.

- Import a signed certification response (see page 116).

  If you generated a key/certificate pair from the Administrative UI, import the certificate from the signed response sent by the Certificate Authority.

Import a Key/Certificate Pair from an Existing File

If you do not have a key/certificate pair in the certificate data store, import one from an existing .p12 or .pfx file.

Federation Manager treats a certificate that you import as a trusted certificate. The exceptions are self-signed certificates:

- If Federation Manager identifies a V3 self-signed certificate as a CA certificate, Federation Manager treats it as a CA certificate. This behavior occurs even though you initiate the import from the Certificate/Private Key dialog.
- Federation Manager treats the certificate as a trusted certificate:
  - If Federation Manager does not identify a V3 self–signed certificate as a CA.
  - If the certificate is a V1 self–signed certificate.

Follow these steps:

1. Log in to the Administrative UI.
2. From the Certs & Keys tab, select Certificates and Private Keys.

   The View Certificates and Private Keys dialog opens.
3. Click Import New and follow the wizard.

   Note: You can click Help for a description of fields, controls, and their respective requirements.

   Be aware of the following items as you complete the wizard:

   - You can import a single file with a key and certificate in it or separate key and certificate files. Select the appropriate radio button for the file you are using.
   - For a trusted certificate file in DER (binary) format, the file can contain one or more certificate entries. For a trusted certificate file in PEM (base 64) format, Federation Manager expects one certificate per file.

     The standard extension for a file in DER or PEM format is *.crt or *.cer.

- If you are using a .p12 file, you are required to fill in a password. Federation Manager processes a .p12 or .pfx file as a file containing key/certificate pairs.
- For each entry you plan to add to the certificate data store, enter the alias you want to associate with that entry. If you select multiple entries, each requires a unique alias.

4. At the Confirm step, review the information and click Finish.

The key/certificate pair is imported into the certificate data store.

Import a Signed Certificate Response

After completing a certificate request and sending it to the Certificate Authority, the Certificate Authority issues a signed certificate response.

Import the signed certificate into the certificate data store to replace the existing self-signed certificate entry of the same alias.

Follow these steps:

1. From the Certs & Keys tab, select Certificate and Private Keys.

   The View Certificates and Private Keys dialog opens.

2. Search for the self-signed entry with the same alias.
3. Select Action, Update Certificate next to the entry that contains the self-signed certificate.

   The wizard for importing certificates and keys displays.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Browse to the file you want. You can use a:
   - .p7 or .p7b file that contains the signed certificate and the corresponding certificate chain.
   - .cer or .crt file (base64 PEM file) with the signed certificate without the certificate chain.
5. Select the appropriate entry.
6. At the Confirm step, review the certificate information and click Finish.

The signed certificate is imported into the certificate data store and the self-signed certificate is replaced.

Export Certificates from the CDS using the Administrative UI

You can export a private key/certificate pair to a file and send the certificate file (public key) to your federation partner. The partner can use the certificate to verify the signature of assertion responses created with the associated private key or encrypt a response to be decrypted with the associated private key.

Important! If you export the private key as part of a backup, never share it with anyone else.

Follow these steps:

1. Log in to the Administrative UI.
2. From the Certs & Keys tab, select Certificates and Private keys.

   The View Certificates and Private Key window displays.
3. Select Action, Export for the entry in the Certificate and Private Key List you want to export.

   The Export Key Store Entry dialog displays.
4. Select the format of the file you want to create from the exported data.

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. Select the file format.
6. Click Export.

   You are prompted to open or save the file on the local system.

   Federation Manager generates the encoded file content representing the key or certificate.
7. Send the file to your partner (see page 130).

Send the Certificate File to your Partner

After exporting the encoded file with the certificate, send this file to your federation partner. Your partner has to import this certificate to handle verification or encryption of federation messages.

Update Certificates in the Certificate Data Store

You can update key/certificate pairs and standalone certificates in the following ways:

- Update an expiring trusted certificate by deleting the existing certificate and importing a new trusted certificate. The new certificate must match the expiring certificate in the certificate data store.
- Update the certificate by importing a signed trusted certificate or a PKCS7-signed response. The new certificate must match the expiring certificate in the certificate data store.
- Update a certificate with a certificate from a PKCS#12 file. The new private key and certificate pair must match the expiring key/certificate pair in the certificate data store.

The new certificate must be valid before Federation Manager can use it to update an expiring certificate. Certificates are updated and become available immediately after they are imported. If the new certificate is not valid, as determined by its validity interval, Federation Manager cannot use the new certificate.

To import only a trusted certificate, use a certificate file that has a PEM or DER encoding. The standard extension for files of these types is *.crt or *.cer. If the file ends in .p12 or .pfx, it is processed as a certificate data store file containing key/certificate pairs. Finally, if a file ends in .p7 or .p7b, it is processed as a signed response file. Anything else is treated as a certificate file, and Federation Manager tries to load a certificate from it.

Note: If you update certificates for a federated environment, you do not have to update any federation objects using the expiring certificates.

CA Certificate Usage

The federation system uses Certificate Authority certificates to verify the following items:

- Whether an SSL server certificate for an SSL connection that secures the artifact back channel is trusted.
- For artifact single sign-on, secure the back channel with an SSL connection. The embedded web server for the federation system can verify that the SSL connection is secured by a trusted certificate by validating the certificate of the Certificate Authority. This certificate must be stored in the certificate data store.
- Whether a certificate revocation list is valid.

  CRLs are acquired from a Certificate Authority. The certificate of the corresponding CA is required to validate the CRL before it can be trusted. The CRL is stored in the data store for use at runtime.

A default set of common root and intermediate CA certificates are shipped with the product for these purposes.

Import a CA Certificate

A set of common root and intermediate CAs are included with the product. To use CA certificates that are not in the certificate data store, import them.

Any certificate that you import is treated as a CA certificate. The exceptions are self-signed certificates:

- If the system identifies a V3 self-signed certificate as a non-CA certificate, the certificate is treated as a trusted certificate. This behavior occurs even though you initiated the import from the Import CA Certificate dialog.
- If the system identifies a V1 self-signed certificate, the certificate is treated as a CA certificate.

Note: If you are importing a root CA certificate, import all root CA certificates in the chain if they are part of a trust chain.

To import a CA certificate

1. Log in to the Administrative UI.
2. Select Certs & Keys, Authorities.

   The Certificate Authorities List displays.
3. Click Import New.

   The Import CA Certificate dialog displays.

   Note: Click Help for a description of fields, controls, and their respective requirements.
4. Follow the wizard to import a new entry.
5. At the Confirm step, review the certificate information and click Finish.

The CA certificate is imported into the certificate data store. The change takes place directly after the import is complete.

Important! You cannot delete a CA certificate that is part of a trust chain for other certificates in use on the system. If you try to delete a CA certificate in use, an error message states that the certificate cannot be deleted.

Troubleshoot Certificate Signature Verification for Back Channel Communication

Symptom:

HTTP-Artifact is the profile in use for single sign-on. The asserting party is communicating to the relying party over an SSL back channel. The relying party must verify the signature of the server certificate at the asserting party to communicate over the SSL back channel.

The following error is logged for a failure to verify the signature of the server certificate:

```
[Dispatcher object thrown unknown exception while processing the
request message. Message: Certificate not verified..]
```

Solution:

The relying party must import the root CA certificate into the certificate data store. This certificate is required to verify the signature of the server certificate at the asserting party. For verification, import the root CA that signed the server certificate.

Verify the following information about the CA certificate that is imported for verification:

- Does the root CA certificate have the same issuer and subject DN? If not, the certificate is an intermediary root CA. Import all root CA certificates in the trusted chain.
- Check that the issuer of the asserting party server certificate matches the subject and issuer of the root CA you have imported.

Chapter 7: Federation Partnerships

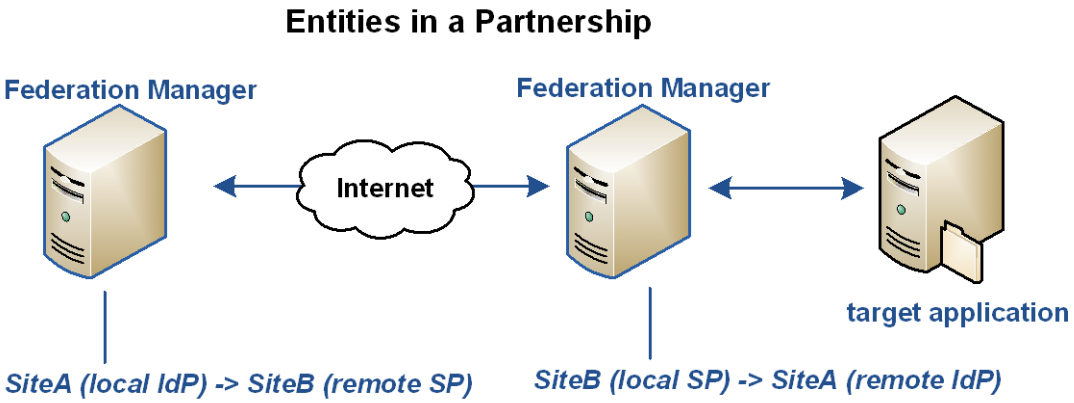
This section contains the following topics:

Partnership Creation

The main purpose of Federation Manager is to establish a partnership between two organizations so they can share user identity information and can facilitate single sign-on (SSO). A partnership consists of two entities at different sites—one local and one remote. Either entity can assume the role of the asserting party, the side which produces assertions or the relying party, the side which consumes assertions.

If Federation Manager is installed at both sites, each site must define a partnership. For each local asserting party-to-relying party partnership at one site, there has to be a reciprocal local relying party-to-asserting party partnership at the partner site. The two definitions define a single partnership.

In the following figure, SiteA has been configured as the local SAML 2.0 IdP and has specified SiteB as the remote SAML 2.0 SP. SiteB has been configured as the local SAML 2.0 SP, and SiteA is its remote SAML 2.0 IdP.



Note: An asserting party can have partnerships with more than one relying party and a relying party can establish partnerships with more than one asserting party.

Creating a federation partnership consists of the following steps:

1. Specify the partnership type.
2. Configure the following partnership details:
    a. Partnership name and the participating entities
    b. Federation users (local asserting party only)
    c. Name ID format and other assertion attributes (local asserting party only)
    d. User identification (local relying party only)
    e. Single sign-on (SSO)
    f. Single logout (SLO) – SAML 2.0 only
    g. Signing
    h. Encryption – SAML 2.0 only

Partnership Definition

The federation partnership definition specifies which federation role is local, and which federation role is remote.

Follow these steps:

1. Log in to the Federation Manager UI.
2. From the Federation tab, select Partnerships.

   The View Federation Partnerships dialog is displayed.
3. Click Create Partnership in the Federation Partnership List section.

   Note: Click Help for a description of fields, controls, and their respective requirements.
4. Select one of the following options:
   - SAML2 IDP->SP (Identity Provider is local).
   - SAML2 SP->IDP (Service Provider is local).
   - SAML1.1 Producer ->Consumer (Producer is local).
   - SAML1.1 Consumer ->Producer (Consumer is local).

The Create Federation Partnership dialog displays the first step in partnership configuration.

Partnership Identification

After you have selected the partnership type, specify the partnership name and identify the local and remote entities.

Note: Click Help for a description of fields, controls, and their respective requirements.

Follow these steps:

1. Type the name of the partnership. You can use alphanumeric characters, underscores, hyphens, and periods in the name. Spaces are not allowed.
2. (Optional) Type a description.
3. Select a local entity from the local list if you have already configured an entity. If not, click Create Local Entity.
4. Select the remote entity from the remote list if you have already configured an entity. If not, click Create Remote Entity.

   Note: This step can be deferred if you are planning to create the remote entity by importing metadata at a later time.

5. (Optional) Enter the Skew Time in seconds.

   The skew time is the difference between the system time on the local system and the system time on the remote system. Usually, the inaccuracy of system clocks causes this condition. Determine the skew time number by subtracting the number of seconds from the current time.

   SiteMinder uses the skew time and the SSO validity duration to determine how long an assertion is valid.

6. Select one or more user directories from the Available Directories list and move them to the Selected Directories list.

   If you configure only one user directory, that directory is automatically placed in the Selected Directories list.

7. (Optional) Specify time and IP address restrictions for the partnership.

8. Click Next to move to the next step.

   - If the local entity is the asserting party (Producer or IdP), the next step is defining Federation Users.
   - If the local entity is the relying party (Consumer or SP), the next step is to configure User Identification.

Note: If you are editing a partnership, you can click Get Updates next to this field to update the entity information. The latest information from the entity configuration is propagated to the partnership. However, if you edit the entity information directly from the partnership, the changes do not get propagated back to the individual entity configuration.

More information:

Assertion Validity for Single Sign-on (see page 154)

Modifying Entities from the Partnership

You can click Get Updates next to the local and remote entity fields to update information about the entity. When you select Get Updates, Federation Manager asks if you want to pull in the latest information from the entity.

After confirmation, the partnership you are editing is refreshed with the latest entity information. Changes are saved when you complete the Partnership wizard. Confirm the update, or no change is made to the partnership.

The Entity Name identifies an entity object for in the Federation Manager database. The Entity Name must be the unique identifier because this value is what Federation Manager uses internally to distinguish an entity. This value is not used externally and the remote partner is not aware of this value.

If the Entity ID represents a remote partner, the value must be unique. If the Entity ID represents a local partner, it can be reused on the same system.

Note: The Entity Name can be the same value as the Entity ID, but the value must then not be shared with any other entity.

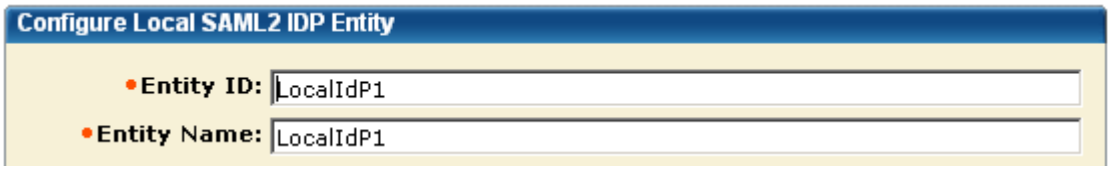
An entity is a key component of a federation partnership. Changing an entity alters the partnership significantly; therefore, the Federation Manager UI does not let you replace an entity after it is in a partnership. To replace an entity, create a partnership.

To provide some flexibility within partnership configuration, you can change an entity ID because it does not identify the entity uniquely. Changing the entity ID at the partnership level does not link the partnership to another entity. The original entity in the partnership does not change. Modifications to an entity are a one-way propagation from the entity to the partnership. A change to the entity ID at the partnership does not get propagated back to the original entity.

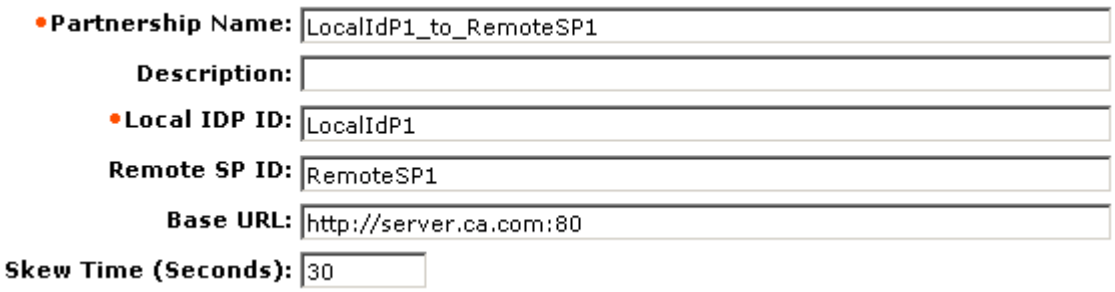
Regard entity configurations as templates. Partnerships are created based on the entity templates so changing the partnership does not change the original entity template.

Example:

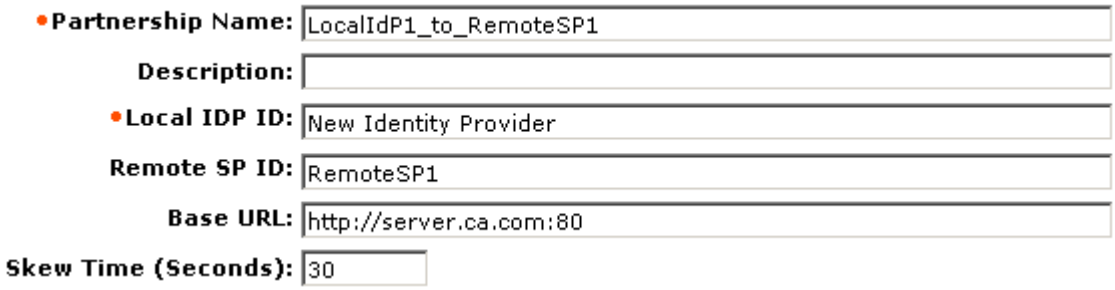
The following figure shows an entity configuration with an Entity ID of LocalIdP1.



The following figure shows a partnership that uses entity LocalIdP1.



You change the Local IDP ID value to New Identity Provider in the partnership, as shown in the following figure. However, the value in the Entity ID field for the entity configuration remains LocalIdP1, as in the previous figure.



Federation Users Configuration at the Asserting Party

The Federation Users dialog is the second step in the partnership wizard when the local entity is the asserting party. This step lets you specify which users are authorized to access target resources at the remote site. Additionally, you can enable the SiteMinder Connector for Federation Manager integration with SiteMinder.

The SiteMinder Connector is a software component that enables a deployed SiteMinder system to integrate with Federation Manager. If Federation Manager is at the asserting party, the SiteMinder Connector can create a Federation Manager session from a SiteMinder session. To establish the SiteMinder session, SiteMinder authenticates the user first and then the user visits the asserting party.

You can enable the SiteMinder Connector on a per-partnership basis; however, only one global connector configuration applies to all partnerships. The connector is available only when the check box in the Deployment Settings is selected and a configuration is defined. You access the Deployment Settings from the Infrastructure tab in the UI. After enabling the Connector globally, Federation Manager evaluates the partnership configuration to determine whether the Connector is enabled. The partnership uses the global Connector configuration.

To disable the Connector for the partnership, clear the check box at the partnership level. To disable the Connector globally, disable it in the Deployment Settings.

Important! If the Connector is disabled at the global level, Federation Manager ignores the check box at the partnership level.

Configure Federation Users

Federation users are those users allowed to access protected federated resources.

To specify federation users

Note: Click Help for a description of fields, controls, and their respective requirements.

1. Select a user directory from the list in the Directory column of the table of the Federated Users group box.

   The pull-down list consists of one or more directory entries, depending on the number of directories you specified in the previous dialog.

2. Select the user class in the User Class column.

3. Specify a user name or create a filter for the User Name/Filter By column.

4. (Optional) You can select Exclude for an entry to indicate that you want to exclude this user class. The default is to include all users in the directory.

   Note: An exclude criteria always takes precedence over an include criteria in case the two criteria conflict.

5. (Optional) Click Add Row to specify an additional user class for the same directory or another user directory.

6. (Optional) Configure the SiteMinder Connector settings:

   a. If Federation Manager is integrating with an existing SiteMinder deployment, enable the SiteMinder Connector by selecting the check box.

   b. (Optional) Clear the Enforce UserDN and Directory Name Comparison so that the Federation Manager or SiteMinder uses a Universal ID to retrieve a user record. The Universal ID enables the user directories to be physically different and of different types. Use of the Universal ID is sufficient to regard the retrieved user record as the correct record.

      Note: If you rely on the Universal ID, each user must have a unique Universal ID. If the Universal IDs are not unique, the system accessing the user record can retrieve the wrong record.

      If you leave the check box selected (the default), Federation Manager and SiteMinder must use the same physical directory. The name for both of these directories must be the same for user store lookups. The entity authenticating the user compares the information that the user provides against the UserDN and the Directory Name of the user record.

7. Click Next.

   The Assertion Configuration dialog displays.

User Identification (Relying Party)

Part of the relying party configuration requires that you specify a method by which Federation Manager locates a user in the local user directory. Locating the user in the user directory is the process of disambiguation. You configure the identity attribute for user disambiguation in the User Identification dialog.

Federation Manager can employ one of the following methods for the disambiguation process:

- Extract the Name ID value from the assertion.
- Use the value of a specific attribute from the assertion.
- Use the value obtained by an Xpath query.

  The Xpath query locates and extracts an attribute other than the Name ID from the assertion.

After determining which attribute is extracted from the assertion, you include this attribute in a search specification, which Federation Manager uses to locate a user in the user store. After a successful disambiguation process, Federation Manager generates a session for the user.

In the User Identification dialog you can also configure the SAML 2.0 Allow/Create feature, which lets an asserting party create a user identifier at the request of the relying party.

Single sign-on can be initiated by the relying party sending an authentication request (AuthnRequest) to the asserting party. In this request, the relying party can ask that the asserting party include a particular user attribute in the assertion. However, the value of the required attribute may not be available in the asserting party user record.

If the authentication request from the relying party includes the Allow/Create attribute and the asserting party is configured to create a new identifier, the asserting party generates a unique value as the NameID. This value is placed in the assertion and sent back to the relying party.

In the User Identification dialog, you can also enable the SiteMinder Connector.

The SiteMinder Connector is a software component included with Federation Manager. It enables a deployed SiteMinder system to integrate with Federation Manager. If you integrate SiteMinder and Federation Manager at a relying party, SiteMinder does not rechallenge users authenticated by Federation Manager when they request SiteMinder-protected resources. There is no authentication rechallenge because the Connector and a custom SiteMinder authentication scheme at the Policy Server enable the creation of a SiteMinder session for users authenticated by Federation Manager.

You can enable the SiteMinder Connector on a per-partnership basis; however, only one global SiteMinder Connector configuration applies to all partnerships. The Connector is available only when the check box in the Deployment Settings is selected and a configuration is defined. You access the Deployment Settings from the Infrastructure tab in the UI. After enabling the Connector globally, Federation Manager evaluates the partnership configuration to determine whether the connector is enabled. The partnership uses the global Connector configuration.

To disable the Connector for the partnership, clear the check box at the partnership level. To disable the Connector globally, disable it in the Deployment Settings.

Important! If the Connector is disabled at the global level, Federation Manager ignores the check box at the partnership level.

Configure User Identification

Identify the attribute for user disambiguation in the User Identification dialog.

Note: Click Help for a description of fields, controls, and their respective requirements.

To configure user identification at the relying party

1. Select one of the following attributes:
   - Name ID
   - An attribute from a previously populated drop-down list

     If the remote asserting entity was created based on metadata that contained attributes, the list is populated.
   - An attribute you enter

     This option is most likely used when metadata is not available and the remote asserting entity does not include any attributes.
   - An Xpath
2. (Optional—SAML 2.0 only) Select Allow IDP to create user identifier.

   This attribute instructs the asserting party to generate a new value for the NameID, if this feature is enabled at the asserting party. The Name ID format configured at the asserting party must be a persistent identifier. This new value for the NameID is included in the assertion that the asserting party returns to the relying party.

3. Specify an LDAP or ODBC search specification. If both directories are present, configure search specifications for both.

   LDAP Example

   ou=%s,o-ca

   ODBC Example

   name=%s

   In the ODBC search specification field, the value from the user store that replaces the %s in the search string can contain an equals sign (=). If the value contains an equals sign, prepend the value **user=** at the beginning of the entry. For example, if the value for ElectronicMail in the user store is CN=catechnologies, enter **user=ElectronicMail=%s** in the ODBC search specification field. The addition of user= enables the policy engine to interpret the string properly.

4. (Optional) Configure the SiteMinder Connector settings:

   a. If Federation Manager is integrating with an existing SiteMinder deployment, enable the SiteMinder Connector by selecting the check box.

   b. (Optional) Clear the Enforce UserDN and Directory Name Comparison so that the Federation Manager or SiteMinder uses a Universal ID to retrieve a user record. The Universal ID enables the user directories to be physically different and of different types. Use of the Universal ID is sufficient to regard the retrieved user record as the correct record.

      Note: If you rely on the Universal ID, each user must have a unique Universal ID. If the Universal IDs are not unique, the system accessing the user record can retrieve the wrong record.

      If you leave the check box selected (the default), Federation Manager and SiteMinder must use the same physical directory. The name for both of these directories must be the same for user store lookups. The entity authenticating the user compares the information that the user provides against the UserDN and the Directory Name of the user record.

5. Click Next to continue with partnership configuration.

Assertion Configuration

The Assertion Configuration step of the Partnership wizard defines the configuration for the Name ID and the inclusion of attributes in an assertion. You can also configure the assertion generator plug-in.

The Name ID identifies a user in a unique way. The format of the Name Identifier establishes the type of content used for the ID in the assertion. The Name ID format is a required element in an assertion.

Attributes can provide information about a user requesting access to a relying-party resource. An attribute statement passes user attributes, DN attributes, or static data from the asserting party to the relying party in a SAML assertion. Any configured attributes are included in the assertion in an <AttributeStatement> element or the <EncryptedAttribute> element in the assertion. Attributes take the form of name/value pairs and can be made available as HTTP Headers or HTTP Cookies. When the relying party receives the assertion, it takes the attribute values and makes them available to applications.

Note: Attributes statements are not required in an assertion.

Servlets, web applications, or other custom applications can use attributes 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 relying party. For example, an attribute variable named Authorized Amount is set it to a maximum dollar amount that the user can spend at the relying party.

Typically, attributes come from user directory records, but an assertion can contain attributes from other sources, such as an external database or application content. You can write an assertion generator plug-in that pulls in attributes from various sources. The assertion generator plug-in is a piece of custom code that you write according to the Assertion Generator Plug-in interface for Federation Manager.

To determine assertion configuration

1. Navigate to the Assertion Configuration step of the Partnership wizard.
2. Select values for the Name ID Format and the Name ID Type in the Name ID section.

   The relying party uses these values to know how to interpret the value that is passed in the assertion.

   Note: Click Help for a description of fields, controls, and their respective requirements.
3. Based on the value of the NameID Type, do one of the following:
   - Complete the Value field if you selected Static or User Attribute for the Name ID type.
   - Complete the Value and the DN specification fields if you selected the DN Attribute for the Name ID type.
4. (Optional - SAML 2.0 only) Select Allow Creation of User Identifier so the asserting party can create a value for the NameID. For this feature to work, the AuthnRequest from the relying party must include an AllowCreate attribute.

   Note: If you select this option, the value of the Name ID Format must be Persistent Identifier.

5. (Optional) Click Add Row in the Assertion Attributes table to specify one or more attributes for inclusion in the assertion. Optionally, you can encrypt the attribute.

   Click Help for detailed information about the columns in the attribute table.

   Note: For attributes from an LDAP user store, you can add multivalued user attributes to an assertion. The Help describes how to specify multivalued user attributes.

6. (Optional) If you have created an assertion generator plug-in using the Federation Manager SDK, complete the fields in the Assertion Generator Plug-in section.

   To write a plug-in, see the *Federation Manager Java SDK Guide*.

7. Click Next to continue with partnership configuration.

Customize Assertion Content

You can modify the assertion content using an assertion generator plug-in. The plug-in enables you to customize the content of an assertion based on the business agreements between you and your partners and vendors. One plug-in is allowed for each partner.

There are several steps to configuring an assertion generator plug-in.

1. Install the Federation Manager SDK, if you have not done so already.
2. Implement the AssertionGeneratorPlugin.java interface, which is part of the Federation Manager SDK.
3. Deploy your assertion generator plug-in implementation class.
4. Configure the plug-in the assertion generator plug-in parameters in the Federation Manager UI.

Implement the AssertionGeneratorPlugin Interface

The first step in creating a custom assertion generator plug-in is to implement the AssertionGeneratorPlugin interface. The following requirements apply to the implementation class:

- The implementation must provide a public default constructor method that contains no parameters.
- The implementation must be stateless, so that many threads can use a single plug-in class.
- The implementation must include a call to the customizeAssertion methods. You can overwrite the existing implementations of these methods as your requirements dictate. See the sample programs.
- The syntax requirements and use of the parameter string that is passed into the customizeAssertion method is the responsibility of the custom object.

Note: The folder *federation_mgr_sdk_home*\sample\com\ca\federation\sdk\plugin\sample includes two sample implementation classes.

Deploy an Assertion Generator Plug-in

After you have coded your implementation class for the AssertionGeneratoPlugin interface, compile it and verify that Federation Manager can find your executable file.

To deploy the assertion generator plug-in

1. Compile the assertion plug-in code in one of the following ways:
   - If you are using a sample plug-in, use the build script for your platform to compile the plug-in. The build scripts are installed in the directory *federation_mgr_sdk_home*\sample. The build scripts are:

     Windows: build_plugin.bat

     UNIX: build_plugin.sh

     A compiled sample plug-in, fedpluginsample.jar, is in the directory *federation_mgr_sdk_home*\jar.
   - If you write your own plug-in, include the smapi.jar when you compile your plug-in.

2. In the JVMOptions.txt file, modify the -Djava.class.path value so it includes the classpath for the plug-in. Locate the JVMOptions.txt file in the directory *federation_mgr_home*\siteminder\config.

   You can place the plug-in jar in any directory and have the JVMOptions.txt file point to it. To use the sample plug-in, modify the classpath to point to fedpluginsample.jar; however, do not modify the classpath for smapi.jar.

   Note: To use Apache Xerces or Xalan in your plug-in, use the Xerces or Xalan binary files installed with Federation Manager. The binaries are not installed with the Federation Manager SDK. Using these files is necessary for compatibility reasons.

3. Restart the Federation Manager services.

   Restarting the services helps ensure that Federation Manager uses the latest version of the assertion generator plug-in.

Enable the Assertion Generator Plug-in

After writing an assertion generator plug-in and compiling it, you enable the plug-in by configuring settings in the Federation Manager UI. The UI parameters let Federation Manager know where to find the plug-in.

Do not configure the plug-in settings until you deploy the plug-in (see page 147).

To enable the Assertion Generator plug-in

1. Log on to the Federation Manager UI.
2. Navigate to the Assertion Configuration step of the Partnership wizard for the partnership you want to modify.

3. Enter values for the Assertion Generator Plug-in settings that follow:

   Plug-in Class

   Specifies the Java class name of the plug-in. Enter a name. This plug-in is invoked at run time.

   Example: com.mycompany.assertiongenerator.AssertionSample

   The plug-in class can parse and modify the assertion, and then return the result to Federation Manager for final processing. Specify an Assertion Generator plug-in for each relying party. A compiled sample plug-in is included in the SDK. You can view complied sample assertion plug-ins in the directory *federation_mgr_sdk_home*/jar.

   Note: You can also view the source code for the Federation Manager sample plug-ins in the directory *federation_mgr_sdk_home*\sample\com\ca\federation\sdk\plugin\sample.

   Plug-in Parameter

   (Optional). Specifies the string that Federation Manager passes to the plug-in as a parameter at run time. The string can contain any value; there is no specific syntax to follow.

   The plug-in interprets the parameters that it receives. For example, the parameter could be the name of an attribute or the string can contain an integer that instructs the plug-in to do something.

Reference information (method signatures, parameters, return values, data types), and the constructor for UserContext class and the APIContext class, are in the *Javadoc Reference*. Refer to the AssertionGeneratorPlugin interface in the Javadoc.

Single Sign-on Configuration (Asserting Party)

When you configure single sign-on at the asserting party, you specify how the asserting party delivers an assertion to a relying party.

Only one single sign-on session is persisted in a browser. The session information is stored in the FEDSESSION cookie. If you access another partnership in the same browser, the FEDSESSION cookie is not valid, unless the underlying user directory is the same as the previously accessed partnership during the same browser session.

The FEDSESSION cookie uses the following timeout settings:

- Idle Timeout: 600 seconds (10 minutes)
- Max Timeout: 900 seconds (15 minutes)

You cannot change these timeout settings in UI.

To configure single sign-on at the asserting party

1. Begin at the appropriate step in the Partnership wizard.

   SAML 1.1

   Single Sign-On

   SAML 2.0

   SSO and SLO

   Note: Click Help for a description of fields, controls, and their respective requirements.

2. Select an option for the Authentication Mode in the Authentication group box.

   Authentication Mode

   Select Local or Delegated

   - Click Local if Federation Manager is handling user authentication.
   - Click Delegated if a third-party web access management (WAM) system is handling user authentication.

3. Select the Authentication Type for the authentication mode you chose. The options change depending on whether you are using local or delegated authentication.

   Local Authentication Type (Local Mode only)

   Select Basic or Form based

   If you are using Federation Manager that is localized for Japanese or French users, select Forms based authentication scheme. Basic authentication is not supported for localized users.

   For forms authentication, sample log-in forms are available for Japanese and French. The forms are in the directory *federation_mgr_home*/secure-proxy/proxy-engine/examples in the folders formsja (Japanese) and formsfr (French).

   To use the localized forms

   a. Navigate to *federation_mgr_home/*secure-proxy/proxy-engine/examples.

   b. Make a backup copy of the forms folder.

   c. Rename the folder for your language (formsja for Japanese or formsfr for French) to **forms**.

   Delegated Authentication Type

   Select Legacy Cookie, Query String, Open-format Cookie

   Note: The open format cookie is the only FIPS-compatible option for delegated authentication.

4. For Delegated Authentication only, configure the required parameters for the type of delegated authentication you chose.

   Legacy Cookie

   If user identity information is being passed from the third-party WAM in a cookie, configure the Delegated Authentication URL. This URL redirects the request to the WAM system if the user comes to Federation Manager first. The URL does not apply when the user visits the WAM first.

   Query String

   If user identity information is being passed from the third-party WAM in a query string, configure the following settings:

   - Delegated Authentication URL

     This URL redirects the request to the WAM system when the user comes to Federation Manager first. The URL does not apply when user goes to the WAM first.

   - Hash Secret
   - Confirm Hash Secret

   Open-format Cookie

   If user identity information is being passed from the third-party WAM in a FIPS-encrypted cookie, configure the Delegated Authentication URL. The open format cookie is the only FIPS-compatible option for delegated authentication. This URL redirects the request to the WAM system if the user comes to Federation Manager first. The URL does not apply when user goes to the WAM first.

   Note: If you select Legacy Cookie or Open-format Cookie as the Delegated Authentication Type, configure the required global cookie settings. Locate the deployment settings by navigating to Infrastructure, Deployment Settings.

5. Complete the Authentication Class field by entering a URI for the user authentication method you want to use. This URI is placed in the AuthnContextClassRef element in the assertion to describe how a user is authenticated.

   Guidelines:

   - If the user is going to authenticate locally, accept the default URI for Password.
   - If the user is going to authenticate at a remote third party, edit this field to reflect the authentication method.

6. Complete the required fields in the SSO group box to configure how single sign-on operates:

   Be aware of the following guidelines:

   - If you select Artifact binding, select an artifact encoding (URL or FORM). The encoding defines how the artifact comes back to the relying party. If you select the URL option, the artifact is sent back as a query parameter in a URL. If you select FORM, the artifact is posted as form data.
   - You can select both bindings for SAML 2.0—the local entity determines the sequence in which the bindings are tried.

     Note: For artifact binding, the assertion is sent over a secure back channel. Therefore, configure the settings in the Back Channel group box.
   - When you select an SSO binding, configure at least one Assertion Consumer Service with a matching binding. If you select Enhanced Client and Proxy Profile, you need an Assertion Consumer Service with the PAOS binding.
   - The SSO Validity Duration and the Skew Time determine when the assertion is valid. Read the information about assertion validity (see page 154) to understand how these settings work together.

7. Specify the URL for the Assertion Consumer Service. This service is the service at the relying party that processes received assertions.

Any values defined during the creation or import of the remote relying party are already filled in.

This procedure completes SSO configuration for the asserting party.

More information:

Back Channel Authentication for Artifact SSO (see page 163)
Assertion Validity for Single Sign-on (see page 154)
Enhanced Client or Proxy Profile (ECP) (see page 171)
Delegated Authentication for Federation Users (see page 221)

Customize the Auto-POST form for HTTP-POST SSO

You can customize the auto-POST form sent to the relying party in a SAML response to improve the user experience.

To use a customized form, enter the name of the form in the Custom Post Form field of the SSO section of the SSO and SLO step of the wizard. The system uses the form you specify in the response. The product includes a form named defaultpostform.html.

Note: Enter only the name of the form, not the path to the form.

The physical page must reside in the directory *federation_mgr_home*\customization, where *federation_mgr_home* is the installed location of Federation Manager.

Single Sign-on Configuration (Relying Party)

To configure single sign-on at the relying party, you specify the SAML binding supported by the relying party and the related aspects of how the relying party handles single sign-on communication.

When Federation Manager is at the relying party, it uses the skew time set for the partnership to determine if the assertion it receives is valid. Read more about assertion validity (see page 154) to understand how Federation Manager uses the configured skew time.

To configure single sign-on at the relying party

1. Begin at the appropriate step in the Partnership Wizard.

   SAML 1.1

   Single Sign-On

   SAML 2.0

   SSO and SLO

2. Configure the settings in the SSO group box for the profiles you are using.

   For SAML 2.0, you can select both Artifact and POST—the local entity determines the sequence in which the bindings are tried.

   Note: Click Help for a description of fields, controls, and their respective requirements.

3. If you select HTTP-Artifact, also configure the authentication method for the outgoing back channel.

This procedure completes the SSO configuration for the relying party.

More information:

Enhanced Client or Proxy Profile (ECP) (see page 171)
Back Channel Authentication for Artifact SSO (see page 163)

Assertion Validity for Single Sign-on

For Single Sign-on, the values of the Skew Time and the SSO Validity Duration determine how Federation Manager calculates the total time that an assertion is valid. Federation Manager applies the skew time to the generation and consumption of assertions. In the assertion document, the beginning and end of the validity interval is represented by the NotBefore and NotOnOrAfter values.

At the asserting party, Federation Manager sets the assertion validity. Federation Manager determines the beginning of the validity interval by taking the system time when the assertion is generated. It sets the IssueInstant value in the assertion based on this time. Federation Manager then subtracts the skew time value from the IssueInstant value. The resulting time becomes the NotBefore value.

NotBefore=IssueInstant - Skew Time

To determine the end of the validity interval, Federation Manager adds the Validity Duration value and the skew time to the IssueInstant value. The resulting time becomes the NotOnOrAfter value.

NotOnOrAfter=Validity Duration + Skew Time + IssueInstant

Times are relative to GMT.

For example, an assertion is generated at the asserting party 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 before the time the assertion was generated and ends 90 seconds afterward.

At the relying party, Federation Manager performs the same calculations as it does at the asserting party to determine if the assertion it receives is valid.

Calculating Assertion Validity if Federation Manager is at Both Sides of the Partnership

If Federation Manager is at both sides of a partnership, the total time the assertion is valid is the sum of the SSO validity duration plus two times the skew time. The equation is:

Assertion Validity = 2 x Skew Time (asserting party) + SSO Validity Duration+ 2 x Skew Time (relying party)

The initial part of the equation (2 x Skew Time + SSO Validity Duration) represents the beginning and end of the validity window at the asserting party. The second part of the equation (2 x Skew Time) represents the skew time of the system clock at the relying party. You multiply by 2 because you are accounting for the NotBefore and the NotOnOrAfter ends of the validity window.

Note: For Federation Manager, the SSO Validity Duration is only set at the asserting party.

Example

Asserting Party

The values at the asserting party are as follows:

IssueInstant=5:00PM

SSO Validity Duration=60 seconds

Skew Time = 60 seconds

NotBefore = 4:59PM

NotOnOrAfter=5:02PM

Relying Party

The relying party takes the NotBefore and NotOnOrAfter values that is receives in the assertion then applies its skew time to those values to calculate new NotBefore and NotOnOrAfter values.

Skew Time = 180 seconds (3 minutes)

NotBefore = 4:56PM

NotOnOrAfter=5:05PM

Based on these values, the calculation for the total assertion validity window is:

120 seconds (2x60) + 60 seconds + 360 seconds (2x180) = 540 seconds (9 minutes).

Customize Assertion Processing

The message consumer plug-in is a Java program that implements the Message Consumer Extension API. The plug-in lets you implement your own business logic for processing assertions, such as rejecting an assertion and returning a status code. This additional processing works together with the standard processing of an assertion.

During authentication, the system first tries to process the assertion by mapping a user to its local user store. If Federation Manager cannot find the user, it calls the postDisambiguateUser method of the message consumer plug-in.

If the plug-in successfully finds the user, the process continues to the second phase of authentication. If the plug-in cannot map the user to a local user store, the plug-in returns a UserNotFound error. The plug-in can optionally use the redirect URL feature. Without the consumer plug-in, the redirect URLs are based on the error that the SAML authentication scheme generates.

During the second phase of authentication, the system calls the postAuthenticateUser method of the message consumer plug-in, if the plug-in is configured. If the method succeeds, Federation Manager 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.

Reference information (method signatures, parameters, return values, data types), and the constructor for UserContext class, are in the *Java SDK Programming Reference*. Refer to the MessageConsumerPlugin interface.

To configure the plugin:

1. Install the Federation Manager SDK.
2. Implement the MessageconsumerPlugin.java interface, which is part of the SDK.
3. Deploy your message consumer plug-in implementation class.
4. Enable the message consumer plug-in in the Administrative UI.

Implement the MessageConsumerPlugin Interface

Create a custom message consumer plug-in by implementing the MessageConsumerPlugin.java interface. The minimum requirements for the implementation class are listed in the following procedure.

Follow these steps:

1. Provide a public default constructor method that contains no parameters.
2. Provide code so that the implementation is stateless. Many threads must be able to use a single plug-in class.
3. Implement methods in the interface as your requirements demand.

   The MessageConsumerPlugin includes the following four methods:

   init()

   Performs initialization procedures that the plug-in requires. SiteMinder calls this method once for each plug-in instance, when the plug-in is loaded.

   release()

   Performs any rundown procedures that the plug-in requires. SiteMinder calls this method once for each plug-in instance, when SiteMinder is shutting down.

postDisambiguateUser()

Provides processing to disambiguate a user when the authentication scheme is unable to do so. Alternatively, this method can add data for new federation users to a user store. This method receives the decrypted assertion. The decrypted assertion is added to the properties map passed to plug-in under the key "_DecryptedAssertion".

postAuthenticateUser()

Provides additional code to determine the outcome of assertion processing, regardless of whether the Policy Server processing is a success or failure.

The product provides the following samples of the Message Consumer plug-in class:

- MessageConsumerPluginSample.java
- MessageConsumerSAML20.java

The default location for the samples is:

Windows

C:\Program Files\FederationManager\sdk\java\sample

The package name is com\ca\federation\sdk\plugin\sample.

UNIX

/FederationManager/sdk/java/sample

The package name is com/ca/federation/sdk/plugin/sample.

Deploy a Message Consumer Plug-in

After you have coded your implementation class for the MessageConsumerPlugin interface, compile it and verify that Federation Manager can find your executable file.

Follow these steps:

1. Compile the MessageConsumerPlugin Java file. The file requires the following dependent libraries, which are installed with the product:

   federation_mgr_home\siteminder\bin\jars\SmJavaApi.jar

   federation_mgr_home is the directory where you installed Federation Manager

2. When a plug-in class is available, in a folder or a jar file, modify the -Djava.class.path value in the JVMOptions.txt file. This step enables the plug-in class to load with the modified classpath.

   Locate the JVMOptions.txt file in the directory *federation_mgr_installation_home*\siteminder\config.

   Note: Do not modify the classpath for the existing xerces.jar, xalan.jar, or SmJavaApi.jar.

3. Restart the system to pick up the latest version of MessageConsumerPlugin. This step is necessary each time the plug-in Java file is recompiled.
4. Enable the plug-in.

Enable the Message Consumer Plug-in in the UI

After writing a message consumer plug-in and compiling it, enable the plug-in by configuring settings in the Administrative UI. The UI settings tell Federation Manager where to find the plug-in.

Do not configure the plug-in settings until you deploy the plug-in (see page 157).

To enable the message consumer plug-in

1. Log on to the Administrative UI.

   Select the Consumer-to-Producer or SP-to-IdP partnership that you want to modify.
2. Navigate to the User Identification step in the partnership wizard.
3. In the Message Consumer Plug-in section, complete the following fields:

   Plug-in Class

   Specify the Java class name for the plug-in, For example, a sample class included with the SDK is:

   com.ca.messageconsumerplugin.MessageConsumerPluginSample

   Plug-in Parameters

   Specify a string of parameters that are passed to the plug-in specified in the Full Java Class Name field.
4. Restart the federation services according to your operating environment.

   - **Windows**

     Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

     a. Start, All Programs, CA, FederationManager, Stop services

     b. Start, All Programs, CA, FederationManager, Start services

   - **UNIX**

     a. Open a command window.

     b. Run the following scripts:

     federation_mgr_home/fedmanager.sh stop

     federation_mgr_home/fedmanager.sh start

     Note: Do not stop and start the services as the root user.

How to Get User Consent to Send an Assertion

A federated partnership relies on trust between the two parties. Part of the trust relationship can be a contractual requirement to have user permission to pass on identity information to a relying partner. Additionally, users that control whether to exchange their identity information for a requested service helps enforce the trust relationship.

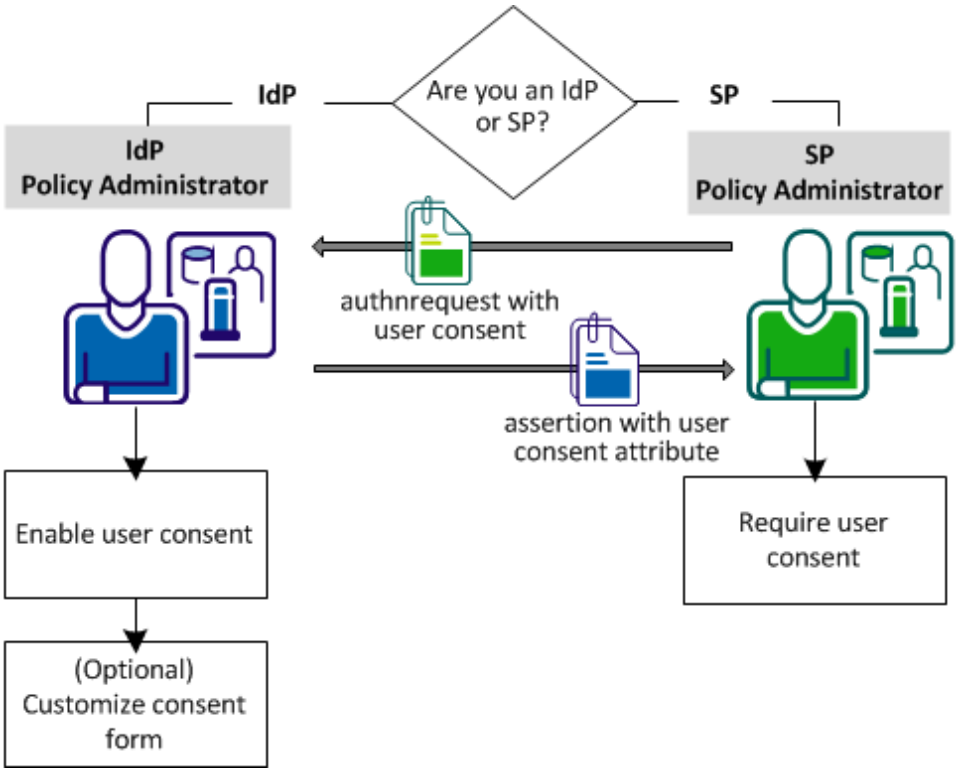
Your federation system acting as an Identity Provider supports the SAML 2.0 user consent feature. User consent at the Identity Provider site requires that the Identity Provider asks the user to grant permission before it sends an assertion to a partner. If you enable user consent at the Identity Provider, the Identity Provider prompts the user for consent. The Identity Provider passes the consent value in an assertion.

The consent validity period is 5 minutes. When the Identity Provider redirects the user to the consent page, the user has 5 minutes to grant consent. The user is then redirected back to the Identity Provider. The Identity Provider then generates the assertion and sends it to the Service Provider. These tasks must be complete in the 5-minute time period. If the time expires before the Identity Provider generates an assertion, it does not pass on the user identity.

Consent applies only to a single assertion. After the Identity Provider generates an assertion, it deletes all record of consent being granted. The same user can return to an Identity Provider before the 5-minute validity period expires, but the Identity Provider still prompts the user for consent.

Note: The validity period is not configurable.

This figure shows the configuration tasks at each partner.



The configuration tasks at the IdP are:

1. Enable user consent at the IdP. (see page 161)
2. Customize a user consent form (optional) (see page 162).

The configuration task at the SP is:

1. Require user consent at the SP. (see page 163)

User Consent Example

The following use case illustrates user consent.

User1 logs in and authenticates at MyWorkPlace.com at 2:00PM. MyWorkPlace is acting as an Identity Provider. At 2:03PM, the user selects a link to the partner company that runs travel specials for employees. User1 is redirected to a form that asks for consent before sending User1 to ExampleTravel.com. User1 takes a phone call before completing the consent form. The time is now 2:10PM. MyWorkPlace does not generate an assertion because the validity period has expired.

If User1 grants consent promptly and is redirected back to the Identity Provider by 2:05PM, the Identity Provider generates an assertion. Only 2 minutes pass between consent and assertion generation, so the validity period is still active.

Enable User Consent at the IdP

Configuring user consent requires that you:

- Enable user consent in the Administrative UI.
- Provide the name of a user consent form.

  The Identity Provider sends the custom form to the user to get consent.

Configure user consent at the Identity Provider using the Federation Manager UI. When you configure this feature through the UI, only the following URI is used in the assertion response:

```
urn:oasis:names:tc:SAML:2.0:consent:obtained
```

You can also enable this feature using the Federation Manager Java or .NET SDKs. The SDK passes whatever user consent value it receives from the third party that is performing delegated authentication.

User consent is also configurable at the Service Provider. A Service Provider can require the Identity Provider to pass the user consent value in the assertion response.

1. Log in to the Administrative UI.
2. Navigate to Federation, Partnership Federation, Partnerships.
3. Select the IdP->SP partnership you want to modify.
4. Navigate to the SSO and SLO step in the partnership wizard.

5. In the SSO section:
   a. Select the Enable User Consent check box.
   b. Specify the name of the custom form in the User Consent Post Form field.

   Note: The User Consent Service URL is specified by default. You cannot change this value.
6. Navigate to the Confirm step when your configuration is complete and click Finish.

Customize a User Consent Form (Optional)

The product ships with a *consent to federate* form named ca_defaultconsentform.html. The Identity Provider sends the custom form to the user to get permission to send an assertion for that user. The default consent form is in the following locations:

Windows: %FEDROOT%\customization

UNIX: $FEDROOT/customization

FEDROOT is the system environment variable.

You can write a custom form instead of using the default consent form.

Follow these steps:

1. Create the custom HTML form. Modify the form and replace values for the following settings:

   $$userconsent_spid$$

   Represents the SP ID configured in the partnership

   $$userconsent_idpid$$

   Represents the IDP ID configured in the partnership.
2. Place the form in the customization directory.
3. Specify the location of the form User Consent Post Form in the Administrative UI.

Require User Consent at the SP

The SP can require that the user consent attribute be in the assertion response returned by the IdP. To include this attribute in the authentication request, enable the setting in the Administrative UI.

Follow these steps:

1. Log in to the Administrative UI.
2. Modify the appropriate SP->IdP partnership.
3. Navigate to the SSO and SLO step in the partnership wizard.
4. Select the Require User Consent setting in the SSO section of the dialog.

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. If there are no other changes, select the Confirm step and click Finish to save the changes.

The user consent attributes is placed in the authentication request sent to the IdP.

Back Channel Authentication for Artifact SSO

Artifact single sign-on requires the relying party to send an artifact to the asserting party to retrieve the assertion. The asserting party uses the artifact to retrieve the correct assertion and returns the assertion to the relying party over a back channel.

You can require an entity to authenticate to access the back channel. The back channel can also be secured using SSL, though SSL is not required.

Securing the back channel using SSL involves:

- Enabling SSL.

  SSL is not required for Basic authentication but you can use Basic over SSL. SSL is required for Client Cert authentication.
- Configuring an incoming or outgoing back channel for the SAML 2.0 communication exchange. The direction you configure depends on the role of the local entity.

  Configuring separate channels is supported only for SAML 2.0. The back channel configuration for SAML 1.1 artifact single sign-on uses a single configuration for each partnership. Federation Manager uses the correct direction automatically (incoming for a local producer and outgoing for a local consumer).

Select which direction to configure for SAML 2.0 single sign-on based on the entity you are configuring.

- The local asserting party uses the incoming channel.
- The local relying party uses the outgoing channel.

Note: You can configure an incoming and outgoing back channel; however, a channel can have only one configuration. If two services use the same channel, these two services use the same back channel configuration. For example, if the incoming channel for a local asserting party supports HTTP-Artifact SSO and SLO over SOAP, these two services must use the same back channel configuration.

- Choosing the type of authentication required for the relying party to gain access across the protected back channel. The authentication method applies per channel (incoming or outgoing).

  The options for back channel authentication are:

  Basic

  Indicates that a Basic authentication scheme is protecting the back channel.

  Note: Basic authentication can be selected if SSL is enabled for the back channel; however, you can use Basic authentication without SSL.

  Client Cert

  Indicates that SSL with an X.509 client certificate protects the asserting party back channel. For more information, see Certificates to Secure the Artifact Back Channel (see page 112).

  If you select Client Cert as the authentication method, all endpoint URLs have to use SSL communication. This means that the URLs must begin with **https://**. Endpoint URLs locate the various SAML services on a server.

  NoAuth

  Indicates that the relying party is not required to supply credentials. The back channel and Artifact Resolution Service are not secured. You can still enable SSL with this option. The back channel traffic is encrypted but no credentials are exchanged between parties.

  Use the NoAuth option for testing purposes but not for production, unless Federation Manager is configured for SSL-enabled failover and sits behind a proxy server. When client certificate authentication protects the back channel, the proxy server handles the authentication because it has the server certificate. In this case, all IdP->SP partnerships use NoAuth as the authentication type.

  Important! The authentication method for the incoming back channel must match the authentication method for the outgoing back channel. on the other side of the partnership. Agreeing on the choice of authentication method is handled out of band.

To configure back channel authentication

1. Begin at the Back Channel section in the SSO and SLO step of the Partnership wizard.
2. Select HTTP-Artifact in the SSO section.

   The Authentication Method field becomes active.
3. Select the type of authentication method for the incoming or outgoing back channel, or both.

   Note: Click Help for a description of fields, controls, and their respective requirements.

   If you select No Auth as the authentication method, no additional steps are required.
4. Depending on the authentication method you select, several additional fields are displayed for you to configure.

   Note: Click Help for a description of fields, controls, and their respective requirements.

   The client certificate authentication method requires an X.509 client certificate to establish a connection. The relying party must have the key/certificate pair or client certificate authentication fails. Verify that the client certificate exists in the certificate data store at the asserting party. When the relying party sends the request for the assertion, the client certificate serves as the relying party credentials to access the retrieval service.

After entering values for all the necessary fields, the back channel configuration is complete. Enable SSL on each side of the connection for added security.

More information:

Partnership Creation (see page 135)

Single Logout (SAML 2.0)

Single logout (SLO) results in the simultaneous termination of all user sessions for the browser that initiated the logout. Closing all user sessions prevents unauthorized users from gaining access to resources at the SPs.

The single logout binding determines what is sent with a single logout message and how each received message is handled.

Two bindings are available for single logout operation:

HTTP-Redirect

HTTP-Redirect binding relies on a browser to conduct each logout transaction. The single logout message is always a GET request. The browser is involved in every request and response. The involvement of the browser means that HTTP-redirect binding provides browser session data, which the SOAP binding does not.

A disadvantage of HTTP-Redirect binding is that the data in the message is limited to what you can send on the query string. Also, HTTP-Redirect binding is an asynchronous process so timeouts are unlikely. However, if a redirect fails, that failure stops the entire single logout chain.

SOAP

SOAP binding uses POST requests to conduct single logout transactions. POST requests let you send more data than the HTTP-Redirect binding. SOAP also enables you to do more in the way of encryption and other features.

SOAP is a synchronous process. The IdP has more control and can prevent a problem at a single SP from interfering with the whole process. SOAP communication takes place over a back channel. One logout failure does not have to stop the IdP from attempting to log out from the rest of the SPs.

SOAP relies on a back channel connection, so after the initial single logout call and response a browser is not involved. The the SOAP binding does not clean up cookies at the remote entity as part of the logout process. Cookies are cleaned up only at the local entity. If deleting cookies is required, use HTTP-Redirect binding.

Managing Single Logout Across a Network Using HTTP-Redirect and SOAP

Your network could have some sites that support the HTTP-Redirect binding and others that support the SOAP binding. The IdP has to manage multiple bindings, but the SP sends or receives only one logout request.

The following sections provide configuration guidelines to handle a mixed-binding environment.

SLO Configuration if Federation Manager is at the IdP

If Federation Manager is at the IdP, configure the partnership to include an HTTP Redirect-based SLO Service URL and a SOAP-based SLO Service URL.

Federation Manager at the IdP inspects the configuration for each SP in a session and handles all SOAP-enabled logouts first. HTTP-Redirect logouts for SPs that do not support SOAP follow.

SLO Configuration if Federation Manager is at the SP

If Federation Manager is at the SP and the SP initiates single logout, we recommend the HTTP-Redirect binding to initiate the logout. Other SPs for the user session possibly do no support SOAP.

HTTP-Redirect relies on a browser session to handle all redirections. For this reason, it sends the necessary data that the IdP must have to logout SPs that only support HTTP-Redirect. If the initiating SP starts the process with HTTP-Redirect, the IdP can use SOAP with all SPs that support it. Switch to HTTP-Redirect binding for the remaining SPs.

If you initiate single logout with the SOAP binding, the browser session data is not present.

To help ensure an SP-initiated logout uses HTTP-Redirect, embed an HTTP-Redirect link that points to the SP' local servlet in a page or application. For Federation Manager, that link is:

http://s*p_host:port*/affwebservices/public/saml2slo.

This embedded link causes Federation Manager to generate a SAML <LogoutRequest> message that it sends to the SLO service at the IdP. When a user logs out, the logout at the SP is performed first and then the logout request is sent to the IdP. The IdP then completes the logout process with all the other SPs involved in the user session.

Understanding Skew Time for SLO Request Validity

Two values are relevant when calculating how long the logout request is valid. These values are 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, Federation Manager takes its system time. The resulting time becomes the IssueInstant set in the request message. To determine when the logout request expires, Federation Manager takes its current system time and adds the Skew Time plus the SLO Validity Duration. The resulting time becomes the NotOnOrAfter value.

Note: Times are relative to GMT.

For example, a log out request is generated at the asserting party 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.

Configure Single Logout

Be aware of the following information when configuring single logout:

- If a partner receives a SAML <LogoutRequest> message using HTTP-Redirect, the response back to the sending party must use HTTP-Redirect.
- If a partner receives SAML <LogoutRequest> message using SOAP, the response back to the sending party must be over SOAP.

- If a partner receives an SLO request over a binding it does not support, single logout fails.
- If a single logout user session includes partners that use HTTP-Redirect and SOAP, configure Federation Manager to support both bindings. When the IdP proceeds with the logout, it logs out all SPs using SOAP then logs out all SPs using HTTP-Redirect binding.
- If a Federation Manager SP initiates single logout, we recommend starting with HTTP-Redirect binding, even if the SP supports SOAP.

  Review configuration guidelines (see page 166) for managing single logout in an environment that supports SOAP and HTTP-Redirect.

To configure single logout at either side of a partnership

Note: The SLO configuration settings are the same at the IdP and SP.

1. Begin at the SSO and SLO step of the Partnership wizard.
2. In the SLO section, select one or both SLO bindings.

   The SLO binding enables single logout and indicates the binding in use at the local entity. The SLO binding also indicates which binding the local entity accepts when it receives a single logout request.

   If you select SOAP, you can encrypt the Name ID in the SOAP message. The setting for this option is in the Signature and Encryption step of the Partnership wizard.

   If you select SOAP as the binding, the Incoming and Outgoing Configuration for the Back Channel becomes active. SLO requests and responses are sent across a back channel. Each local partner can secure the back channel by requiring the remote partner to authenticate.

   More information can be found about the back channel settings for SLO (see page 163).
3. Configure any of the additional SLO settings:
   - SLO Confirm URL
   - Validity Duration
   - Relay State overrides SLO Confirm URL

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Complete the table for the SLO Service URLs. You must have at least one entry.

   The SLO Service URL initiates single logout, which then triggers Federation Manager to generate a SAML <LogoutRequest> message. In addition, the SLO Service URL tells Federation Manager where to send the logout request message.

   Specify a SLO service URL for each supported SLO binding, as follows:

   - HTTP-Redirect enabled—select one URL with HTTP-Redirect as the binding.
   - SOAP enabled—select one URL with SOAP as the binding.
   - Redirect and SOAP enabled—select two URLs, one set to HTTP-Redirect and one set to SOAP.

   Note: The Response Location URL field is optional.

   Click Add Row to add more entries to the table. Values defined for the selected remote entity are already entered in the table.

Single logout is configured after these steps are complete.

Back Channel Configuration for Single Logout

Single logout enabled with the SOAP binding sends logout requests and responses across a back channel. You can require an entity to authenticate to access the back channel. The back channel can also be secured using SSL, though SSL is not required.

Securing the back channel using SSL involves:

- Enabling SSL.

  SSL is not required for Basic authentication but you can use Basic over SSL. SSL is required for Client Cert authentication.

- Configure an incoming and outgoing back channel for the single logout communication exchange. The local entity has to be able to send messages over the outgoing channel and receive messages over the incoming channel.

  Note: You can configure an incoming and outgoing back channel; however, a channel can have only one configuration. If two services use the same channel, these two services use the same back channel configuration. For example, if the incoming channel for a local asserting party supports HTTP-Artifact SSO and SLO over SOAP, these two services must use the same back channel configuration.

- Choosing the type of authentication required for the remote entity to gain access across the protected back channel. The authentication method applies per channel (incoming or outgoing).

  The options for back channel authentication are:

  Basic

  Indicates that a Basic authentication scheme is protecting the back channel.

  Note: If SSL is enabled for the back channel connection, Basic authentication can still be selected.

  Client Cert

  Indicates that SSL with an X.509 client certificate protects the asserting party back channel.

  If you select Client Cert as the authentication method, all endpoint URLs have to use SSL communication. This means that the URLs must begin with **https://**. Endpoint URLs locate the various SAML services on a server, such as single sign-on, single logout, the Assertion Consumer Service, Artifact Resolution Service (SAML 2.0), and the Assertion Retrieval Service (SAML 1.x).

  NoAuth

  Indicates that the relying party is not required to supply credentials. The back channel is not secured. You can still enable SSL with this option. The back channel traffic is encrypted but no credentials are exchanged between parties.

  Use the NoAuth option for testing purposes but not for production, unless Federation Manager is configured for SSL-enabled failover and sits behind a proxy server. In this case, if client certificate authentication is used to protect the back channel, the proxy server handles the authentication because it has the server certificate. In that case, all IdP->SP partnerships can use NoAuth as the authentication type.

  Important! The authentication method chosen for the incoming back channel must match the authentication method for the outgoing back channel on the other side of the partnership. Agreeing on the choice of authentication method is handled out of band.

To secure the back channel for single logout

1. Begin at the Back Channel group box in the SSO and SLO step of the Partnership wizard.
2. Select SOAP in the SLO group box. The Authentication Method field becomes active.
3. Select the type of authentication method for the incoming and outgoing back channel. Additional fields to configure are displayed for Basic and Client Cert methods.

   Note: Click Help for a description of fields, controls, and their respective requirements.

   If you select No Auth as the authentication method, no additional steps are required.
4. Depending on the authentication method you select, several additional fields are displayed for you to configure.

   Note: Click Help for a description of fields, controls, and their respective requirements.

After entering values for all the necessary fields, the back channel configuration is complete.

More information:

SSL Administration for the Apache Web Server and the UI (see page 285)

Enhanced Client or Proxy Profile (ECP)

The Enhanced Client or Proxy Profile (ECP) is an application of the SAML 2.0 single sign-on profile. An enhanced client can 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.

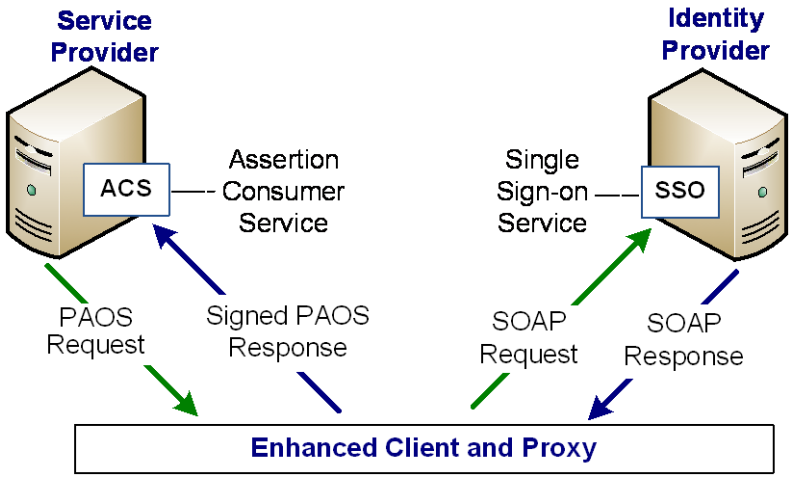
An enhanced client or proxy is a system entity that knows how to contact an Identity Provider and supports the Reverse SOAP binding, PAOS. The ECP acts as the intermediary between the Service Provider and the Identity Provider.

The ECP profile allows the Service Provider to make an authentication request without knowing the Identity Provider. PAOS lets the relying party obtain the assertion through the ECP, which is always directly accessible.

You can 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 figure:



To enable the ECP profile

1. Verify that ECP request is directed to the AuthnRequest service at the Service Provider. The following URL shows an example:

   https://*host:port*/affwebservices/public/saml2authnrequest

2. Verify that the headers in the ECP request include attributes that the SAML 2.0 specification requires. The following attributes are examples:

   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 user interface to configure single sign-on.
4. Select the Enable Enhanced Client and Proxy Profile check box as part of the single sign-on configuration.

IDP Discovery Profile

The Identity Provider Discovery (IPD) profile provides a common discovery service that enables a Service Provider to select a unique IdP for authentication. A prior business agreement between partners is established so that all sites in the network interact with the Identity Provider Discovery service.

This profile is useful in federated networks that have more than one partner providing assertions. A Service Provider can determine which Identity Provider it sends authentication requests for a particular user.

The IdP Discovery profile is implemented using a cookie domain that is common to the two federated partners. A cookie in the agreed upon domain contains the list of IdPs that the user has visited.

IDP Discovery Configuration at the Identity Provider

You configure the IDP Discovery profile in the IDP Discovery section in the SSO and SLO dialog.

Note: Click Help for a description of fields, controls, and their respective requirements.

To enable the Identity Provider Discovery Profile

1. Select the Enable IDP Discovery checkbox.
2. Set the value for the Service URL field to the Identity Provider Discovery Profile servlet. For Federation Manager, this URL is:

   http://*host:port*/affwebservices/public/saml2ipd

   host

   Represents the common domain that you specify in the Common Domain field.

   port

   Specifies the Apache HTTP or HTTPS port you specified when installing Federation Manager.

   The URL can also begin with https.
3. Specify the cookie domain in the Common Domain field.
4. (Optional) Select the Enable Persistent Cookie check box to preserve the common cookie in the browser.

IdP Discovery is enabled at the IdP.

IDP Discovery Configuration at the Service Provider

For IDP Discovery profile, the Service Provider (SP) has to determine the Identity Provider (IdP) to which it sends authentication requests. The user that the SP wants to authenticate must have previously visited the Identity Provider and authenticated.

The SP has to redirect the user to its own IdP Discovery Service to retrieve the common domain cookie. The cookie contains the list of Identity Providers that the user has already visited. From this list, the cookie chooses the correct IdP and then sends an AuthnRequest to that IdP.

The IDP Discovery process is as follows

1. The browser requests the site selection page at the SP.

   This site selection page is aware of the IDP Discovery Service URL.

2. The site selection page redirects the user to IDP Discovery Service URL, indicating that it wants to get the Common Domain Cookie.

3. The IDP Discovery Service gets the Common Domain Cookie, reads the cookie in its domain and redirects the user back to the site selection page. The discovery service provides Common Domain Cookie as a query parameter.

4. The SP populates the site selection page with IdP URLs at which the user has previously authenticated.

5. The user selects an IdP to perform the user authentication.

To configure IdP Discovery at the SP

1. Create a site selection page that requests the Common Domain Cookie from the IdP Discovery Service at the SP.

   Federation Manager comes with a sample site selection page, named IdPDiscovery.jsp that the SP can use to implement IdP Discovery. You can find the page in the following directory:

   ```
   federation_mgr_home/secure-proxy/Tomcat/
   webapps/affwebservices/public
   ```

   The first link redirects the browser from one domain to the IdPDiscovery service in the common domain and retrieves the common domain cookie, named **_saml_idp**. When the IdP Discovery Service at the SP receives the request, it gets the common domain cookie and adds it as a query parameter. The IDP Discovery Service then redirects the user back to the IdPDiscovery.jsp site selection page in the regular domain. By default, the IdPDiscovery.jsp page displays only a list of IDs for the IdPs that it extracts from the common cookie. This list is static; there are no HTML links associated with the list that initiate communication with the associated IdP.

2. Edit the following link on the sample page for your SP site. The first part of the link specifies the common domain where the saml2idp cookie resides. The second part of the link specifies the regular domain where the IdPDiscovery.jsp resides.

   For example:

   ```
   <a href="http://myspsystem.commondomain.com/affwebservices/public
   /saml2ipd/?IPDTarget=/http://myspsystem.spdomain.com/affwebservices
   /public/IdpDiscovery.jsp&SAMLRequest=getIPDCookie">
   Retrieve idp discovery cookie from IPD Service</a>
   ```

   When the user is redirected back to the regular domain with the target site selection page, it now has the common cookie.

3. (Optional) Edit the IdPDiscovery.jsp site selection page so it displays an HTML link for each IdP. Each link triggers an AuthNRequest to the IdP to initiate single sign-on. By default, the IdPDiscovery.jsp page only displays a list of IDs for the IdPs that it extracts from the common cookie.

4. Use the edited site selection page to test IdP Discovery.

With IdP Discovery working, you can see the site selection page with a list of IdPs from which to select.

Securing the IdP Discovery Target Against Attacks

When the Federation Manager Identity Provider Discovery Service receives a request for the common domain cookie, the request includes a query parameter named IPDTarget. This query parameter lists a URL where the Discovery Service must redirect to after it processes the request.

For an IdP, the IPDTarget is the SAML 2.0 Single Sign-on service. For an SP, the target is the requesting application that wants to use the common domain cookie.

We recommend protecting the IPDTarget query parameter against security attacks. An unauthorized user can place any URL in this query parameter and cause a redirection to a malicious site.

To protect the query parameter against an attack, configure the Agent Configuration Object setting **ValidFedTargetDomain**. The ValidFedTargetDomain parameter lists all valid domains for your federated environment.

Note: The ValidFedTargetDomain setting is similar to the ValidTargetDomain setting used by the Web Agent, but this setting is defined specifically for federation.

When the IPD Service examines the IPDTarget query parameter, it obtains the domain of the URL specified by the query parameter. The IPD Service compares this domain to the list of domains specified for the ValidFedTargetDomain parameter. If the URL domain matches one of the configured domains in the ValidFedTargetDomain, the IPD Service redirects the user to the designated URL.

If there is no domain match, the IPD Service denies the user request and they receive a 403 Forbidden in the browser. Additionally, errors are reported in the FWS trace log and the affwebservices log. These messages indicate that the domain of the IPDTarget is not defined as a valid federation target domain.

If you do not configure the ValidFedTargetDomain setting, no validation is done and the user is redirected to the target URL.

Sign and Encrypt Federation Messages

Securing an assertion and encrypting data within the assertion is a critical part of partnership configuration. The Signature step (SAML 1.1) and the Signature and Encryption step (SAML 2.0) let you configure signing and encryption of assertions.

For SAML 2.0, you have the option of choosing a signing algorithm for signing tasks. The ability to select an algorithm supports the following use cases:

- An IdP-->SP partnership in which the IdP signs assertions, responses and SLO-SOAP messages with the RSAwithSHA1, or the RSAwithSHA256 algorithm.
- An SP-->IdP partnership in which the SP signs authentication requests and SLO-SOAP messages with the RSAwithSHA1, or the RSAwithSHA256 algorithm.

Signature verification automatically detects which algorithm is in use on a signed document then verifies it. No configuration for signature verification is required.

Signature Configuration at a SAML 1.1 Producer

In the Signature step, define how Federation Manager uses private keys and certificates to verify SAML assertions and assertion responses.

Note: SAML 1.1 does not support encryption.

The certificate data store holds multiple private keys and certificates. If you have multiple federated partners, you can use a different key pair for each partner.

Note: For a Federation Manager system operating in FIPS_COMPAT or FIPS_MIGRATE mode, all certificate and key entries are available from pull-down lists. If your system is operating in FIPS-Only mode, only FIPS-approved certificate and key entries are available.

Follow these steps:

1. Select the Signature step in the Partnership wizard.

   Note: Click Help for a description of fields, controls, and their respective requirements.

2. In the Signature section, select an alias for the Signing Private Key Alias field.

   If there is no private key in the certificate data store, import a key or generate a certificate request.

   By completing this field, you are indicating which private key the asserting party uses to sign assertions and responses.

3. For the Artifact and Post signature options, select the specific components (assertion, response) that you want signed.

Note: In a test environment, select the Disable Signature Processing check to disable signature processing to simplify testing.

Signature configuration at the SAML 1.1 producer is complete.

Signature Configuration at the SAML 1.1 Consumer

In the Signature step, define how Federation Manager uses private keys and certificates to verify SAML assertions and assertion responses.

Note: SAML 1.1 does not support encryption.

The certificate data store holds multiple private keys and certificates. If you have multiple federated partners, you can use a different key pair for each partner.

Note: For a Federation Manager system operating in FIPS_COMPAT or FIPS_MIGRATE mode, all certificate and key entries are available from pull-down lists. If your system is operating in FIPS-Only mode, only FIPS-approved certificate and key entries are available.

Follow these steps:

1. Begin by selecting the Signature step in the Partnership wizard.
2. Select an alias for the Verification Certificate Alias field.

   By completing this field, you are indicating which certificate verifies signed assertions or responses or both. If there is no certificate in the database, click Import to import one or click Generate to create a certificate request.

Note: In a test environment, disable signature processing to simplify testing. Click the Disable Signature Processing check box.

Signature configuration at the SAML 1.1 consumer is complete.

Signature and Encryption Tasks at a SAML 2.0 IdP

In the Signature and Encryption step, define how Federation Manager uses private keys and certificates to do the following tasks:

- Sign and verify SAML assertions, assertion responses, and authentication requests.

  Note: For SAML 2.0 POST binding, you are required to sign assertions.

- Sign single logout responses and requests (HTTP-Redirect and SOAP bindings).
- Encrypt and decrypt entire assertions, Name IDs and attributes.

The certificate data store holds multiple private keys and certificates. If you have multiple federated partners, you can use a different key pair for each partner.

Note: For a Federation Manager system operating in FIPS_COMPAT or FIPS_MIGRATE mode, all certificate and key entries are available from pull-down lists. If your system is operating in FIPS-Only mode, only FIPS-approved certificate and key entries are available.

Signing Options

Follow these steps:

1. Select the Signature and Encryption step in the Partnership wizard.
2. In the Signature section, select an alias for the Signing Private Key Alias field. If there is no private key in the in the certificate data store, import one or generate a certificate request.

   By completing this field, you are indicating which private key the asserting party uses to sign assertions, single logout requests and responses.

   Note: Click Help for a description of fields, controls, and their respective requirements.

3. Select the hash algorithm for digital signing in the Signing Algorithm field. The IdP signs assertions, responses and SLO-SOAP messages with the specified algorithm.

   Select the algorithm that best suits your application.

   RSAwithSHA256 is more secure than RSAwithSHA1 due to the greater number of bits used in the resulting cryptographic hash value.

   SiteMinder uses the algorithm that you select for all signing functions.

4. Select an alias for the Verification Certificate Alias field.

   By completing this field, you are indicating which certificate verifies signed authentication requests or single logout requests or responses. If there is no certificate in the certificate data store, import one.

5. (Optional) Specify Artifact and POST signature options for the assertion or response or both.

6. (Optional) Specify an SLO SOAP signature option for the logout request, the logout response or both when you are using single logout.
7. (Optional) Select the check box for Require Signed Authentication Requests so the asserting party only accepts signed requests from the relying party.
8. Activate a partnership for all configuration changes to take effect and for the partnership to become available for use.

Important! Signature processing must be enabled in a SAML 2.0 production environment. However, in a test environment, select the Disable Signature Processing check box to simplify testing.

Encryption Options

Follow these steps:

1. In the Encryption section, select one or both of the following check boxes to specify the assertion data to be encrypted:
   - Encrypt Name ID
   - Encrypt Assertion
2. Select the certificate alias for the Encryption Certificate Alias.

   This certificate encrypts assertion data. If there is no certificate in the certificate data store, import one.
3. Choose values for the Encryption Block Algorithm and Encryption Key Algorithm fields.

   Important! For the following block/key algorithm combinations, the minimum key size that is required for the certificate is 1024 bits.
   - Encryption Block Algorithm: 3DES

     Encryption Key Algorithm: RSA-OEAP
   - Encryption Block Algorithm: AES-256

     Encryption Key Algorithm: RSA-OEAP

     Note: To use the AES-256 bit encryption block algorithm, install the Sun Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files. Download these files from http://java.sun.com/javase/downloads/index.jsp.
4. Activate a partnership for all configuration changes to take effect and for the partnership to become available for use.

The signing and encryption configuration is complete.

Signature and Encryption Tasks at a SAML 2.0 SP

In the Signature and Encryption step, define how Federation Manager uses private keys and certificates to do the following tasks:

- Verify SAML assertions signatures and assertion responses and sign authentication requests.

  Note: For SAML 2.0 POST binding, the IdP is required to sign assertions.

- Sign single logout responses and requests (HTTP-Redirect and SOAP bindings).
- Encrypt and decrypt entire assertions, Name IDs and attributes.

The certificate data store holds multiple private keys and certificates. If you have multiple federated partners, you can use a different key pair for each partner.

Note: For a Federation Manager system operating in FIPS_COMPAT or FIPS_MIGRATE mode, all certificate and key entries are available from pull-down lists. If your system is operating in FIPS-Only mode, only FIPS-approved certificate and key entries are available.

Signing Options

Follow these steps:

1. Select the Signature and Encryption step in the Partnership wizard.
2. In the Signature section, select an alias for the Signing Private Key Alias field. If there is no private key in the certificate data store, import one or generate a certificate request.

   By completing this field, you are indicating which private key the relying party uses to sign authentication requests and single logout requests and responses.

   Note: Click Help for a description of fields, controls, and their respective requirements.
3. Select the hash algorithm for digital signing in the Signing Algorithm field. The SP signs authentication requests and SLO-SOAP messages with the specified algorithm.

   Select the algorithm that best suits your application.

   RSAwithSHA256 is more secure than RSAwithSHA1 due to the greater number of bits used in the resulting cryptographic hash value.

   SiteMinder uses the algorithm that you select for all signing functions.
4. Select an alias for the Verification Certificate Alias field.

   By completing this field, you are indicating which certificate the relying party uses to verify signed assertions or single logout requests and responses. If there is no certificate in the certificate data store, click Import to import one.

5. (Optional) To sign authentication requests, select the Sign Authentication Requests. If the remote asserting party requires the authentication requests to be signed, check this option.
6. Activate a partnership for all configuration changes to take effect and for the partnership to become available for use.

Important! Signature processing must be enabled in a SAML 2.0 production environment. However, in a test environment, check the Disable Signature Processing check box to simplify testing.

Encryption Options

Follow these steps:

1. In the Encryption section, select one or both of the following check boxes for data that you want encrypted by the IdP:
   - Require encrypted Name ID
   - Require encrypted Assertion

   Note: To use the AES-256 bit encryption block algorithm, install the Sun Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files. Download these files from http://java.sun.com/javase/downloads/index.jsp.
2. Select the alias for the Decryption Private Key Alias.

   This private key decrypts any encrypted assertion data. If there is no certificate in the data store, import one or generate a certificate request.

The signing and encryption configuration is complete.

Application Integration

The Application Integration step of the partnership wizard is applicable only at the relying party. This step lets you define various aspects of federated operation for resolving user identities and directing users to the target application.

The features that you can configure in the Application Integration step are:

- User redirection to the target application
- Mapping assertion attributes to outgoing application attributes
- Provisioning a user identity
- User redirection in case of an authentication failure

Redirecting a User to the Target Application

The Target Application group box in the Application Integration step lets you define how a user gets redirected from Federation Manager to the target application. There are several methods from which to choose. The redirection method you select depends on the type of data you want to pass along with the user to the target application.

To configure the redirection method

1. Navigate to the Application Integration step in the Partnership wizard.
2. Select a redirection method for the Redirect Mode field.
   - If you select Cookie Data, you can URL-encode attribute data in the cookie by selecting the URL Encode Attribute Cookie Data check box.
   - If you select open format cookie as the mode, there are additional settings you must configure, such as the name of the cookie, the algorithm that encrypts the cookie along with the encryption password. Optionally, you can enable an HMAC function to verify the integrity of the cookie.

     If the relying party receives an assertion with multiple attribute values, Federation Manager passes all values to the target application in the cookie.
   - If you select one of the FIPS-compatible algorithms (AES algorithms), you are required to use a Federation Manager SDK to consume the open format cookie. If you use the .NET SDK, you are required to use the AES128/CBC/PKCS5Padding encryption algorithm.
   - If you configured Federation Manager in proxy mode and you select HTTP Headers as the redirect mode, Federation Manager can deliver multiple attribute values in a single header by separating each value with a comma.

   Note: Click Help for a description of fields, controls, and their respective requirements.

3. Enter the URL of the target application in the Target field.

   If Federation Manager is operating in proxy mode, enter the URL for the proxy host because the proxy handles all federation requests locally. The proxy host can be any system that sits in front of Federation Manager. The proxy host can also be Federation Manager itself, provided Federation Manager is being accessed directly from the Internet. Ultimately, when operating in proxy mode, the URL you specify as the target must go through Federation Manager. For example, if the base URL for Federation Manager is fedmgr.demo.com:5555 and the backend server resource is mytarget/target.jsp, the value for the Target field is http://fedmgr.demo.com:5555/mytarget/target.jsp.

   Note: You specify the backend server that sits behind the proxy host when you run the Federation Manager Configuration wizard. You can modify the backend server entry by rerunning the Configuration wizard.

   For SAML 2.0, you can leave this field blank if you override it with the value of the Relay State query parameter, which can be included in a URL to trigger single sign-on. To enable this override, select the Relay state overrides target check box.

Setting up redirection to the target is complete.

Mapping Assertion Attributes to Application Attributes

At the relying party, Federation Manager enables you to map a set of assertion attributes to a set of outgoing application attributes. Federation Manager then delivers the application attributes to the target application. Attribute mapping allows you to provide a customized experience for users without having to modify the target application. Attributes are mapped on a per-partnership basis, which allows you to use a relying party-side application for multiple asserting parties.

Federation Manager can perform the following types of mapping:

- Convert assertion attribute names to application attribute names.

  Example

  An incoming assertion attribute can be Region=US. The attribute can be converted to an outgoing application attribute ServiceLocation=US.

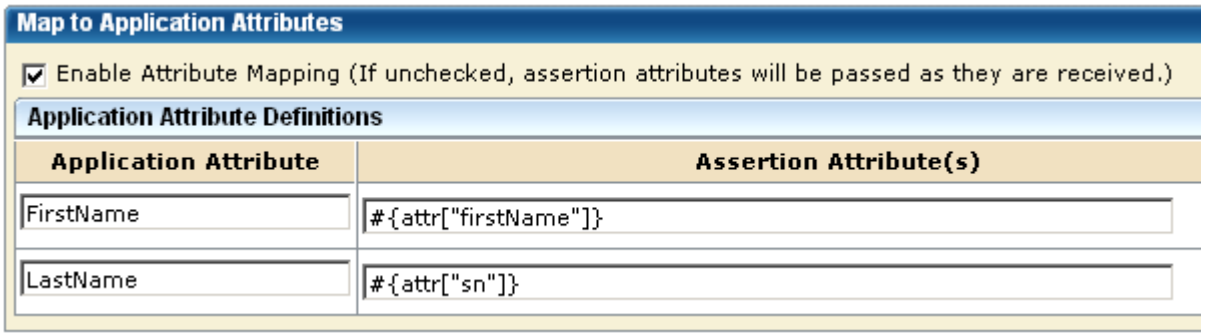
- Transform separate attributes and their values into a single attribute.

  Example

  Two attributes are included in the assertion, Name=Bob and LastName=Smith. These two attributes can be converted to FullName =Bob Smith.

Using the Application Attributes Definitions Table

You define attribute mapping rules in the Application Attributes Definitions table of the Application Integration dialog. This table is shown in the following figure:



The Application Attribute and Assertion Attribute columns are populated based on assertion attributes specified for the remote Producer or IdP entity. You configure these attributes at this local relying party. The assertion attribute name is entered for the Application Attribute column. The equivalent Unified Expression Language (UEL) string is entered in the Assertion Attribute(s) column.

Administrators or application integrators at the relying party must know the following information to configure attribute mapping:

- Names of the target application attributes.
- Names of the attributes in the assertion.
- Mapping relationship between the assertion attributes and the target application attributes. Understanding the mapping relationship means that you know how to transform the available assertion attributes into the required application attributes.

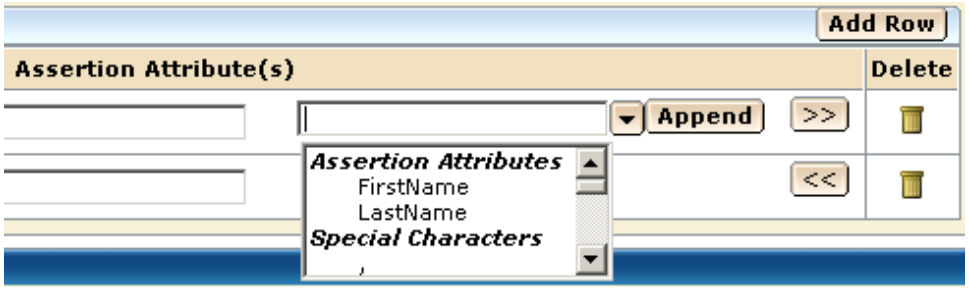
Gather the names of the application and assertion attributes from the necessary parties before setting up attribute mapping.

The application attributes must reflect the attributes used by the target application so you must modify the default values to suit the application. You obtain the application attributes from an out-of-band communication with the application administrator.

Use the Expression Builder to Build Mapping Rules

The UI provides an expression builder to aid in the construction of mapping rules. Access the expression builder by selecting the slider button (<<) to the right of the Assertion Attribute(s) field. The slider button reveals a blank field and pull-down arrow. Select the arrow to see a list of assertion attributes and special characters that you can use to compose a mapping. Click the slider button (>>) to hide the expression builder.

The following figure shows the Expression Builder menu.



The Assertion Attributes list from the expression builder is pre-populated based on assertion attributes specified for the remote Producer or IdP entity, which you configure at this local relying party. You can specify entries manually as long as you know the attribute is in the assertion. You do not have to use only the options from the expression builder menu.

The Special Characters list contains characters, such as commas and percent signs that you can use to build a mapping rule. You can select a character from the list or enter the character manually.

Important! When you enter assertion attributes in this table, they are case sensitive relative to how the assertion attribute is specified at the remote asserting party. The cases must match. If Federation Manager is at both sides of the partnership, the attributes are specified in the NameID and Attributes step of the remote IdP Partnership wizard. Obtain the assertion attributes in an out-of-band communication with the partner or by importing metadata.

After the mapping rules are defined, Federation Manager places the data in a legacy cookie, an open format cookie, or an HTTP header and sends the data to the application. You specify the delivery method in the Target Application section of the Application Integration dialog.

Modify and Delete Mappings

You can change or remove attribute mappings in the Application Attributes Definitions table at any time.

To modify a mapping

1. Place your cursor in any of the fields in the row you want to modify and enter the new text. You can also use the expression builder to append additional values to the end of the current expression.
2. Save the change by clicking Next to advance to the end of the wizard.

To delete a mapping

1. Click the trash barrel in the Delete column for the entry you want to remove.
2. Save the change by clicking Next to advance to the end of the wizard.

Construct Attribute Mapping Rules Using the Proper Syntax

Attribute mapping uses mapping rules that transform assertion attributes to application attributes. When attribute mapping is enabled, Federation Manager generates default mapping rules. The rules are based on the assertion attributes specified for the remote Producer or IdP entity. All this configuration takes place at the local relying party. When attribute mapping is disabled, assertion attributes are passed "as is" to the target application.

Federation Manager uses a Unified Expression Language (UEL) syntax for mapping that is similar to JSP and JSF. Each assertion attribute is put into a hashmap and assigned the **attr** keyword. A UEL expression evaluator goes through the list of mapping rules and applies them to the hashmap of assertion attributes. The expression evaluator then generates another hashmap containing the resulting application attributes. The hashmap of outgoing application attributes is converted into cookie contents or header variables and delivered to the target application.

For more information about UEL, go to the Sun Developer Network http://developers.sun.com/.

To construct expressions, it is important to understand the syntax Federation Manager uses for the expressions.

Single Attribute Representation

To represent a single assertion attribute, use the following syntax:

#{attr["*attribute_name*"]}

Example: #{attr["Name"]} represents the value of the Name assertion attribute.

Composite Attribute Representation

Value expressions can be concatenated to form a composite value (with optional delimiter). To represent a composite assertion attribute, use the following syntax:

#{attr["*first_attribute*"]}*optional_character* #{attr["*second_attribute*"]}

Mapping Examples

The following are a series of examples of mapping rules. These examples are presented in the following format:

application_attribute=assertion_attributes_expression

Name Example

Syntax

ID = #{attr["Name"]}

Sample Result

BobSmith

Simple Concatenation Examples

Syntax

FullName = #{attr["FirstName"]},#{attr["LastName"]}

Sample Result

Bob,Smith

Syntax

FullName = #{attr["LastName"]},#{attr["FirstName"]}

Sample Result

Smith,Bob

Spaces are considered special characters. If you want a space between attributes in an expression, enter a space. For example:

Syntax

FullName = #{attr["LastName"]}, #{attr["FirstName"]}

Sample Result

Smith, Bob

Date Examples

Syntax

Date = #{attr["month"]}/#{attr["dateOfMonth"]}/#{attr["year"]}

Sample Result

01/05/2010

Syntax

Date = #{attr["monthSymbol"]} #{attr["dateOfMonth"]}, #{attr["year"]}

Sample Result

January 5, 2010

Monetary Example

Syntax

Price = #{attr["amount"]}#{attr["currency"]}

Sample Result

2.50EUR

Email Address Examples

Syntax

EmailAddress = #{attr["userName"]}@#{attr["domainName"]}

Sample Result

JaneDoe@company.com

Syntax

AcmeEmailAddress = #{attr["AcmeIDKey"]}@acme.com

Sample Result

bsmith@acme.com

Configure Attribute Mapping at the Relying Party

Define a set of mapping rules that Federation Manager can apply to the assertion attributes. Federation Manager lets you map a specific assertion attribute or a combination of several attributes. The result of the mapping can be a single application attribute or multiple attributes.

To configure attribute mapping

1. Navigate to the Application Integration step in the Partnership wizard.
2. Select the Enable Attribute Mapping check box in the Map to Application Attribute section.

   An Application Attribute Definitions table displays.
3. Modify any existing application attribute or define new ones in the table. All application attributes are delivered to the target application.

   The syntax of the value in the Assertion Attribute column must comply with Unified Expression Language (UEL).

   Select the slider button (<<) to open the expression builder and display the options available to you. To add the item from the list to the attribute value, select the assertion or special character and click Append.

   Note: When you specify Cookie Data and any special character in the Application Attributes Table, select the URL Encode Attribute Cookie Data option. The check box is in the Target Application section of the dialog. Special characters can be added from the drop-down list or entered manually. Additionally, the target application must URL decodes the name and value of the application attribute received.
4. (Optional) If the default mappings are not sufficient, add as many rows as you like.

   By default, all assertion attributes defined at the remote Producer or IdP entity are included in the table with default (straight) mappings. The original assertion attribute is not changed. You can modify these mappings.
5. Configure the method by which the application attributes are sent to the target application. You configure the method in the Target Application section of the Application Integration dialog.

Attribute mapping configuration is complete.

More information:

Using the Application Attributes Definitions Table (see page 184)
Construct Attribute Mapping Rules Using the Proper Syntax (see page 186)

Dynamic Provisioning of a User Identity at the Relying Party

In a federated network, it is not uncommon for the relying party to establish accounts for users federating from different asserting parties. Dynamic provisioning lets Federation Manager support the process of creating client accounts with the necessary account rights and access privileges for accessing data and applications.

Federation Manager offers two methods to support provisioning:

- Local account linking (SAML 2.0 only)
- Remote provisioning

Each method is described in the following sections.

Local Account Linking for Provisioning

You can use local account linking to implement provisioning only for SAML 2.0 deployments. Provisioning occurs by linking a user account at the IdP to an account at the SP.

The local account linking process is as follows:

1. A user requests access to a federated target resource at the SP.
2. The SP generates an AuthnRequest that includes an attribute named AllowCreate, which is set to true. The SP sends the AuthnRequest to the IdP to obtain an identity for the user.
3. Upon receiving the AuthnRequest, the IdP generates an assertion. During assertion generation, the IdP searches for the appropriate user record for the attribute that is configured to serve as the Name ID in the assertion.
4. If the IdP cannot find a value for the attribute being used for the NameID, the IdP generates a persistent identifier, assuming the feature to create an identifier is enabled.

   The persistent identifier is a randomly generated ID. The IdP uses this identifier as the value of the Name ID attribute and places it in the assertion. The IdP then returns the assertion to the SP. For example, if the attribute for the NameID is set to **telephone** and there is no value for telephone in the user record, the NameID is set to the randomly generated identifier.

   Note: The Allow/Create feature must be configured at both sites. If the IdP is not configured to create an identifier, regardless of whether the Allow/Create attribute is in the AuthnRequest message, assertion generation fails.
5. Federation Manager at the SP processes the assertion from the IdP, but it cannot find the user record because the NameID value does not exist at the SP. As a result, authentication fails.
6. The failed authentication attempt triggers a redirect to a linkaccount.jsp page with all the assertion and other data that the Assertion Consumer Service passes to it.
7. The user is required to authenticate with local credentials before gaining access to the linkaccount.jsp page. The successful login identifies the user. Federation Manager references the appropriate user record in the local user directory and creates a session for that user. The user still does not get access to the originally requested federated resource.

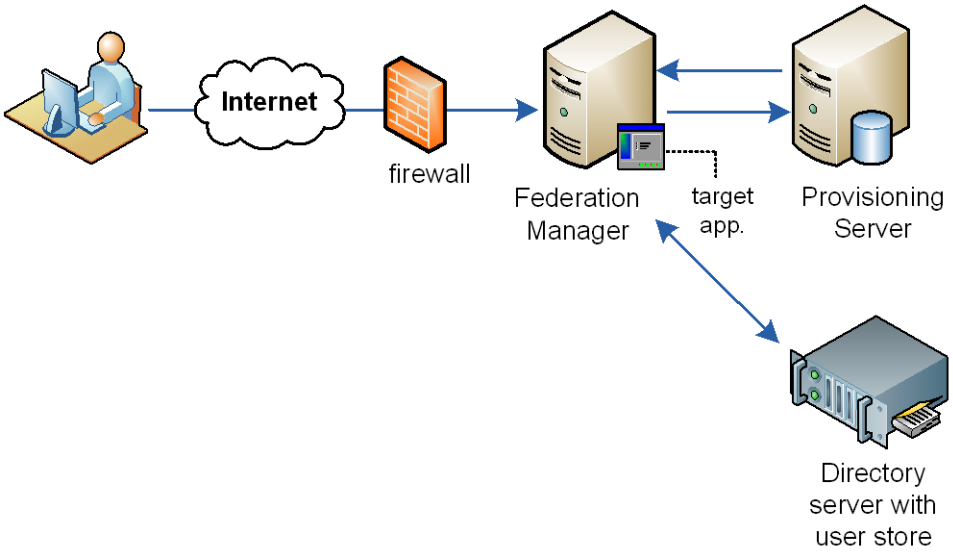
8. The linkaccount.jsp passes the assertion and all other data back to the Assertion Consumer Service. Federation Manager authenticates the user with the assertion again. Now that there is a session that identifies the user, Federation Manager populates the proper user record in the local user directory with the persistent identifier from the assertion. Federation Manager stores the persistent identifier in an attribute that you configure specifically for this purpose. The account at the IdP is now linked with the account at the SP. Authentication succeeds.
9. Finally, Federation Manager redirects the user the requested resource.

Note: Local account linking requires the use of the **Allow IdP to create User Identifier** feature; however, the AllowCreate feature is not exclusively for local account linking. You can select this feature without wanting to implement local account linking.

Remote Provisioning

Remote provisioning employs a third-party provisioning application to create a new user account and then pass the necessary information back to Federation Manager. Federation Manager uses the data to create a user credential.

The following figure shows how a remote provisioning setup can be configured.



The high-level provisioning process is as follows:

1. Federation Manager at the relying party receives a request for a resource along with an assertion; however, the user cannot be found in the user directory.
2. With provisioning enabled, Federation Manager processes an active response containing assertion data and generates a cookie (legacy or open format) with the assertion data. Additionally, a cookie that keeps state is generated to indicate a provisioning request is in place.

3. Federation Manager redirects the browser with cookies or headers to a provisioning application.
4. The provisioning application typically prompts the user to log in. After logging in, the application reads the Federation Manager cookie or the headers and uses the assertion data and the login credentials to establish a user account.
5. The user is sent back to Federation Manager and a cookie that maintains state information about provisioning is examined to verify that the user has been provisioned. A credential is created and passed to the authentication scheme.
6. Federation Manager attempts user disambiguation a second time. Assuming provisioning is successful, the user is authenticated and cookies or headers are sent to the target application.

   The data delivery method to the target application is defined by the redirect mode you select for the target application.
7. The user is redirected to the target resource.

Delivery of Assertion Data to the Provisioning Application

To accomplish remote provisioning, Federation Manager redirects the browser with the assertion data to the provisioning application.

Federation Manager can pass the assertion data using one of three methods:

Legacy cookie

Delivers SAML assertion information in a legacy cookie generated by Federation Manager. The cookie contains a login ID based on the assertion data. If a legacy cookie is used, then the Federation Manager Java SDK must be installed on the system with the provisioning application so that the provisioning application can read the legacy cookie.

Note: If you use the legacy cookie, the Federation Manager system and the remote provisioning system must be in the same domain.

Open format cookie

Delivers SAML assertion information in an open format cookie. The cookie contains a login ID based on the assertion data.

Note: If you use the open format cookie, the Federation Manager system and the remote provisioning system must be in the same domain.

The cookie can be created in one of two ways:

- The Federation Manager SDK creates the cookie.

  If you select one of the FIPS algorithms (AES algorithms), you are required to use a Federation Manager SDK to generate the cookie. If you are planning to use the .NET SDK, you are required to use the AES128/CBC/PKCS5Padding encryption algorithm. If the provisioning application uses .NET then the Federation Manager .NET SDK can be installed on the provisioning server and used to read the open format cookie.

  The provisioning application must use the same language as the SDK that it is using to create a cookie. If you are using the Federation Manager Java SDK, the application must be in Java. If you are using the .NET SDK, the application must support .NET.

- You manually create an open format cookie.

  To create an open format cookie without using a Federation Manager SDK, use any programming language to create the cookie. Review the details about the contents of the open format cookie (see page 329).

  The language you use to write the cookie must support UTF-8 encoding and any of the PBE encryption algorithms that Federation Manager uses for password-based encryptions, which include:

  - PBE/SHA1/AES/CBC/PKCS12PBE-1000-128
  - PBE/SHA1/AES/CBC/PKCS12PBE-1000-192
  - PBE/SHA1/AES/CBC/PKCS12PBE-1000-256
  - PBE/SHA256/AES/CBC/PKCS12PBE-1000-128
  - PBE/SHA256/AES/CBC/PKCS12PBE-1000-192
  - PBE/SHA256/AES/CBC/PKCS12PBE-1000-256
  - PBE/SHA1/3DES_EDE/CBC/PKCS12PBE-1000-3
  - PBE/SHA256/3DES_EDE/CBC/PKCS12PBE-1000-3

  The provisioning application cannot read the open format cookie without an SDK if you select FIPS-compatible (AES) algorithm to encrypt the cookie.

  You must also ensure that the open format cookie gets set in the user's browser.

  Note: If you installed Federation Manager in FIPS-only mode, only the open format cookie is available.

HTTP headers

If proxy mode is used, this information can also be passed as HTTP headers. If you use HTTP headers, the Federation Manager system and the remote provisioning system can be in different domains.

The delivery option is configurable in the Application Integration step of the Partnership wizard.

After the user is redirected to the provisioning application, Federation Manager no longer has control over the process. If provisioning a user account is a time-consuming process, the provisioning application is responsible for handling this situation, for example, by sending a message to the user that provisioning is in process. This information lets the user know not to keep trying to log in before an user account is available.

Local Account Linking Configuration (SAML 2.0)

Implementing the local account linking method of provisioning requires configuration at the Identity Provider and Service Provider.

To configure local account linking at the Identity Provider

1. Access the Partnership wizard and navigate to the Assertion Configuration step in the Partnership wizard.
2. Configure the required fields in the Name ID group box.

   In these fields is where you determine the attribute used for the NameID in the assertion.

   Note: Click Help for a description of fields, controls, and their respective requirements.
3. Select the **Allow Creation of User Identifier** check box.
4. Select the Confirm step the Partnership wizard and click Finish to save your changes.

Configuration at the Identity Provider is complete.

To configure local account linking at the Service Provider

1. Access the Partnership wizard and navigate to the User Identification step.
2. In the Choose Identity Attribute from Assertion group box:
   - Select NameID as the attribute from the assertion used for identification.
   - Select Allow IDP to create user identifier.

3. Enter a value for the Search Specification field.

   The Search Specification value is the attribute Federation Manager uses to look up the user and to store the persistent identifier sent from the IdP. For example, if buyerID should store the value of the NameID, set the string to buyerID=%s.

4. Navigate to the Application Integration step.

5. Select Local Account Linking for the Provisioning Type field in the User Provisioning section of the dialog.

   Selecting this option automatically configures the User Not Found URL to the linkaccount.jsp page with a method of POST. This URL is where Federation Manager redirects the user after the first failed authentication attempt.

6. (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. The accountlinking parameter must be set to yes. The page is in *federation_mgr_home*/secure-proxy/Tomcat/webapps/affwebservices/public.

7. Select the Confirm step in the Partnership wizard and click Finish to save your changes.

Remote Provisioning Configuration

Configuring remote provisioning requires that you determine a delivery option of the assertion data and supply the URL of the provisioning server.

In addition to configuring remote provisioning, you can select the Allow IdP to create User Identifier option. This option enables the IdP to create a persistent identifier if no identifier for the user exists. This Allow/Create feature is not exclusively for provisioning using local account linking, though it is required for the local method.

You can enable the Allow/Create feature together with remote provisioning, if you want the IdP to generate a user identifier that is sent with other attributes to the remote provisioning server. The application at the remote provisioning server determines how it uses the generated identifier. The application can perform local account linking; however, this is not Federation Manager local account linking.

To configure remote provisioning

1. Begin at the Application Integration step of the Partnership wizard.

2. Select the provisioning type in the User Provisioning group box.

   Note: Click Help for a description of fields, controls, and their respective requirements.

3. If you select Remote as the provisioning type, complete the following additional fields:
   - Delivery Option
   - Provisioning Server URL
4. If you specify open format cookie as the delivery option, you must complete the additional settings in the Open-format Cookie group box.

   These settings include the name of the cookie, the algorithm that encrypts the cookie and the encryption password. Optionally, you can enable an HMAC function to verify the integrity of the cookie.
5. Select the Confirm step in the wizard and click Finish to save your changes.

You have completed remote provisioning configuration.

More information:

Delivery of Assertion Data to the Provisioning Application (see page 192)

Failed Authentication Handling Using Redirect URLs (Relying Party)

Assertion-based authentication can fail at the site that consumes assertions. If authentication does fail, you can configure Federation Manager to redirect the user to different applications (URLs) for further processing. For example, when user disambiguation fails, Federation Manager can be configured to send the user to a provisioning system, which could create a user account based on the information found in the SAML assertion.

Setting up redirect URLs is optional and is only configurable at the relying party.

To configure the redirect URLs

1. Begin at the Application Integration step of the Partnership wizard.
2. In the Status Redirect URL section of the dialog, configure only those settings for the failure conditions for which you want to redirect users. The settings in the Status Redirect URLs group box are:
   - User Not Found
   - Invalid SSO Message
   - Unaccepted User Credential (SSO message)

   Note: Click Help for a description of fields, controls, and their respective requirements.

3. For each redirect option you configure, specify the method by which Federation Manager redirects the user. The options are:

   302 No Data (default)

   Redirects the user with an HTTP 302 redirect and no data.

   HTTP Post

   Redirects the user with the HTTP Post protocol.

Configuration of the redirect URLs is complete.

Partnership Confirmation

Review the partnership configuration before saving it.

To confirm the configuration of the partnership

1. Review the settings in the Confirm step of the Partnership wizard.
2. Click Modify in each group box to change any settings.
3. Click Finish when you are satisfied with the configuration.

The partnership configuration is complete.

Partnership Activation

After you have created a partnership, you must activate it before you can use it. You can also deactivate a partnership using the same process.

Important! You must deactivate a partnership before you can modify it.

To activate or deactivate a partnership

1. From the Federation tab, select Partnerships.

   The View Federation Partnerships dialog opens.

2. From the Actions menu, select Activate or Deactivate next to the partnership of interest.

   A confirm dialog displays.

   Note: Activate is only available for a partnership in DEFINED or INACTIVE status, and Deactivate is only available for a partnership in ACTIVE status.

3. Click Yes to confirm your selection.

   The status of the partnership is set and the display is refreshed.

Exporting a Partnership

You can use metadata as a basis for creating remote entities and forming a partnership. Metadata makes partnership configuration more efficient because many aspects of an entity are already defined in the metadata file. The file can then be imported to create a new partnership or remote entity.

You do not have to complete a partnership before exporting it. You can configure a portion of the partnership and then export it.

In the Federation Manager UI, you can export metadata from an existing partnership entry.

Note: In the Federation Manager UI, you can export metadata from an existing local asserting or relying entity. Be aware that when you export SAML 1.1 data, the terms used in the resulting metadata file are SAML 2.0 terms. This convention is dictated by the SAML specification. When you import the SAML 1.1 data, the terms are imported correctly using SAML 1.1 terminology.

When exporting from the partnership, the selected partnership is used as the basis of the export and you are not allowed to define a new partnership name—the system uses the name from the selected partnership.

To export partnership metadata

1. From the Federation tab, select Partnerships.

   The View Federation Partnerships dialog displays.

2. Click the Action pull-down menu next to the appropriate entry in the list and select Export Metadata.

   The Export Metadata dialog opens.

3. Complete the fields on the dialog.

   If you are exporting a partnership in ACTIVE status, most of the fields are read-only; only the Validity Duration field and the alias drop-down list are editable.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Click Export to finish.

5. A dialog prompting you to open or save the metadata file displays. You can open it to view it.

6. Save the data to an XML file on your local system.

The metadata is exported to the specified XML file.

Web Links to Initiate Single Sign-on

When designing a site for federated content, that site includes a page with specific links to trigger single sign-on. These links are URLs to Federation Manager servlets for the Single Sign-on service or the AuthnRequest Service.

To initiate single sign-on, the user can begin at the Identity Provider or the Service Provider. Configure the appropriate links at each site to initiate single sign-on operation.

Producer-initiated SSO (SAML 1.1)

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. The URL makes a request to the producer-side web Agent before the user is redirected to the consumer site.

For SAML Artifact and POST profile, the syntax for the intersite transfer URL is:

```
http://producer_host:port/affwebservices/public/intersitetransfer?
CONSUMERID=consumer_entity_ID&TARGET=http://consumer_site/target_url
```

The variables and query parameters in the previous intersite transfer URL are as follows:

producer_host:port

Specifies the server and port number where the user is authenticated.

CONSUMERID

(Required) Identifies the consumer. On the producer side, the producer-to-consumer partnership has a name, and the remote consumer entity has an ID. The CONSUMERID is the entity ID of the remote consumer.

You can use the parameter NAME in place of CONSUMERID, but not both.

If you use NAME, specify the name of the producer-to-consumer partnership as defined at the producer.

consumer_entity_ID

Identifies the consumer site the user wants to visit from the producer site.

TARGET

(Optional) Identifies the requested target resource at the consumer.

The TARGET parameter is optional. You are required to define the target; however, you can define it in the consumer-side partnership instead of the intersite transfer URL. The target is defined in the Application Integration step of the Partnership wizard. Be sure to define the target in the URL or in the partnership.

consumer_site

Specifies the server at the consumer site.

target_url

Indicates the target application at the consumer site.

Note: Query parameters for the SAML Artifact binding must use HTTP-encoding.

Example of an intersite transfer URL for the Artifact and POST profile:

```
http://www.smartway.com/affwebservices/public/intersitetransfer?
CONSUMERID=ahealthco&TARGET=http://www.ahealthco.com:85/
smartway/index.jsp
```

IdP-initiated SSO (SAML 2.0 Artifact or POST)

If a user visits a Federation Manager Identity Provider before going to the Service Provider, an unsolicited response at the Identity Provider must be initiated. To initiate an unsolicited response, create a hard-coded link that generates an HTTP Get request that Federation Manager accepts. This HTTP Get request must contain a query parameter that provides the Service Provider ID. The Identity Provider must generate the SAML assertion response. A user clicks this link to initiate the unsolicited response.

Note: This information applies to Artifact or POST bindings.

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*&RelayState=*target_URL*

idp_server:port

Identifies the web server and port hosting Federation Manager.

SP_ID

Specifies the Entity ID of the Service Provider defined in the partnership.

URI_for_binding

Identifies the URI of the POST or Artifact binding for the ProtocolBinding element. The SAML 2.0 specification defines this URI.

- 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: A binding must also be enabled for the partnership for the request to work.

target_URL

Specifies the URL of the federation resource target at the Service Provider.

Note the following:

- If you do not include the ProtocolBinding query in the link, use the one binding configured in the Service Provider properties
- When Artifact and POST are enabled in the Service Provider properties, POST is the default. Therefore, if you only want to use Artifact binding, include the ProtocolBinding query parameter in the link.

Important! If you configure indexed endpoint support for Assertion Consumer Services, the value of the ProtocolBinding query parameter overrides the binding for the Assertion Consumer Service.

Unsolicited Response Query Parameters Used by the IdP

An unsolicited response that initiates single sign-on from the IdP can include the following query parameters:

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 for sending the assertion response to the Service Provider. If the Service Provider is not configured to support the specified protocol binding, the request fails.

RelayState

Indicates the URL of the target resource at the Service Provider. By including this query parameter, it tells the IdP to redirect the user the appropriate resource at the Service Provider. This query parameter can be used in place of specifying a target URL when configuring single sign-on.

Required Use of the ProtocolBinding Query Parameter

The ProtocolBinding query parameter is required *only* if the artifact and POST binding are enabled for the Service Provider properties. In addiiton, the user wants to only use artifact binding.

- The URI for the artifact binding is:

  urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact

- The URI for the POST binding 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: HTTP coding the query parameters is not necessary.

Optional Use of the ProtocolBinding Query Parameter

When you *do not* use the ProtocolBinding query parameter, the following information 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 the default.

Example: Unsolicited Response without ProtocolBinding

The link redirects the user to the Single Sign-on service. Included in this link is the Service Provider identity, which the SPID query parameter specifies. The ProtocolBinding query parameter is not present. After the user clicks this hard-coded link, they are redirected to the Single Sign-on service.

http://fedsrv.fedsite.com:82/affwebservices/public/saml2sso?
SPID=http%3A%2F%2Ffedsrv.acme.com%2Fsmidp2for90

Example: Unsolicited Response with ProtocolBinding

The link redirects the user to the Single Sign-on service. Included in this link is the Service Provider identity, which the SPID query parameter specifies and the artifact binding is being used. After the user clicks this hard-coded link, they are redirected to 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

ForceAuthn and IsPassive Processing at the 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.

Note: Federation Manager Identity Providers do not support the IsPassive query parameter; however, the IsPassive parameter may be included in an AuthnRequest message sent by a third-party Service Provider.

When a Service Provider includes ForceAuthn or IsPassive in the AuthnRequest, a Federation Manager Identity Provider handles these query parameters as follows:

ForceAuthn Handling

When a Service Provider includes ForceAuthn=True in the AuthnRequest message, a Federation Manager Identity Provider challenges the user for their credentials, regardless of whether or not a Federation Manager session exists. 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 Federation Manager session, a Federation Manager Identity Provider returns a SAML response that includes an error message because Federation Manager requires a session.
- If IsPassive=True in the AuthnRequest message and there is a Federation Manager session, the Federation Manager Identity Provider returns the assertion.
- If IsPassive and ForceAuthn are in the AuthnRequest message and both are set to True, the Federation Manager Identity Provider returns an error because this is an invalid request. IsPassive and ForceAuthn are mutually exclusive.

SP-initiated SSO (SAML 2.0)

SP-initiated SSO requires that you have an HTML page at the Service Provider containing hard-coded links to the AuthnRequest service at the Service Provider. The links redirect the user to the Identity Provider to be authenticated and determining what is included in the AuthnRequest itself.

This information applies to Artifact or POST bindings.

The hard-coded link that the user selects must contain specific query parameters, which are used in an HTTP GET request to the AuthnRequest service.

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:port*/affwebservices/public/saml2authnrequest?
ProviderID=*IdP_ID*&ProtocolBinding=*URI_of_binding*&
RelayState=*target_URL*

sp_server:port

Specifies the server and port number at the Service Provider that is hosting Federation Manager.

IdP_ID

Specifies the identity that is assigned to the Identity Provider.

URI_of_binding

Identifies the URI of the POST or Artifact binding for the ProtocolBinding element. The SAML 2.0 specification defines this URI.

- The URI for the artifact binding is:

  urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact

- The URI for the POST binding 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.

Also, enable a binding for the partnership for the request to work.

target_URL

Specifies the URL of the federation target at the Service Provider.

Note the following information:

- If you do not include the ProtocolBinding query parameter in the AuthnRequest link, the default binding is the one defined for the partnership. If you have both bindings defined in the partnership, then no binding is passed in the AuthnRequest. As a result, the default binding at the Identity Provider is used.
- If the artifact and POST bindings are enabled for the partnership but you only want to use artifact binding, include the ProtocolBinding query parameter in the link.

AuthnRequest Query Parameters Used by an SP

The query parameters a Federation Manager SP can use in the links to the AuthnRequest Service are as follows:

ProviderID (required)

Entity ID of the Identity Provider where thethe AuthnRequest Service.sends AuthnRequest message.

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 fails.

If you use this parameter in the AuthnRequest, you cannot include the AssertionConsumerServiceIndex parameter also. They are mutually exclusive.

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 using Federation Manager, not if it is using third-party federation software.

- If the SP sets ForceAuthn=True in the AuthnRequest message, and a session exists for a particular user, the Identity Provider challenges the user for credentials. If the user successfully authenticates, the IdP sends the identity information from the existing session in the assertion and discards the session generated for the authentication.
- If the SP sets ForceAuthn=True in the AuthnRequest message and there is no session, the IdP challenges the user for credentials. If the user successfully authenticates, a session is established.

Example

http://sp1.demo.com:81/affwebservices/public/saml2authnrequest?ProviderID=idp1.example.com&ForceAuthn=yes

AssertionConsumerServiceIndex

Specifies the index of the endpoint acting as the Assertion Consumer Service. It tells the Identity Provider where to send the assertion response.

If you use this parameter in the AuthnRequest, do not include the ProtocolBinding parameter also because they are mutually exclusive. The Assertion Consumer Service has its own protocol binding, which could conflict with the ProtocolBinding parameter.

RelayState

Indicates the URL of the target resource at the Service Provider. By including this query parameter, it tells the Service Provider where to send the user. Otherwise, the default target defined for the partnership is used.

Required Use of the ProtocolBinding Query Parameter

The ProtocolBinding parameter is required if artifact and POST binding are enabled for the partnership, and if 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.

Optional Use of ProtocolBinding

When you *do not* use the ProtocolBinding query parameter, the following applies:

- If only one binding is enabled for the partnership and the ProtocolBinding query parameter is not specified, the enabled binding for the partnership 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 the ProtocolBinding Query Parameter

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, Federation Manager passes a request for an AuthnRequest message.

Example: AuthnRequest Link with the ProtocolBinding Query Parameter the

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, Federation Manager passes a request for an AuthnRequest message.

Chapter 8: Authentication Context Processing

Determine how a User Authenticated at an Identity Provider

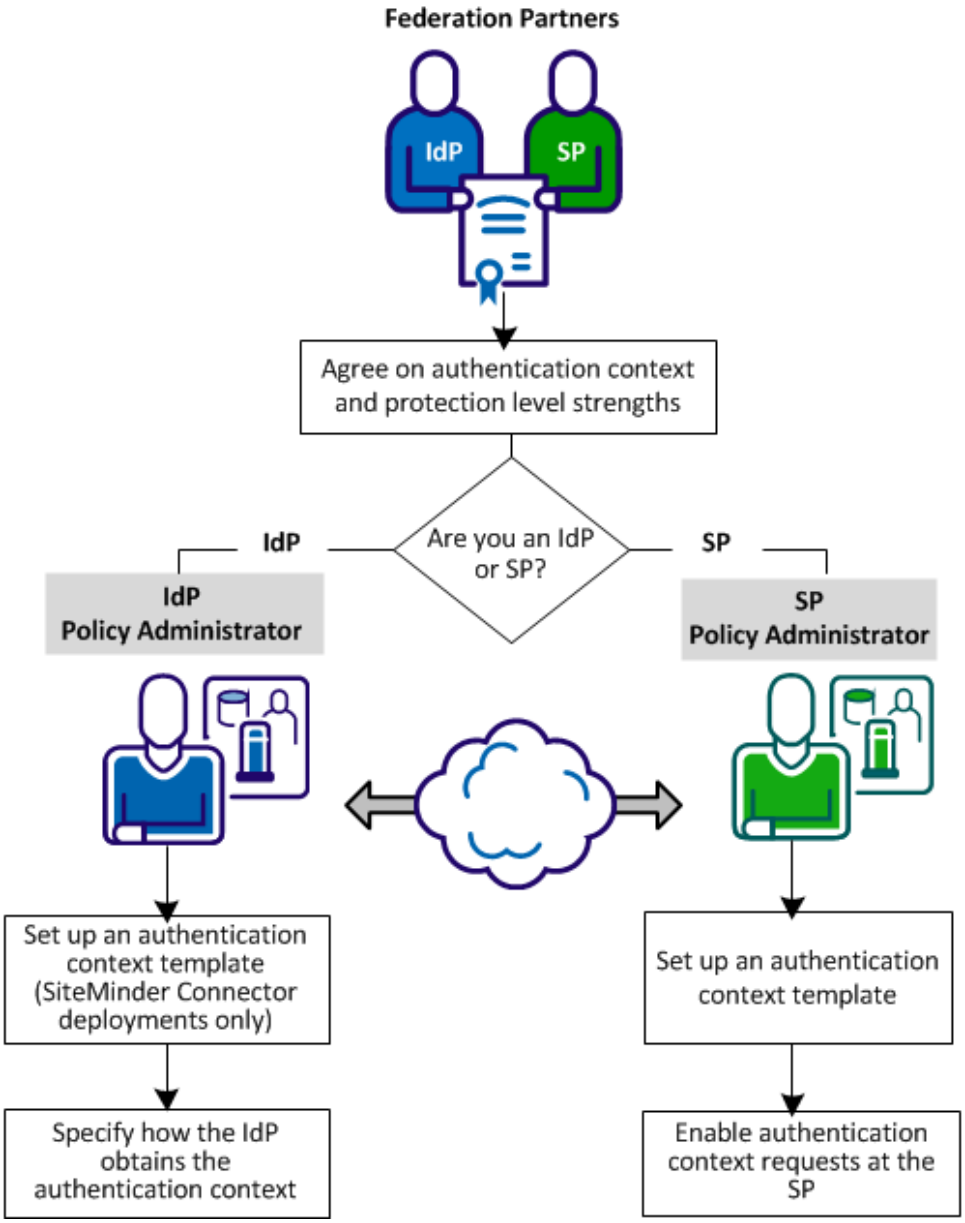
The *authentication context* indicates how a user authenticated at an Identity Provider. The Identity Provider includes the authentication context in an assertion at the request of a Service Provider or based on configuration at the Identity Provider. A Service Provider can require information about the authentication process to establish a level of confidence in the assertion before granting access to resources.

When the Identity Provider receives a request, it compares the value of the <RequestedAuthnContext> element to the authentication context. The comparison is based on a comparison value sent in the request from the Service Provider. If the comparison is successful, the Identity Provider includes the authentication contexts in the assertion it returns to the Service Provider. If validation is configured, the Service Provider validates the incoming authentication context with the value it requested.

Verify that the policy administrators meet the following minimum knowledge requirements:

- Familiarity with SAML 2.0 specifications and standards related to authentication context processing.
- Understand Federation Manager configuration objects.
- Know how to access and use the Federation Manager Administrative UI.

The following figure shows the configuration process for each partner. Federation Manager does not have to be installed at each site.



Complete the following steps to configure authentication context processing:

1. Agree on authentication context and protection level strengths (see page 213).
2. Set up an authentication context template (see page 214).
3. Complete the task for your site:
   - Specify how the IdP obtains the authentication context (IdP-side) (see page 217)
   - Enable authentication context requests at the SP (SP-side) (see page 220)

Authentication Context Processing for IdP-initiated SSO

When single sign-on is initiated at the IdP, authentication context processing follows these steps:

1. A user request triggers single sign-on at the IdP.
2. The user is authenticated and a user session is generated. Associated with the session is a protection level that is configured with the authentication scheme.
3. Depending on the authentication context configuration at the IdP, *one* of the following conditions occur:
   - Automatic detection occurs—only available if the SiteMinder Connector is enabled for the IdP-to-SP partnership.

     Based on a configured authentication context template, the AuthnContext class is mapped to the protection level for the session.
   - Predefined authentication class is used.

     The hard-coded URI you specify is added to the assertion.
4. The IdP generates the assertion and adds the authentication context to it. The assertion is then sent to the SP.
5. At the SP, another comparison is made between the authentication context class from the assertion and the one configured at the SP. If this comparison is successful, the authentication transaction is complete.

Authentication Context Processing for SP-Initiated SSO

When single sign-on is initiated at the SP, authentication context processing follows these steps:

1. The SP sends an authentication request with the <RequestedAuthnContext> element and a comparison operator. The element is included based on a setting in the configuration of the SP-> IdP partnership.

2. When the IdP receives the request, the IdP authenticates the user and a user session is generated. Associated with the session is a protection level for the authentication scheme.
3. Depending on the authentication context configuration at the IdP, *one* of the following conditions occur:
   - Automatic detection occurs

     Based on a configured authentication context template, the AuthnContext class is mapped to the protection level for the session.
   - Predefined authentication class is used

     The hard-coded URI you specify is added to the assertion.
4. The IdP compares the AuthnContext against the authentication class for the user session. The comparison is based on the comparison operator that is sent with the request. See the table that follows this procedure for examples of how each comparison operator affects processing.

   If the SP includes multiple authentication context URIs in the request, the classes are compared one-by-one in sequential order against the context for the session. At the first successful comparison, the IdP adds the session authentication context to the assertion.
5. If the comparison is successful, then the authentication context is added to the assertion sent to the SP.

   If the comparison is not successful, the transaction is terminated with a "noauthncontext" status response.
6. At the SP, a second comparison takes place between the authentication context from the assertion and the one configured at the SP. If this comparison is successful, the authentication transaction is complete.

The following table shows examples of how an authentication context is processed depending on the comparison attribute sent in the authentication context request.

SP-requested Authentication Context	Comparison Attribute Value	IdP-configured Authentication Context	Status Response
Password	exact	InternetProtocol	NoAuthnContext
Password	minimum	InternetProtocol	NoAuthnContext
Password	better	InternetProtocol	NoAuthnContext
InternetProtocol	exact	InternetProtocol	Success
InternetProtocol	minimum	InternetProtocol	Success
InternetProtocol	maximum	InternetProtocol	Success
InternetProtocol	maximum	Password	NoAuthnContext

SP-requested Authentication Context	Comparison Attribute Value	IdP-configured Authentication Context	Status Response
InternetProtocol	better	Password	Success

Determine Authentication Context and Strength Levels with your Partner

The SP can require specific authentication context classes and strength levels before it permits access to a requested resource. Based on the sensitivity of the resources at the SP, the SP has to feel confident in the assertion it receives from the IdP.

The administrators at the IdP and SP have to establish guidelines for supported authentication contexts and the relative strength of each class. The order of the classes at the IdP together with the associated strength levels affects how it can respond to the SP.

For example, an SP requests an authentication context class of X.509 certificates with a strength level of 3. The IdP has to authenticate the requesting user at a suitable strength level. The comparison value in the request from the SP defines the evaluation of the authentication context. The authentication context that the IdP provides has to satisfy the requirement that is indicated by the comparison. The strength level is an exact match, a minimum or maximum level, or a better strength level.

Configure an Authentication Context Template

An authentication context template defines the specific SAML 2.0 AuthnContext URIs that a partner supports. Each URI identifies the context class.

You can select a template on a per-partnership basis; multiple partnerships can use a single template.

In addition to the common function, a template has distinct functions at each partner:

Authentication Context Template at the IdP

You only require a template at the IdP under the following conditions:

- The SiteMinder Connector is enabled.
- Delegated authentication is the authentication method for single sign-on.
- The IdP automatically detects the authentication context from the SP request.

The template maps URIs to the protection levels associated with a SiteMinder user session. The protection levels indicate the strength of the SiteMinder authentication scheme, from 1 through 1000, with 1000 being the strongest. An administrator assigns protection levels when configuring SiteMinder authentication scheme that authenticates a user and establishes a user session.

Note: Protection levels are only available if you are using the SiteMinder Connector.

Authentication Context Template at the SP

A template at the SP is required to generate an authentication context request. After the SP generates the request, it sends it to the IdP. The template is also required for the SP to validate that the assertion from the IdP satisfies the authentication context request.

Set up an Authentication Context Template

Set up an authentication context template to implement authentication context processing. This procedure is the same for an Identity Provider or Service Provider.

Follow these steps:

1. Log in to the Administrative UI.
2. From the Federation tab, select AuthnContext Templates.

   The View Authentication Context Templates window opens.
3. Select Create Template.

   The template wizard opens at the first step.
4. Enter a name for the template.
5. Complete one of the following actions:
   - Manually enter a URI and click Add URI.
   - Click Load Default URIs to select URIs from a predefined list. Move URIs from the Available URIs to the Selected URIs list.
6. Arrange the selected URIs by strength level. The strength level is in descending order, with the strongest URI at the top and the least strong at the bottom.
7. Click Next.
8. (Optional) Group URIs that require the same level of strength indenting one URI under the previous URI. Use the Change Grouping arrow to move a URI into or out of a group.

9. For SiteMinder Connector deployments only:
   a. Click Enable Protection Levels.
   b. Map the protection levels from a SiteMinder authentication scheme to the URIs. SiteMinder protection levels indicate the strength of an authentication scheme, ranging between 1 through 1000, with 1000 being the strongest. Individual URIs can have unique protection levels; however, grouping URIs means that they have the same level of strength.

      Consider the following information when assigning protection levels:

      - Assign the protection levels in descending order. List the strongest context at the top and the weakest context at the bottom.
      - You can modify the maximum protection level and the Administrative UI calculates the minimum. The Administrative UI verifies that there is no gap in the range of levels so that each protection level has an associated URI.

      Read more about protection level assignments.
10. Click Next to move to the last step of the wizard.
11. Select Finish to confirm the configuration.

The template is complete.

Protection Level Assignments for a Context Template

A federation deployment that uses the SiteMinder Connector for delegated authentication requires that you associate protection levels with each authentication URI. The protection level indicates a level of assurance in the strength of the authentication. Each protection level is mapped to a URI strength level. Ensure that the protection level assignments reflect the protection levels of the SiteMinder authentication scheme.

Note: In a deployment with the SiteMinder Connector, the protection level overrides the level specified in the connector authentication scheme.

When you assign protection levels in the Administrative UI, specify a range. Specify the maximum level for each URI in the list. The minimum protection level is automatically calculated based on the maximum level for the subsequent URI in the list. The range has to cover the configured SiteMinder authentication schemes. For example, if SiteMinder configures an X.509 authentication scheme at a protection level of 20, ensure that the range specified for Federation Manager includes 20.

Protection Level Example

SiteMinder Authentication Scheme	Protection Level
urn:oasis:names:tc:SAML:2.0:ac:classes:X509	20
urn:oasis:names:tc:SAML:2.0:ac:classes:MobileTwoFactorContract	15
urn:oasis:names:tc:SAML:2.0:ac:classes:InternetProtocol	10
urn:oasis:names:tc:SAML:2.0:ac:classes:Password	5

Each protection level is mapped to a URI strength level. The table shows the original list of URIs:

URI	Protection Level Max	URI Strength
urn:oasis:names:tc:SAML:2.0:ac:classes:X509	1000	4
urn:oasis:names:tc:SAML:2.0:ac:classes:MobileTwoFactorContract	15	3
urn:oasis:names:tc:SAML:2.0:ac:classes:InternetProtocol	10	2
urn:oasis:names:tc:SAML:2.0:ac:classes:Password	5	1

The ranges cover the protection level of the SiteMinder authentication scheme. For example:

- X509 scheme covers protection levels 16-1000
- MobileTwoFactorContract covers protection levels 11-15
- Internet Protocol covers 6-10
- Password covers 1-5

If you group several of the URIs, the grouping enables URIs with different protection levels to have the same URI strength. The following modified table shows the groupings.

URI	Protection Level Max	URI Strength
urn:oasis:names:tc:SAML:2.0:ac:classes:X509	1000	3
urn:oasis:names:tc:SAML:2.0:ac:classes:MobileTwoFactorContract	800	3
urn:oasis:names:tc:SAML:2.0:ac:classes:InternetProtocol	700	2

URI	Protection Level Max	URI Strength
urn:oasis:names:tc:SAML:2.0:ac:classes:Password	200	1

The range of strength levels reflects the total number of groups in the list. For example, if there are three groups, the strength level ranges from 1 to the total number groups, which is 3.

Configure Authentication Context Processing at the IdP

The Federation Manager IdP can obtain the authentication context for an assertion in two ways:

- Use a predefined authentication class

  Specify a URI for the authentication class and ignore the context request from the SP. A hard-coded entry can act as the default authentication context for IdP-initiated single sign-on.

- Detect the authentication class automatically—only available with the SiteMinder Connector enabled.

  The system automatically detects the authentication context using the authentication context template.

  The IdP uses the template even if the authentication request from the SP does not include the <RequestedAuthnContext> element. The presence of the element triggers extra evaluation by the IdP and constrains the choices of what the IdP puts in the assertion.

  You can find more information about the flow of authentication context processing (see page 211).

Specify How the IdP Obtains the Authentication Context

Configure how to obtain the authentication context.

Follow these steps:

1. Navigate to the SSO and SLO step in the IdP->SP partnership wizard.
2. In the Authentication section, specify how to obtain the authentication context.
   - For local authentication, you are required to use the predefined authentication class.
   - For delegated authentication with the SiteMinder Connector, select the predefined authentication class or automatically detect the class with an authentication context template.

3. Follow the steps for the method chosen in the previous step:
   - To include a predefined class in the assertion, select a URI from the Authentication Class pull-down menu.
   - To include a class from the session context and a template, select a template from the authentication Context Template field or click Create Template.

     Note: This option is available only if you enabled the SiteMinder Connector.
4. (Optional). Depending on how you obtain the authentication context you can also select the Ignore RequestedAuthnContext check box.

The following table shows how the Configure AuthnContext and the Ignore RequestedAuthnContext settings work together:

Configure AuthnContext	Ignore RequestedAuthnContext	SP requests AuthnContext	Result
Predefined Class	Selected	Yes	IdP ignores the <RequestedAuthnContext> and uses the defined value in the assertion.
Predefined Class	Selected	No	IdP returns the defined value in the assertion by default.
Predefined Class	Not selected	Yes	Transaction fails because the IdP is not configured to handle the authentication context request. The IdP returns an error message to the SP.
Predefined Class	Not selected	No	IdP returns the defined class value in the assertion by default.
Automatically Detect Class	Selected	Yes	IdP compares the protection level for the authentication scheme against the authentication context template and returns the matching authentication URI in the assertion. The IdP ignores the values in the SP request.
Automatically Detect Class	Selected	No	IdP compares the protection level for the authentication scheme against the authentication context template and returns the matching authentication URI in the assertion. The IdP ignores the values in the SP request.
Automatically Detect Class	Not selected	Yes	IdP compares the protection level against the authentication context class that the SP sends. The IdP uses the authentication context template to determine the authentication URI it places in the assertion.

Configure AuthnContext	Ignore RequestedAuthnContext	SP requests AuthnContext	Result
Automatically Detect Class	Not selected	No	IdP compares the protection level for the authentication scheme against the authentication context template and returns the matching authentication URI in the assertion.

Configure Authentication Context Requests at the SP

The authentication context is part of an assertion authentication statement and it indicates how a user authenticated at an IdP. An SP can require information about the authentication process to establish a level of confidence in the assertion before granting access to resources.

Authentication Context URIs are the value of the <AuthnContextClassRef> element inside of a <AuthnContext> element. Each URI identifies the context class that the SP wants the IdP to return in the assertion.

The authentication context template at the SP defines the following information:

- Which URIs the SP wants to receive from the IdP. For outgoing requests, the URIs in the template indicate which authentication contexts are acceptable to the SP before it allows access to the requested resource.
- How the URIs in the request are compared to the URIs defined at the IdP.
- How the SP uses the URIs. The SP can include URIs in the outgoing authentication request. The SP can also validate URIs in the incoming assertion response. You can configure the URI usage for both functions.

You can select a template on a per-partnership basis and multiple partnerships can use a single template.

Create an authentication context template before you enable authentication context requests or while you are configuring the SP partnership.

Enable Authentication Context Requests at the SP

An SP can request that an IdP return the authentication context in an assertion. Enable that request at the SP->IdP partnership.

Before you begin, we recommend that you create an authentication context template.

Follow these steps:

1. Log in to the Administrative UI.
2. Select
3. Select the SP->IdP partnership you want to edit.
4. Navigate to the Configure AuthnContext step in the partnership wizard.

   The configuration dialog opens.
5. Select the Enable Authentication Context Processing check box.
6. Complete the fields in the dialog.

   Note: Click Help for a description of fields, controls, and their respective requirements.

   Note the following information:

   - If no authentication context template exists, select Create template.
   - The Comparison field describes how the URIs in the SP authentication request are compared with the URIs configured at the Identity Provider.

     The Help details each comparison operator.
   - If you are selecting URIs from the Available URIs list, the available URIs reflect the URIs configured for the chosen template. If there are no predefined templates, click Create Template to configure one.

The authentication context request is included in the authentication requests sent to the Identity Provider.

Chapter 9: Delegated Authentication for Federation Users

This section contains the following topics:

Delegated Authentication Overview

When you configure single sign-on for a federation partnership, one of your configuration decisions is determining how users are authenticated.

Federation Manager offers two authentication choices:

- Local authentication
- Delegated authentication

Federation Manager can perform local authentication; however, Basic and HTML forms are the only available authentication schemes.

Delegated authentication lets Federation Manager use a third-party web access management (WAM) system to perform the authentication of any user who requests a protected federated resource. The third-party WAM system performs the authentication and then forwards the federated user identity to Federation Manager. After Federation Manager receives the user identity information, it locates the user in its own user directory and starts the federation process with the relying party.

A delegated authentication request takes place at the asserting party and it can be initiated at the third-party WAM system or at Federation Manager. An authentication request can initiate at the relying party; however this is not considered delegated authentication.

Authentication can be initiated as follows:

Authentication Initiated by Federation Manager at the Asserting Party

Federation Manager can initiate an authentication request at an asserting party. If the request is made to Federation Manager, it is recognized as a delegated authentication request. Federation Manager then redirects the user to the third-party WAM system.

Authentication Initiated by Direct Login to the WAM System at the Asserting Party

When a user logs in to a WAM system at the asserting party, an authentication request is initiated. After the WAM system successfully authenticates the user, the identity information is then forwarded to Federation Manager.

Authentication Initiated at the Relying Party

The relying party can initiate an authentication request, but this scenario is not considered delegated authentication. Delegated authentication occurs only at the asserting party.

A request for a federated resource is made directly to the relying party, who then sends an AuthnRequest to Federation Manager at the asserting party. Federation Manager recognizes it as a delegated authentication request and redirects the user to the third-party WAM system at the asserting party. The user logs in to the WAM system, which initiates an authentication request. After the WAM system successfully authenticates the user, the identity information is then forwarded to Federation Manager.

After the third-party WAM system receives the authentication request, it passes the user identity to Federation Manager. The method the WAM system uses to pass the user identity depends on whether the delegated authentication method is cookie-based or a query string-based.

How the Third Party WAM Passes the User Identity

The third-party WAM system can use one of two methods to pass a federated user identity to Federation Manager:

- Using a legacy cookie or open format cookie.

  The open format cookie can be encrypted to ensure the security of the data.

- Using a query string appended to a redirect URL that sends the browser to Federation Manager.

  The query string is sent in clear text.

The method a third-party WAM system chooses depends on the configuration it wants to establish for passing a user identity to Federation Manager.

The methods of passing the user identity are detailed in the following sections.

Cookie Method for Passing User Identity

Federation Manager can use a legacy or open format cookie to pass a user identity. The cookie contains a user login ID as one of its values.

Note: If you configure delegated authentication for use with the Federation Manager Agent for Windows Authentication, the Agent requires the use of the open format cookie. However, if the SiteMinder Connector is also configured, the open format cookie option for delegated authentication is not available. The Federation Manager Windows Agent and the SiteMinder Connector cannot coexist in a deployment.

Authentication can begin at the WAM system or at Federation Manager. If authentication begins at Federation Manager, it redirects the user to the WAM system, where the authentication process is the same as if it began at the WAM system.

The delegated authentication process is as follows:

1. An authentication request comes into to the third-party WAM system.
2. The user is authenticated.
3. The third-party WAM system obtains a cookie in one of two ways:
   - The WAM system uses the Federation Manager SDK to create a legacy cookie or an open format cookie. The SDK creates the cookie and sends it back in a request to the WAM system.

     Note: To create an open format cookie that is FIPS-encrypted, use a Federation Manager SDK.

     The third-party WAM application must use the same language as the SDK that it is using to create a cookie. If you are using the Federation Manager Java SDK, the third-party WAM application must be in Java. If you are using the .NET SDK, the third-party WAM application must support .NET.
   - The WAM system uses a manually created open format cookie.

     You can create an open format cookie without using a Federation Manager SDK. To create the open format cookie cookie manually, use any programming language that supports UTF-8 encoding and any of the following PBE encryption algorithms that Federation Manager uses for password-based encryption:
     - PBE/SHA1/AES/CBC/PKCS12PBE-1000-128
     - PBE/SHA1/AES/CBC/PKCS12PBE-1000-192
     - PBE/SHA1/AES/CBC/PKCS12PBE-1000-256
     - PBE/SHA256/AES/CBC/PKCS12PBE-1000-128

- PBE/SHA256/AES/CBC/PKCS12PBE-1000-192
- PBE/SHA256/AES/CBC/PKCS12PBE-1000-256
- PBE/SHA1/3DES_EDE/CBC/PKCS12PBE-1000-3
- PBE/SHA256/3DES_EDE/CBC/PKCS12PBE-1000-3

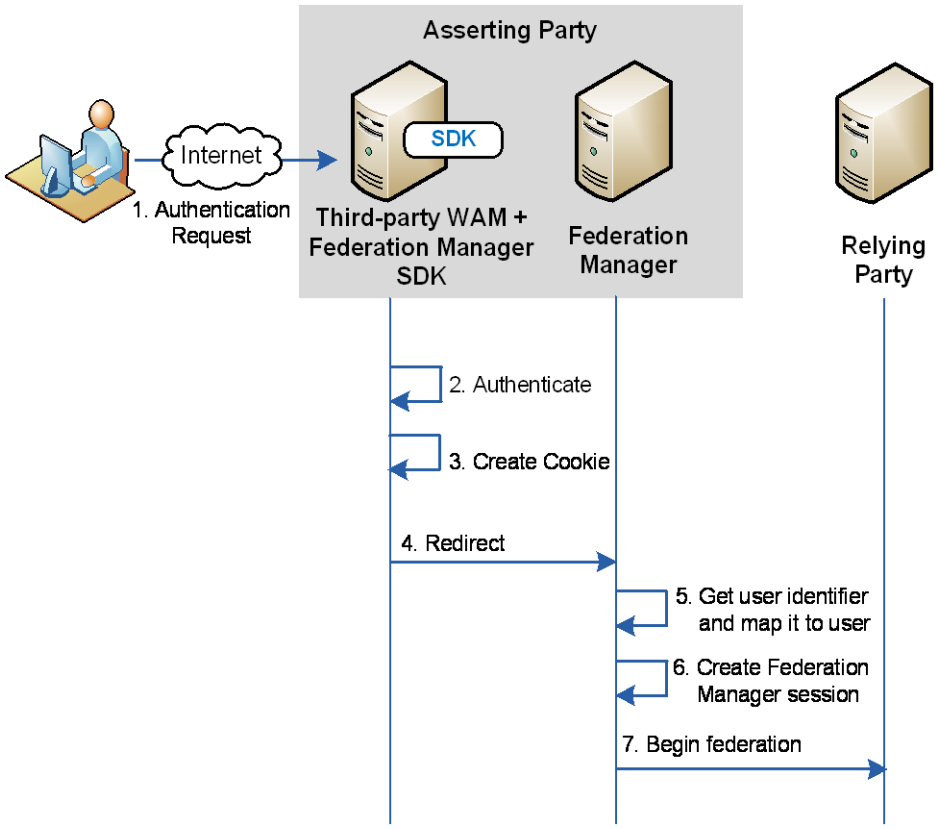
You must also be sure that the open format cookie gets set in the user's browser.

To write a complete cookie, review the details about the contents of the open format cookie (see page 329).

Note: The WAM system and Federation Manager must be in the same cookie domain.

4. The WAM system redirects the browser to Federation Manager.
5. Federation Manager extracts the login ID from the cookie then locates the user in its user directory.
6. Federation Manager creates a Federation Manager session.
7. After the session is created, federated communication with the relying party proceeds.

The following picture shows the cookie method when authentication is initiated at the third-party WAM.



Important! To use the legacy cookie or an SDK-created open format cookie, the third party must install a Federation Manager SDK. The SDK is a separately installed component from Federation Manager. The installation kit contains the documentation that describes how to use the SDK for delegated authentication.

Query String Method for Passing User Identity

A third-party WAM system can pass a user identity to Federation Manager by appending a query string on the redirect URL that sends the user from the WAM system to Federation Manager. For this method to work, the third-party WAM system has to configure a URL that redirects federated users to Federation Manager after they are authenticated.

If authentication is initiated at the WAM system, the process for delegated authentication using a query string is as follows:

Note: Authentication can also be initiated at Federation Manager or at the relying party.

1. The third-party WAM system receives an authentication request.
2. The user is authenticated.
3. The third-party WAM system constructs a redirect URL and adds the login ID and hashed login ID values to the query string in the format LoginID=*LoginID*&LoginIDHash=*hashed_LoginID.*

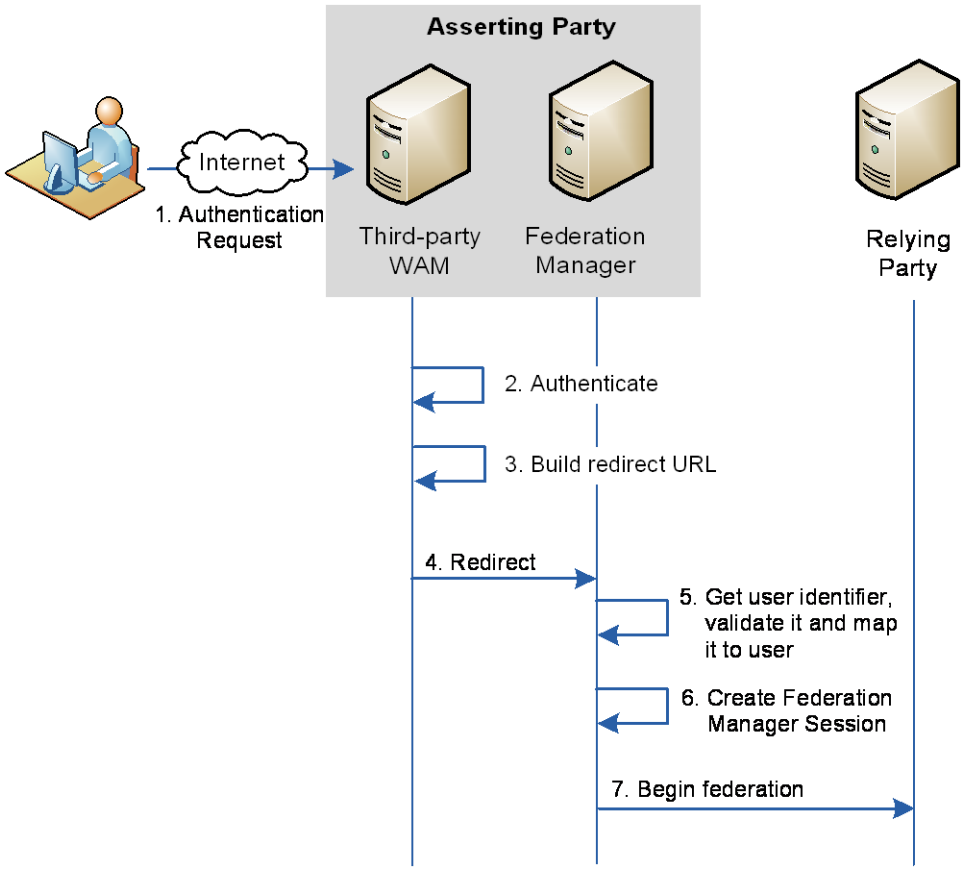
   Important! The LoginID and LoginIDHash parameters are case sensitive. Be sure to include them in the redirect URL as shown in the example.

   The hashing mechanism allows Federation Manager to verify that the user ID has been received unchanged.

   Example of a Redirect URL

   http://idp1.example.com:9090/affwebservices/public/saml2sso?SPID=FmSP&ProtocolBinding=urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST&LoginID=jdoe&LoginIDHash=454d3bd5cb839168eeffcf060ae0b9c28ed6eec0
4. The WAM system redirects the browser to Federation Manager.
5. Federation Manager extracts the login ID and hashed login ID from the URL, validates the identifier using the hashed value, and locates the user in its user directory.
6. Federation Manager creates a user session.
7. After the session is created, federated communication with the relying party proceeds.

The following picture shows the query string method when authentication is initiated at the asserting party.



Delegated Authentication Configuration

Delegated authentication is configured at the asserting party, where an assertion is generated based on an authenticated user identity.

To configure delegated authentication

1. Determine which method (cookie or query string) the third-party WAM uses to pass the user identity.
2. Go to the appropriate step in the partnership wizard to set up delegated authentication.

Important! To use the SDK-created open-format cookie, the third party must install a Federation Manager SDK. The SDK is a separately installed component. The installation kit contains the documentation that describes how to use the SDK for delegated authentication.

More information

Single Sign-on Configuration (Asserting Party) (see page 149)
Deployment Settings (see page 272)

Sample Configuration

The following sample configuration is from the perspective of a SAML 2.0 IdP > SP partnership. The delegated authentication settings are on the SSO and SLO tab of the Partnership wizard.

This sample configuration reflects a SAML 2.0 configuration. The Identity Provider is http://idp1.xyz.com and the third-party WAM system is http://wamservice.xyz.com.

To configure cookie delegated authentication

1. Log in to the Federation Manager UI.
2. Create a partnership or edit an existing one.

   Note: To edit a partnership, deactivate it first.
3. Navigate to the SSO and SLO step in the Partnership wizard.
4. In the Authentication group box, set the fields as follows:

   Authentication Mode

   Delegated

   Delegated Authentication Type

   Select the cookie option that suits your environment.

   Legacy cookie

   For Java-only applications

   Open format cookie

   For use with a web access management application. You can use a Federation Manager SDK to create a Java or .NET application or you can use an application written in another language, provided you build the open format cookie manually.

   If you require FIPS 140-2 encryption, you must create the open format cookie using the Federation Manager Java or .NET SDK.

Delegated Authentication URL

http://wamservice.xyz.com

This is the URL of the third-party WAM system that authenticates users and uses a Federation Manager SDK to create the cookie.

Authentication Class

Enter the authentication method used at the third party. For example:

urn:oasis:names:tc:SAML:2.0:ac:classes:Kerberos

5. Continue with partnership configuration.
6. Communicate all the Cookie Settings on the Infrastructure, Deployment Settings dialog to the third-party WAM system.

   These values are used in the creation of the cookie.

To configure query string delegated authentication

1. Log in to the Federation Manager UI.
2. Create a partnership or edit an existing one.

   Note: To edit a partnership, deactivate it first.
3. Navigate to the SSO and SLO step in the Partnership wizard.
4. In the Authentication group box, set the fields as follows:

   Authentication Mode

   Delegated

   Delegated Authentication Type

   Query String

   Delegated Authentication URL

   http://wamservice.xyz.com

   This is the URL of the third-party WAM system that authenticates users and constructs the redirect URL back to Federation Manager with the query parameters.

Hash Secret

FederatedAuth1

The third-party WAM system uses this secret to hash the login ID.

Confirm Hash Secret

FederatedAuth1

Authentication Class

Enter the authentication method used at the third party. For example:

urn:oasis:names:tc:SAML:2.0:ac:classes:Kerberos

5. Continue with partnership configuration.

Third-party WAM Configuration for Cookie Delegated Authentication

For delegated authentication to succeed, the third-party WAM must adjust its federated application, as follows:

- To communicate the authenticated user login ID through a cookie, the third-party WAM system must generate a cookie.
  - For Java applications, the WAM can use a Federation Manager Java SDK to create a legacy cookie or an open format cookie.
  - For .NET applications, the WAM can use a Federation Manager .NET SDK to create an open format cookie.
  - For languages other than Java and .NET, the WAM can create an open format cookie manually.

  For details on implementing the necessary class and methods, see the *Federation Manager Java SDK Guide* or the *Federation Manager .NET SDK Guide.* Each guide is installed with the SDK. If you create an open format cookie manually, review the details about the required contents of the cookie (see page 329).
- The third party must know the values of the following Federation Manager UI settings Cookie Zone and Encryption Password parameters configured at the Federation Manager asserting party:
  - Global Cookie Zone
  - Encryption Password
  - Open-format Cookie Name
  - Open-format Cookie Encryption Transformation

  These values are used in the creation of the cookie.

- The third-party WAM system must create a redirect URL that sends the user back to Federation Manager. This URL has to send the user back to the Federation Manager Single Sign-on service. The Federation Manager Administrator has to communicate the Single Sign-on service to the third party in an out-of-band communication.

  Important! After the third-party WAM system receives an authentication request from Federation Manager, it must capture and resend any existing query string it receives as part of the incoming authentication request. The incoming request can have Federation Manager request information within the query string and must be passed along unchanged.

  Note: To pass the cookie, the third-party WAM system must be in the same cookie domain as Federation Manager at the asserting party.

Third-party WAM Configuration for Query String Delegated Authentication

A third-party WAM system and Federation Manager at the asserting party communicate the login ID in a query string. The WAM system must add the following two attributes to the query string in the redirect URL:

LoginID

Specifies the value used to identify the user to the third-party WAM system.

LoginIDHash

A hash of the LoginID.

To generate the LoginIDHash value, the LoginID is prepended to a Hash Secret and the entire value is then run through a SHA-1 hashing algorithm. The Hash Secret is specified in the Federation Manager configuration at the asserting party.

When Federation Manager retrieves the credentials from the query string, it also combines these values and hashes them. If the hashes are equal, Federation Manager considers the login ID to be valid and continues with the federation request.

Important! The LoginID and LoginIDHash parameters are case sensitive.

The third-party WAM system must configure its federated application to construct a redirect URL that sends the user back to the Federation Manager Single Sign-on service. Therefore, the Federation Manager Administrator has to communicate the Single Sign-on service to the third party in an out-of-band communication.

Important! After the third-party WAM system receives an authentication request from Federation Manager, it must remember to capture and resend any existing query string it receives as part of the incoming authentication request. If the incoming request has Federation Manager request information within the query string it must be passed along unchanged.

The syntax of the query string is as follows:

?*existing_query_string*&LoginID=*LoginID*&LoginIDHash=*hashed_LoginID*

Example

```
https://johndoe3227.b.com/affwebservices/public/saml2sso?SPID=sp1&
LoginID=user1&LoginIDHash=de164152ed6e8e9a7f760e47d135ecf0c98a
3e4e&ProtocolBinding=urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact
```

Chapter 10: Session Duration Management at a Service Provider

This section contains the following topics:

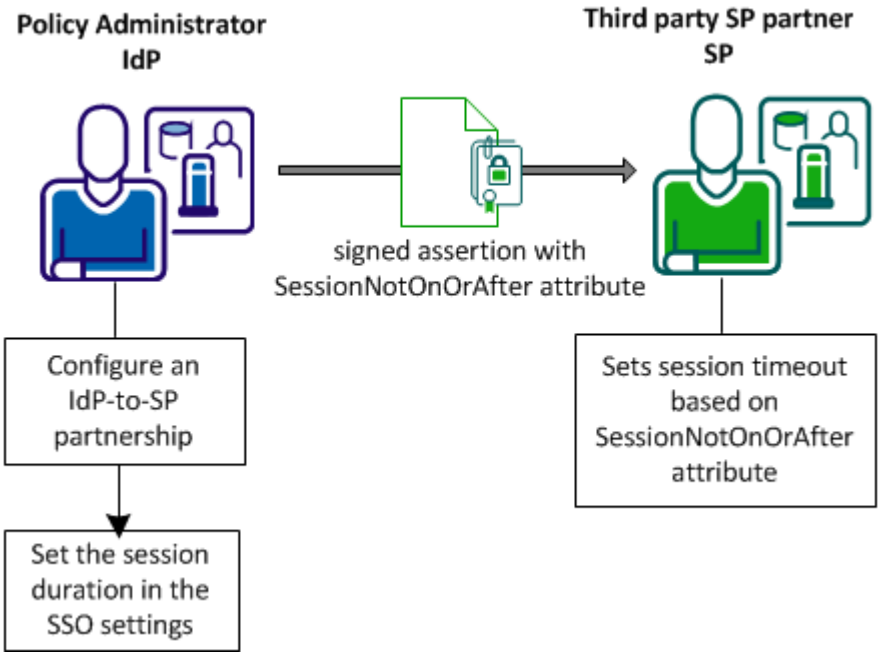
How to Manage the Authentication Session Duration at a Service Provider

You can manage the duration of the authentication session at the Service Provider. The SessionNotOnOrAfter attribute is an optional attribute that the IdP can include in the <AuthnStatement> of an assertion.

Note: The SessionNotOnOrAfter parameter is different from the NotOnOrAfter parameter, which determines how long the assertion is valid.

The value of determining session duration is to prevent a user from authenticating again if the session at the SP is too brief. A third-party SP can use the value of the SessionNotOnOrAfter to set its own timeout values, helping to ensure that sessions are not too short. If a user session becomes invalid, the user has to reauthenticate at the Identity Provider. To create a seemless experience for the user, manage the sessions at the SP accordingly.

The following graphic shows the configuration steps at the IdP and the resulting action that the third-party SP takes.



Include a Session Duration Attribute in an Assertion

The configuration for session duration is done at the IdP. The assertion sent to the SP includes the session attribute that the SP uses to set timeout values for SP site.

Important! If Federation Manager is acting as an SP, it ignores the SessionNotOnOrAfter value. Instead, the SP sets session timeouts from the realm timeout that corresponds to the SAML authentication scheme protecting the target resource.

Follow these steps:

1. Log in to the Administrative UI.
2. Select the IdP->SP partnership you want to modify.
3. Navigate to the SSO and SLO step.

4. In the SSO section, select the option for the Recommended SP Session Duration. If you select the customize option, you can select one of the following options:
   - omit the attribute
   - set the attribute to the IdP session timeout
   - specify your own duration period

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. Select the Confirm step after you complete your changes and click Finish.

Based on the configuration, a session attribute is placed in the assertion and sent to the SP.

Chapter 11: SiteMinder Integration with Federation Manager

This section contains the following topics:

How to Integrate Federation Manager and SiteMinder

A deployed SiteMinder system can integrate with Federation Manager using the SiteMinder Connector, a software component included with Federation Manager. The Connector enables the following interaction between federation and web access management deployments:

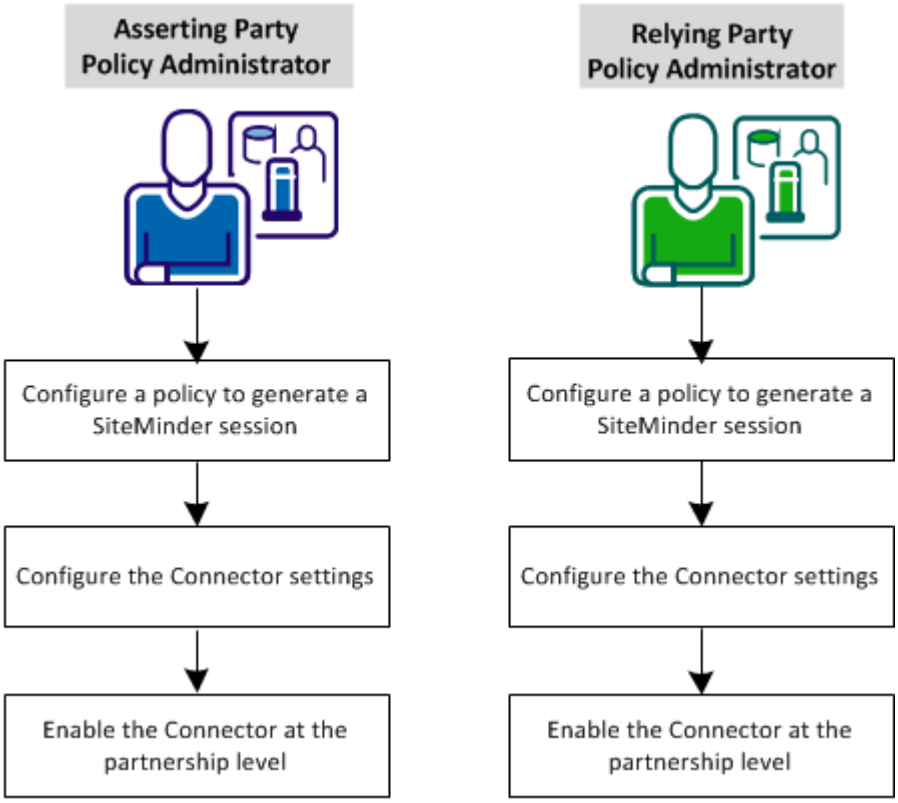
- Establishing an identity to generate an assertion.

  At the asserting party, a user arrives at Federation Manager but has no session. The Connector communicates with SiteMinder to establish a SiteMinder session. Based on the contents of the SiteMinder session, the Connector creates a federation session. Using this session information, a SAML assertion is generated for the user.

- Establishing an identity for SiteMinder to determine authorization privileges.

  At the relying party, a user authenticates with Federation Manager and a federation session is generated. The Connector passes on the federation session with the user name to SiteMinder, which generates a SiteMinder session from the federation session. The user is now identified and is not rechallenged for credentials. SiteMinder determines the authorization privileges for the requested resources at the relying party.

The following figure shows the configuration process when integrating with the Connector:



Complete the following configuration steps:

1. Configure a policy to generate a SiteMinder session (see page 241).
2. Configure the Connector settings (see page 243).
3. Enable the Connector at the partnership level (see page 244).

Integrate with SiteMinder using the SiteMinder Connector

The SiteMinder Connector enables the following integrations:

- Establishing an identity to generate an assertion.

  At the asserting party, a user arrives at Federation Manager but has no session. The Connector communicates with SiteMinder to establish a SiteMinder session. The use of the session information results in a federation session and the generation of a SAML assertion for the user. With this assertion, the user can access protected federated resources at the relying party.

- Determining authorization privileges from the assertion.

  At the relying party, a user authenticates with Federation Manager and a federation session is generated. The Connector passes on the federation session with the user name to SiteMinder, which generates a SiteMinder session. By establishing this session, these users do not get rechallenged when accessing a protected resource. The user is now identified and access privileges for the user at the relying party can be determined.

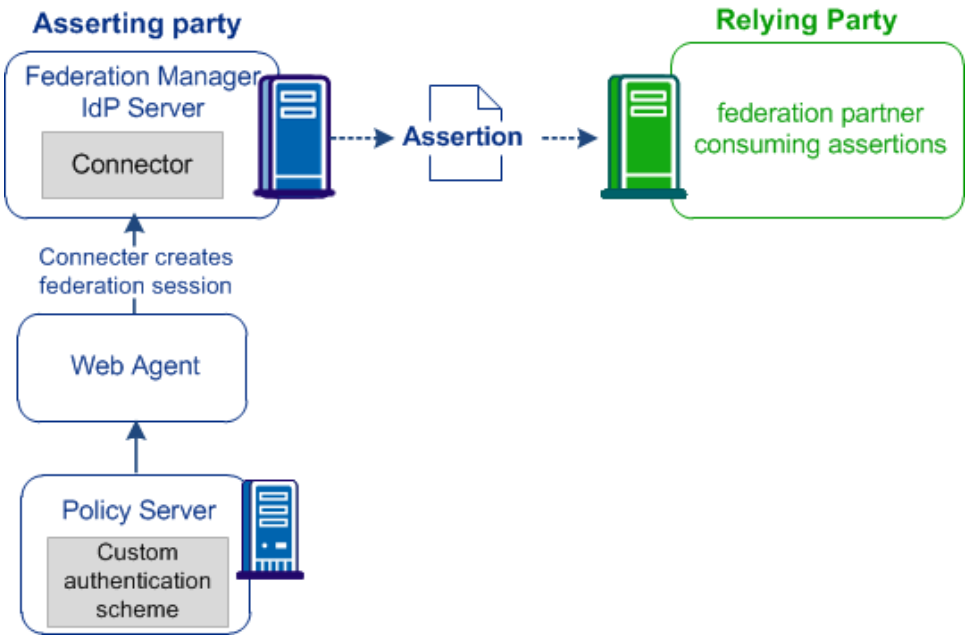
The FEDSESSION cookie uses the following timeout settings:

- Idle Timeout: 600 seconds (10 minutes)
- Max Timeout: 900 seconds (15 minutes)

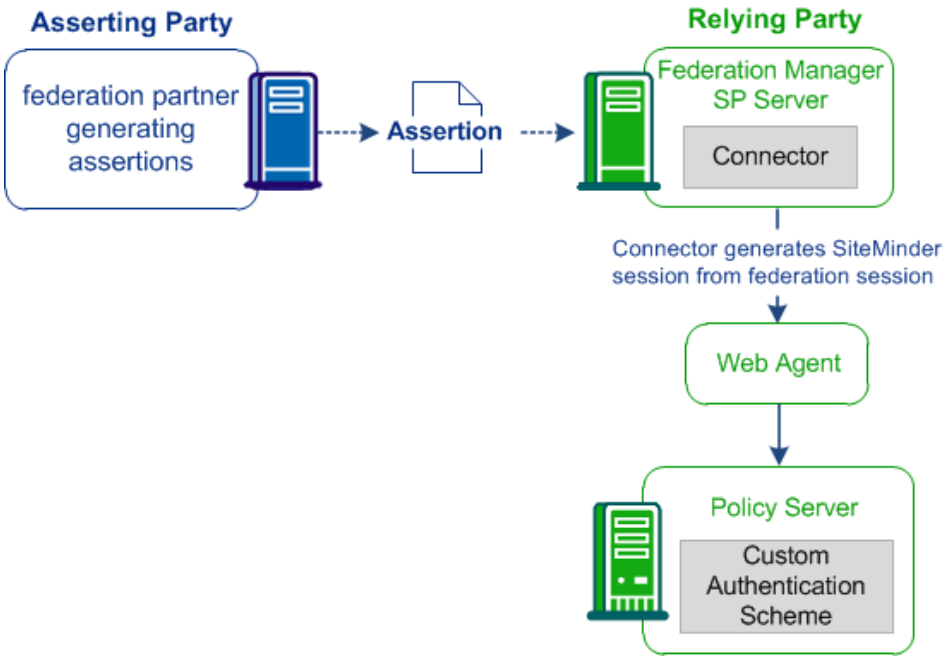
You cannot change these timeout settings in UI.

The Connector requires configuration in the SiteMinder environment and in the Federation Manager environment, as shown in the following diagrams.

This figure shows the Connector at the asserting party:



This figure shows the Connector at the relying party.



Configure a Policy to Generate a Session at Each Site

The SiteMinder Connector enables Federation Manager to work with an existing Policy Server. The first step is to configure a policy. At the asserting party, the policy generates a federation session. At the relying party, the policy generates a SiteMinder session. Though this policy functions as any other policy, its main objective is to trigger a session, not to protect resources.

Note: Configure a policy at the asserting and the relying party.

The policy requires that you configure the typical policy objects; however, you apply a custom SiteMinder Connector authentication scheme. This policy is additional to existing policies for access control.

To configure the Policy Server objects, see the *Policy Server Configuration Guide*.

Important! Complete the following configuration steps at the Policy Server before configuring the Connector.

Follow these steps:

1. Unzip smauthconnectors.zip, which is included with the Federation Manager kit on the SiteMinder system.
2. Select the correct custom authentication scheme library for your operating environment:
   - **Windows:** smauthsmconnector.dll
   - **Solaris/Linux:** libsmauthsmconnector.so

     Note: The name is case-sensitive on UNIX platforms.
3. Copy the library to the appropriate directory for your operating platform:

   Windows: *policy_server_home*/siteminder/bin

   Solaris/Linux: *policy_server_home*/siteminder/lib
4. Log on to the SiteMinder WAM Administrative UI.
5. Create a Web Agent that represents Federation Manager. For example, name it Federation Agent.

   Important! Do not select the option for supporting 4.x agents.
6. Create an Agent Configuration Object, which specifies the Agent configuration, and specify a value for the DefaultAgentName setting. This setting alone is sufficient for the object.

7. Create a Host Configuration Object.

   The Host Configuration Object defines the connection between a trusted host and the Policy Server. To integrate Federation Manager and SiteMinder, the Host Configuration Object defines the Policy Server to which Federation Manager can connect.

   If you want Federation Manager to connect to one or more Policy Servers specified in an existing Host Configuration Object, you can use that object. Otherwise, create one for the Federation Manager-to-Policy Server-connection.

8. Create a custom SiteMinder connector authentication scheme with the following values:

   Library

   smauthsmconnector

   This value is case-sensitive.

   Secret

   alphanumeric string

   The value for this field must match the value Shared Secret value in the Connector settings in the Federation Manager UI.

9. Create a policy domain for Federation Manager. This domain must contain the necessary realm and resource that you add to the policy to create a SiteMinder session.

10. Add the user directory that Federation Manager and SiteMinder uses to the domain you configured.

11. Create a realm with the following values:

    Agent

    Specify the Web Agent from the previous step.

    Resource Filter

    Specify a dummy directory, such as /federationmgr/. This directory does not have to exist on a web server.

    Authentication Scheme

    Enter the name you gave to the custom authentication scheme created previously.

12. Create a rule with the following values:

    Resource

    *

    Action

    Web Agent—Get and Post

13. Create a policy with the following settings:

    Users

    Specify users from the user directory that Federation Manager and SiteMinder share.

    Rules

    Add the rule created for the Connector.

You now have a policy that generates a SiteMinder session when communicating with Federation Manager.

Configure the Connector Settings

For the Connector to interact with SiteMinder, configure the Connector settings in the Federation Manager Administrative UI. All partnerships that use the Connector use a single configuration and connect to a single SiteMinder environment.

Follow these steps:

1. Log in to the Federation Manager UI.
2. Navigate to the Infrastructure tab.
3. Select Deployment Settings.

   The Configure Deployment Settings dialog opens.
4. Fill in all the fields in the SiteMinder Connector Settings section. Note the following considerations:

   - To enable or disable the Connector for a given partnership, enable it at the partnership level.
   - To enable or disable the Connector globally, use the check box in the deployment settings.

   Important! If the Connector is disabled at the global level, Federation Manager ignores the check box at the partnership level.

   Note: Click Help for a description of fields, controls, and their respective requirements.
5. Select Register Host and provide the legacy administrator credentials for the SiteMinder Policy Server. Only legacy administrators can perform host registration.

   This step registers Federation Manager as an Agent with the SiteMinder Policy Server.

   Note: You can configure failover support for the host registration process by specifying more than one Policy Server. If the registration with the primary Policy Server fails, the registration process tries with the next Policy Server specified until the registration process completes successfully.

6. Click Save.

   Important! Select Save specifically in the SiteMinder Connector Settings section after registering the host.

7. Restart the federation services according to your operating environment.

   - **Windows**

     Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

     a. Start, All Programs, CA, FederationManager, Stop services

     b. Start, All Programs, CA, FederationManager, Start services

   - **UNIX**

     a. Open a command window.

     b. Run the following scripts:

     federation_mgr_home/fedmanager.sh stop

     federation_mgr_home/fedmanager.sh start

     Note: Do not stop and start the services as the root user.

The SiteMinder Connector configuration is complete.

Enable the Connector at the Partnership Level

Before you enable the Connector, verify:

- The SiteMinder Policy Administrator has configured the policy for federated communication.
- You have configured the Connector-specific settings in Federation Manager.

Enable the Connector for the partnership where SiteMinder is deployed:

- If SiteMinder is at the asserting party, enable the Connector for an IdP-to-SP or Producer-to-Consumer partnership.
- If SiteMinder is at the relying party, enable the Connector for an SP-to-IdP or Consumer-to-Producer partnership.

Whether you are modifying an existing partnership of configuring a new partnership, the standard partnership configuration steps apply; there are no unique configuration procedures. However, specify the target resources at the relying party in the using the following guidelines:

- If Federation Manager is deployed in standalone mode, the target resource resides on the web server that the SiteMinder Web Agent protects.
- If Federation Manager is deployed in proxy mode, the target resource is the URL for the Federation Manager server because all proxy requests go back to SiteMinder.

Follow these steps:

1. Log in to the Federation Manager UI.
2. Select a partnership from the Federated Partnerships list or create a new one.

   The Partnership dialog opens.
3. Navigate to one of the following steps in the wizard:
   a. At the relying party, navigate to the User Identification step in the Partnership wizard.
   b. At the asserting party, navigate to the Federation Users step in the Partnership wizard.
4. Select the Enable SiteMinder Connector check box.

   The configuration fields become available.
5. (Optional) Select the Enforce UserDN Comparison check box. Selecting this check box forces a comparison of the UserDN and UserDirectory Name entries between the user directory at Federation Manager and the directory at SiteMinder.

   If you select this check box, the user directory for the Federation Manager and the SiteMinder deployment must be the same physical directory. The name for both of these directories must be the same for user store lookups. If you clear the check box, the Universal ID is the attribute that finds the user record. If the Universal ID is used, the directories do not have to be the same. If you rely on the Universal ID, each user must have a unique Universal ID. If the Universal IDs are not unique, the system accessing the user record can retrieve the wrong record.
6. Save your changes.

To disable the Connector, you can do so at the partnership level or globally in the Deployment Settings.

Chapter 12: Securing a Federated Environment

This section contains the following topics:

Protecting Federated Communication

Several mechanisms help secure transactions between federated partners, such as encrypting assertions and using SSL connections between partner sites.

When setting up a federated environment with Federation Manager, here are some recommendations for protecting your environment:

- Generating assertions for only one time use.
- Securing connections across the federated environment.
- Protecting against cross-site scripting.

These topics are described in the sections that follow.

Enforcing the One Time Use of an Assertion

Reusing an assertion beyond its validity results in authentication decisions based on out-of-date identity information. To prevent reuse, Federation Manager can generate an assertion intended for one-time use, in compliance with the SAML 1.x and 2.0 specifications. The assertion contains elements that tell the relying party not to retain the assertion for future transactions, preventing problems associated with reusing an assertion.

If Federation Manager is acting as the asserting party (Producer/IdP), you can configure the one time use of an assertion. For a SAML 1.x producer, you can select the **Set DoNotCache Condition** setting. For a SAML 2.0 IdP, you can select the **Set OneTimeUse Condition** setting. Both of these configuration settings enable Federation Manager to insert the proper elements in an assertion that indicate the one-time use condition.

Note: Do not confuse the one time use of an assertion with the single use policy for SAML 1.x and 2.0 HTTP-POST single sign-on. Federation Manager uses the single use policy when acting as the relying party, and it is only for POST transactions. The one time use feature is for HTTP-Artifact and HTTP-POST.

Securing Connections Across the Federated Environment

Identity information sent between federated partners or a partner and an application is best protected when communication takes place over a secure connection.

Securing the Connection Between the Relying Party and the Target Application

It is important to secure data transmission from the relying party to the target application at the client site. Using a secure connection as the communication channel makes your environment less vulnerable to security attacks.

For example, an assertion can contain attributes that the relying party extracts and sends to the client application. The relying party can pass these attributes to the application using HTTP header variables or cookies. Attributes stored in headers or cookies can be overwritten at the client side, allowing a malicious user to impersonate other users. Using an SSL connection protects an environment from this type of security breach.

Protect against this vulnerability by setting the Enable Secure Cookies check box in the Deployment Settings of the Federation Manager UI. The Enable Secure Cookies setting instructs Federation Manager to generate cookies marked with the "secure" flag. This flag indicates that Federation Manager sends the cookie only over an SSL communication channel.

Securing the Initial Authentication at the Federation Manager Asserting Party

The initial authentication of a user at a Federation Manager asserting party presents a potential vulnerability. When a user first authenticates to establish a user session at the asserting party, a session ID cookie is written to the browser. If the cookie is sent over a non-SSL connection, an attacker can obtain the cookie and steal sensitive user information for impersonation or identity theft.

Protect against this vulnerability by setting the Enable Secure Cookies check box in the Deployment Settings of the Federation Manager UI. The Enable Secure Cookies setting instructs Federation Manager to generate cookies marked with the "secure" flag. This flag indicates that the browser passes the cookie only over an SSL connection, which increases security. In general, establishing SSL connections for all URLs is recommended.

Protecting a Federated Network Against Cross-Site Scripting

A Cross Site Scripting (XSS) attack can occur when an application displays input text from a browser (typically, data from a post or data from query parameters on a URL) without filtering for characters that can form an executable script when displayed at the browser. The display of these characters can lead to an unwanted script being executed on the browser.

Federation Manager provides several JSPs for use with federation functionality. These JSPs check characters in a request to be sure that unsafe information in the output stream is not displayed in the browser.

When Federation Manager receives a request, the following JSPs scan the decoded values for cross-site scripting characters:

- idpdiscovery.jsp

  Used at the relying party for Identity Provider Discovery.

- linkaccount.jsp

  Used at the relying party for dynamic account linking.

- sample_application.jsp

  Used at the IDP to initiate single sign-on. This is a sample application you can use to direct the user first to the SSO Service and then to the custom web application. Typically, you use your own application.

- signoutconfirmurl.jsp

  Used at the Account Partner for WS-Federation sign out.

- unsolicited_application.jsp

  Used for IdP-initiated single sign-on when the user is sent directly to the web application and not initially to the SSO Service.

The pages scan the request for the following characters:

Character	Description
<	left angle bracket
>	right angle bracket
‘	single quotation mark
“	double quotation mark
%	percent sign
;	semi-colon
(	open (left) parenthesis
)	closed (right) parenthesis
&	ampersand
+	plus sign

Each Federation Manager-provided JSP contains a variable that defines the characters to scan. Modify these JSPs to expand the character set.

Chapter 13: Failover Support for Federation Manager

This section contains the following topics:

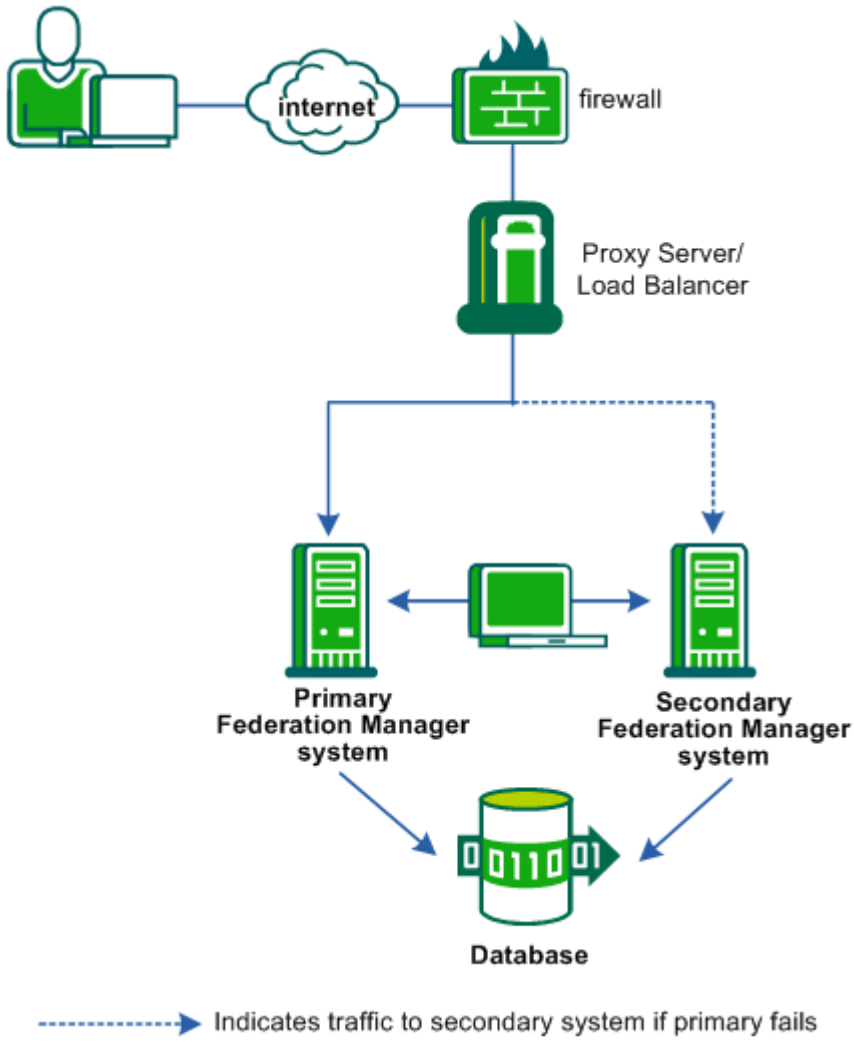
Failover Introduction

Failover support ensures that Federation Manager is not a single point of failure in your federated network. Failover builds redundancy into your network by configuring a primary and secondary Federation Manager system. If the primary Federation Manager system fails, the back-up system can perform the necessary federated communication.

Failover can be configured for Federation Manager acting as the asserting party and the relying party.

Note: If you enabled the SiteMinder Connector, failover support is available for the Connector registration process. Instructions are described in the section Configure the SiteMinder Connector.

The following figure shows a Federation Manager deployment with failover. If the primary system fails, transactions are directed to the secondary system.



As shown in the previous figure, Federation Manager is installed on two machines that use the same database.

How to Configure Failover

Configuring failover requires the following tasks:

- Installing Federation Manager on at least two systems.
- Running the Configuration wizard on the two Federation Manager systems.
- Setting up a proxy server or load balancer that will manage failover of the Federation Manager systems.

We recommend that you configure each Federation Manager system before configuring failover for the proxy server or load balancer.

Important! If you plan to use SSL for federation services, follow the instructions for an SSL-enabled failover environment (see page 255).

Set up Failover at Each Federation Manager System

To enable failover in a Federation Manager deployment, a primary and a secondary Federation Manager system must be installed and configured.

For SSL-enabled failover environments, follow the instructions to enable SSL for a failover environment (see page 255).

Important! For Solaris platforms, treat Solaris zones as phyical machines. Install and configure separate Federation Manager instances in each zone. Federation Manager does not support failover from one zone to another for a single instance because the zones have different Host IDs.

To support failover with a new Federation Manager installation

1. Install Federation Manager on each system, specifying the same Federation Manager Administrator Password for each installation.

   Note: Federation Manager can run in standalone or proxy mode, but the primary and secondary server must use the same mode.

2. Run the Federation Manager Configuration wizard on each system using the same database information for both systems.

3. Log in to the Federation Manager UI.

4. From the Infrastructure tab, select System Settings.

   The Configure System Settings dialog displays.

5. Change the Global Base URL to include the host and port of the proxy server or load balancer in your federated network. Setting this URL helps ensure that the default URL for all entities in any partnership is correct.

   If Federation Manager uses more than one virtual host or domain, modify the server.conf file to include all entries.

   To modify the server.conf file

   a. Navigate to *federation_mgr_home*/secure-proxy/proxy-engine/conf.

   b. Open the server.conf file in an editor.

   c. Go to the # Default Virtual Host section.

   d. Add the base URL to the **hostnames** setting using fully qualified host names, as follows:

      <VirtualHost name="default">

      hostnames="defaultbaseurl.ca.com:80, newbaseurl.ca.com:80"

      </VirtualHost>

      Note: Specify multiple *host_name:port* entries for the hostnames setting, separating each entry with a comma.

      Example:

      <VirtualHost name="default"

      hostnames=lb5.ca.com:80

      </VirtualHost>

Both Federation Manager systems are pointing to the same database. A proxy server or load balancer can be set up to failover from the primary system to the secondary.

Set up the Proxy Server or Load Balancer for Failover

You can direct a proxy server or load balancer to failover to Federation Manager.

Note: The administrator of the proxy server or load balancer must know how to set up failover for the system in the deployment.

Follow these steps:

1. Identify one Federation Manager system as the primary host and the other as the secondary host.

   Do not configure load balancing for the systems.

2. Configure the proxy server or load balancer for the Federation Manager deployment, making sure to pass the following URLs to the Federation Manager systems:

   - /affwebservices/*
   - /siteminderagent/*

   These URLs enable the proxy server or load balancer to balance traffic between the Federation Manager systems.

The proxy server or load balancer is now configured.

How to Configure Failover with SSL Enabled

You can enable SSL in a failover environment whether Federation Manager is sitting behind a load balancer or a proxy server. There are specific configuration instructions for this type of setup.

Configuring SSL-enabled failover requires the following tasks:

- Installing Federation Manager on at least two systems.
- Running the Configuration wizard on the two Federation Manager systems.
- Enabling SSL for the embedded Apache Web Server (only if Federation Manager is behind a load balancer).
- Migrating the SSL configuration from the primary to the secondary system (only if Federation Manager is behind a load balancer).
- Setting up a proxy server or load balancer that will manage failover of the Federation Manager systems.

We recommend that you configure each Federation Manager system before configuring failover for the proxy server or load balancer.

Configure SSL-enabled Failover Behind a Load Balancer

You can configure Federation Manager to sit behind a TCP load-balancer. The load balancer passes the requests to Federation Manager, which then handles the server-side SSL processing.

Follow these steps:

1. Install Federation Manager on each system, specifying the same Federation Manager Administrator Password for each installation.

   Note: Federation Manager can run in standalone or proxy mode, but the primary and secondary server must use the same mode.

2. Run the Configuration wizard and use the same database connection information for both systems.

3. The Configuration wizard prompts for the Apache Configuration information. Specify the same virtual host name in the Server Name setting for the primary and secondary Federation Manager systems. Both systems must use the same virtual host name.

   If Federation Manager is using more than one virtual host or domain, modify the server.conf file for the proxy engine. The server.conf file must list all host names and domains. Add the names to the hostnames field of the Default VirtualHost.

   To edit server.conf

   a. Navigate to the following directory:

      Windows: *federation_mgr_home*\secure-proxy\proxy-engine\conf

      UNIX: *federation_mgr_home*/secure-proxy/proxy-engine/conf

   b. Open the server.conf file in an editor.

   c. Go to the # Default Virtual Host section and add the names to the hostnames setting using a fully qualified URL, as follows.

      <VirtualHost name="default">

      hostnames="virtualhost1.ca.com, virtualhost2.ca.com"

      </VirtualHost>

      Note: You can specify multiple URLs for the hostnames setting, separating each entry with a comma.

4. Log in to the Federation Manager UI.

5. From the Infrastructure tab, select System Settings.

   The Configure System Settings dialog displays.

6. Change the Global Base URL to include the host and port of the Proxy Server or load balancer in your federated network. Setting this URL helps ensure that the default URL for all entities in any partnership is correct.

   To modify the server.conf file

   a. Navigate to *federation_mgr_home*/secure-proxy/proxy-engine/conf.

   b. Open the server.conf file in an editor.

   c. Go to the # Default Virtual Host section.

   d. Add the base URL to the **hostnames** setting using fully qualified host names, as follows:

      <VirtualHost name="default">

      hostnames="defaultbaseurl.ca.com:80, newbaseurl.ca.com:80"

      </VirtualHost>

   Note: Specify multiple *host_name:port* entries for the hostnames setting, separating each entry with a comma.

7. Enable SSL for the embedded Apache Web Server (see page 286) on the primary Federation Manager system.

8. Migrate the Apache SSL configuration (see page 257) to the secondary system in the failover deployment.

9. At the load balancer, configure multiple IP addresses for the same host name, which map to the Federation Manager system.

Migrate the SSL Setup to the Secondary System

After the Apache SSL is configured at the primary Federation Manager machine, it can be migrated to the secondary machine behind the load balancer.

Note: This procedure does not apply if Federation Manager is behind a proxy server.

Ensure that the following criteria is met:

- Same certificate is used for each Federation Manager machine.
- Each Federation Manager machine must be configured with the same host name.
- Federation Manager is accessed through a load balancer.
- All machines must be of the same platform (Windows/Solaris/Linux).

To copy the SSL configuration to the secondary machine

1. Enable Apache SSL on the primary Federation Manager machine. Once enabled, the following components are available:

   - SSL server cert

     federation_mgr_home/secure-proxy/SSL/certs/server.crt

   - CA bundle

     federation_mgr_home/secure-proxy/SSL/certs/ca-bundle.cert

   - SSL server key

     federation_mgr_home/secure-proxy/SSL/keys/server.key

   - certificate request file

     federation_mgr_home/secure-proxy/keys/fedmgrsslcertrequest.pem

   - SSL properties file

     federation_mgr_home/config/fedmanager.properties

2. Import the CA certificate that signed the SSL Server Certificate to the secondary machine. Use the Federation Manager UI to import the certificate.

   This certificate should be imported before or during the SSL configuration process on the primary machine. It is recommended that you use the same alias as was used for this certificate on the primary machine.

3. Copy each of the files listed in step 1 to the same locations on the secondary machine. The folders should already exist.

   Note the following:

   - The secondary machine should already have a copy of ca-bundle.cert. That copy should be backed up or deleted; the new copy from the primary machine has additional data that the secondary machine requires.
   - Copying the certificate request file (fedmgrsslcertrequest.pem) is only required if you want to retrieve it using the Federation Manager UI on the secondary machine. If not, do not copy the file.
   - The SSL properties file should contain at least the following two properties:
     - fedmgr.ssl.enabled, set to Y.
     - fedmgr.ssl.ca.alias, set to the alias of the CA that signed the SSL server certificate request.
     - If you used a different alias when importing this certificate on the secondary machine, update this property with the alias value you actually used.

The configuration is now migrated and you can activate SSL on the secondary system.

Activate SSL on the Secondary Failover System

After migrating the Apache SSL configuration to the secondary system, enable SSL.

To activate SSL on the secondary machine (Windows)

1. Open a command prompt window on the secondary machine.
2. Navigate to the *federation_mgr_home*/secure-proxy/httpd/bin folder.
3. Execute the following command:

   configssl.bat -enable

4. Stop and restart the Federation Manager services using the following shortcuts:

   If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

   - Start, All Programs, CA, FederationManager, Stop services
   - Start, All Programs, CA, FederationManager, Start services

To activate SSL on the secondary machine (UNIX)

1. Navigate to the *federation_mgr_home*.
2. Shut down Federation Manager services by executing the command:

   ./fedmanager.sh stop

3. Restart Federation Manager services in SSL-enabled mode by executing the command:

   ./fedmanager.sh startssl

4. When prompted, enter the Federation Manager UI password to enable startup of the Apache web server in SSL mode.

Configure SSL-enabled Failover Behind a Proxy Server

If Federation Manager is behind a proxy server, the proxy server handles the SSL processing. Federation Manager cannot process SSL because many proxy servers cannot delegate the processing of SSL requests to other systems. Consequently, configure the proxy server with the server certificate and the CA certificates that signed the server certificate and any remote client certificates.

There is no specific SSL configuration required on the Federation Manager machines sitting behind the proxy server.

Set up the Proxy Server or Load Balancer for Failover

You can direct a proxy server or load balancer to failover to Federation Manager.

Note: The administrator of the proxy server or load balancer must know how to set up failover for the system in the deployment.

Follow these steps:

1. Identify one Federation Manager system as the primary host and the other as the secondary host.

   Do not configure load balancing for the systems.

2. Configure the proxy server or load balancer for the Federation Manager deployment, making sure to pass the following URLs to the Federation Manager systems:

   - /affwebservices/*
   - /siteminderagent/*

   These URLs enable the proxy server or load balancer to balance traffic between the Federation Manager systems.

The proxy server or load balancer is now configured.

Maintain the Same Configuration for Each System

If you make any changes to the configuration, always administer these changes to the primary Federation Manager system then export the configuration to the secondary machine.

Note the following information in regard to configuration changes:

Delay After Configuration Changes

Changes that you make using the primary system UI are not always immediately available to the secondary system. UI-managed data that is stored in the database is available to the secondary system because the primary and secondary systems share the same database. However, there can be a delay before the policy engine of the secondary system picks up the changes.

Some Configuration Changes Require Restart

Some configuration changes require a restart of the system. If you change the primary system configuration and this change requires a restart, restart the secondary system also.

Perform Administration on the Same Primary System

Always perform administration on the same primary system. You can disable UI administration on the secondary machine to enforce this practice.

Follow these steps:

1. Log on to the Administrative UI.
2. Select Infrastructure, System Settings.

   The Configure System Settings dialog displays.
3. Click Disable Administration in the UI Settings group box.

   A message appears asking you to confirm the action.
4. Click Yes to disable UI administration.

   An Administration Disabled dialog displays while all other parts of the UI become unavailable. This dialog lets you reenable administration.

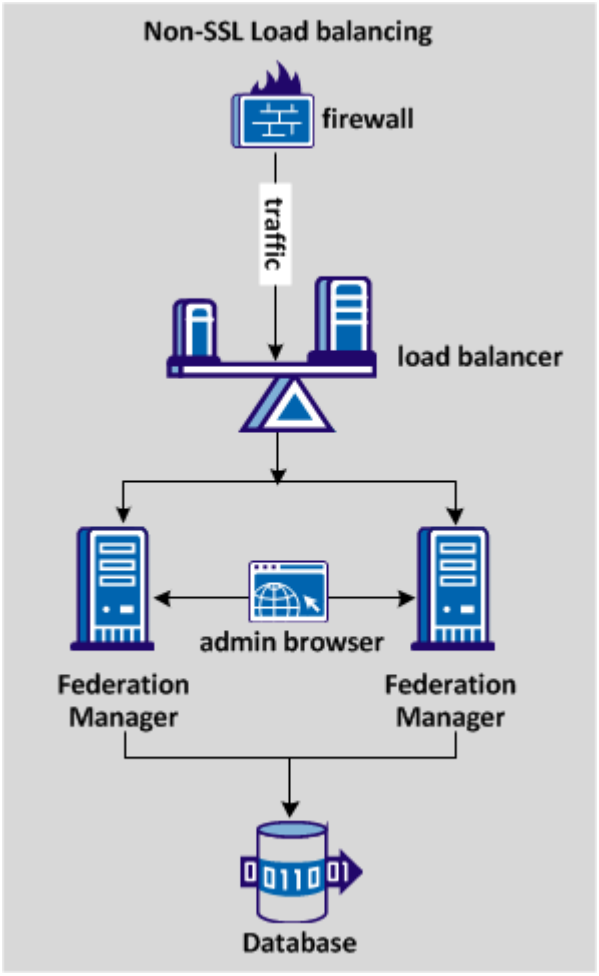
Chapter 14: Load Balancing Support for Federation Manager

This section contains the following topics:

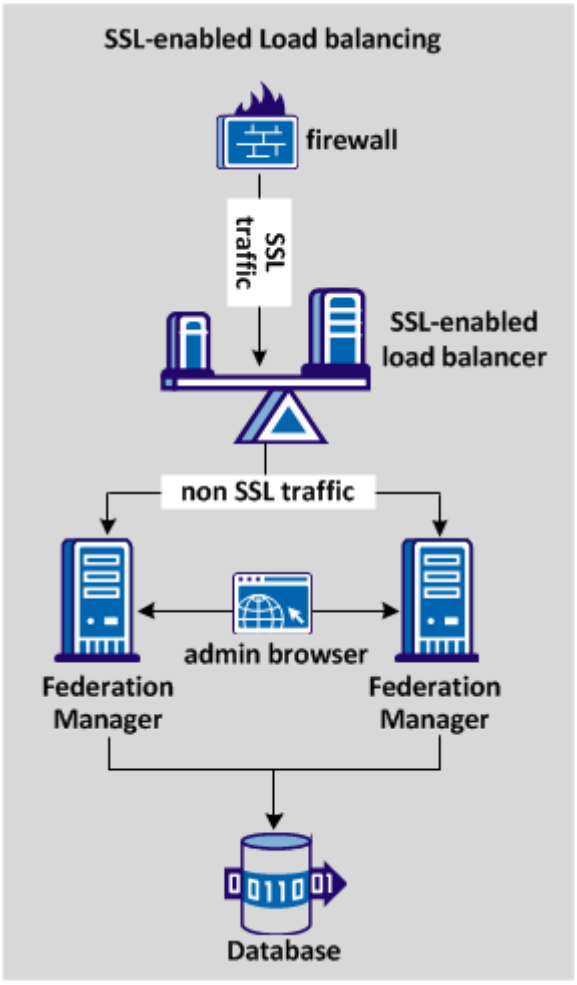
How to Configure Load Balancing

Load balancing distributes communication activity evenly across a network so that no single device is over burdened. Federation Manager is intended as a standalone endpoint and has no built-in support for load balancing. However, it is possible to enable a simple load-balancing deployment in a network using Federation Manager. SSL-enabled load balancing is optional, but it is recommended for sending sensitive data.

The following diagram shows a non-SSL load-balancing deployment.



The following diagram shows an SSL load-balancing deployment, distributing traffic across two systems that use the same database store.



Complete the following configuration steps for load balancing traffic:

1. Configure the load balancer.
2. Set up two or more Federation Manager systems to work with a load balancer.
3. (Optional) If the load balancer is using SSL, configure Federation Manager to handle SSL redirection.

Configure the Load Balancer

Configure the load balancer to work in a network with Federation Manager. Use the load balancer host and port to redirect a user who requests a resource that resides on the Federation Manager system. Use of the load balancer host and port applies to all resources on the Federation Manager system.

Note: This procedure assumes that the load balancer administrator knows how to set up the system in the deployment.

Follow these steps:

1. Configure the load balancer to map IP addresses and host names for the federation deployment.
2. Configure the load balancer for the deployment, making sure to pass the following URLs through to the Federation Manager systems:
   - /affwebservices/*
   - /siteminderagent/*
   - /forms/*

   These URLs enable the load balancer to balance traffic between the federation systems.
3. (Optional) Configure the load balancer to handle SSL traffic.

   If the load balancer is SSL-enabled, all federation traffic comes in to the load balancer over SSL. However, the load balancer sends the traffic to the Federation Manager systems over a non-SSL (HTTP) connection.

The load balancer is now configured to work with Federation Manager systems.

Set up the Federation Manager Systems to Work with a Load Balancer

To use load balancing across a federation deployment, set up two or more Federation Manager systems.

Note: The procedure assumes that all systems are version r12.5.

Follow these steps:

1. Install Federation Manager on each system, specifying the same Federation Manager Administrator Password for each installation.

   Note: Whether Federation Manager is run in standalone or proxy mode, the servers must use the same mode.
2. Run the Configuration Wizard on one system.
3. Log in to the Administrative UI.

4. Navigate to Infrastructure, System Settings.
5. In the Server Settings section, change the Global Base URL to include the host and port of the load balancer in your network. Set this URL so that the default URL for all partnership entities is correct.
6. Set up a federation partnership by completing the following tasks
   a. Import certificates and private keys.
   b. Establish user directories connections (see page 67).
   c. Configure local entities (see page 99).
   d. Specify a remote entity (see page 99).
   e. Configure a partnership (see page 135) between the local and remote entities.
   f. Verify that the federation works with the remote partner.
7. Run the Configuration Wizard on the secondary systems, using the same virtual host name of the load balancer that you entered for the first system.

   Each Federation Manager system must use the same virtual host name. The virtual host name is the host that you specify for the Server Name in the Apache configuration when you run the Configuration Wizard.

   If Federation Manager uses more than one virtual host or domain, modify the server.conf file to include the additional entries.

   To modify the server.conf file

   a. Navigate to *federation_mgr_home*/secure-proxy/proxy-engine/conf.
   b. Open the server.conf file in an editor.
   c. Go to the # Default Virtual Host section.
   d. Add the base URL to the **hostnames** setting using fully qualified host names, as follows:

      <VirtualHost name="default">

      hostnames="defaultbaseurl.ca.com:80, newbaseurl.ca.com:80"

      </VirtualHost>

      Note: Specify multiple *host_name:port* entries for the hostnames setting, separating each entry with a comma.

      Example:

      <VirtualHost name="default"

      hostnames=lb5.ca.com:80

      </VirtualHost>

8. Migrate SSL keys and certificates that are stored by the embedded Apache and Tomcat web servers.
   - Follow the SSL migration procedure (see page 293) to complete this task. Migrating SSL data lets you avoid the purchase of a new key or certificate.
   - Generate a new key/certificate request and then get the certificate signed. SSL certificates are not included in the imported configuration file.

   Note: Replicate any change to the certificate configuration on one system to all other systems. Make configuration changes from the Certs and Keys page in the UI. Changes include adding or removing certificates, keys, or CRL data.
9. Log in to the Administrative UI on the other systems that do not have partnerships configured.
10. Navigate to Infrastructure, System Settings. In the UI Settings section, click Disable Administration.

    Access the Administrative UI locally, without going through the load balancer. If the other systems are up and running, enable administration on only one system. If the administration system is disabled at any time, log in a different system and reenable administration.

Now that all Federation Manager systems are pointing to the same data store, the configured load balancer is able to balance traffic between the systems.

Configure Redirections to an SSL Load Balancer (optional)

If the load balancer uses SSL, we recommend that you configure Federation Manager to redirect traffic over an SSL connection. To redirect traffic, modify the following two files on each Federation Manager system:

- LocalConfig.conf
- httpd.conf

Note: Modify these files on all Federation Manager systems that are redirecting traffic.

Follow these steps:

1. Navigate to *federation_mgr_home*/secure-proxy/proxy-engine/conf/defaultagent.
2. Open the WebAgent.conf file in an editor. Uncomment the line that begins **localconfigfile** then save the file.
3. Open the LocalConfig.conf file in an editor.
4. Add the following settings to the LocalConfig.conf file then save the file:

   `HttpsPorts="443"`

   Specify the port on which the load balancer is listening.

   `GetPortFromHeaders="YES"`

5. Navigate to *federation_mgr_home*/secure-proxy/httpd/conf.
6. Open the httpd.conf file in an editor.
7. Locate the SeverName setting and specify the load balancer *hostname:port*. Do not enter the Federation Manager server host name. Example:

   ```
   ServerName lb5.ca.com:443
   ```

8. After the ServerName setting, add the UseCanonicalName setting and set it to On. Example:

   ```
   UseCanonicalName on
   ```

Federation Manager now redirects traffic over an SSL connection.

Chapter 15: Federation Manager System Administration

This section contains the following topics:

Server Status Monitoring

The Server Status dialog provides a snapshot of information that can be useful for checking the condition of the server. Examples include enhancing system performance or verifying that the installation went as expected.

Note: Click Help for a description of fields, controls, and their respective requirements.

To view the server settings

1. Log in to the Administrative UI.
2. Select Infrastructure, Server Status.
3. Review the information on the status page.

You can click Refresh at any time to see updated server information.

System Settings

The Configure System Settings dialog lets you specify the number of active server threads and the number of active server connections allowed, which may have an impact on system performance. It also allows you to disable and re-enable UI Administration for the local host.

To modify the system settings

1. Start the Federation Manager UI.
2. From the Infrastructure tab, select System Settings.

   The Configure System Settings dialog displays.

3. Modify any of the settings, as necessary.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Click Save.
5. Restart Federation Manager.

   Your changes take effect after the server is restarted with the exception of the Disable Administration feature, which takes effect immediately.

Deployment Settings

The Deployment Settings let you do the following:

- View the FIPS mode setting.
- View the Federation Manager deployment mode (standalone or proxy).
- Specify valid federation domains.
- Configure the SiteMinder Connector if Federation Manager is operating with the SiteMinder Connector enabled.
- Modify the Federation Manager session cookie names.

Deployment Modes and FIPS Settings

The Deployment Settings shows the status of the deployment mode and FIPS mode that you selected when installing and configuring Federation Manager. Additionally, you can specify valid federation domains, and can set a prefix to protect HTTP headers in proxy mode.

The process for modifying each setting differs.

Valid Federation Domains and HTTP Header Prefix

Modify the Valid Federation Domains and HTTP Header Prefix entries from the UI. Changing these settings is optional.

Follow these steps:

1. Enter values for the fields, if necessary.
2. Click Save in the right corner of the section.

FIPS Mode Changes

To change the FIPS Mode, run the Installation wizard again and choose a new setting.

Important! Anytime you change the FIPS mode, restart Federation Manager.

Deployment Mode Changes

To change the Deployment Mode, run the Configuration wizard again and change the mode.

More information:

Encryption and Decryption Algorithms (see page 333)

HTTP Header Protection for a Proxy Mode Deployment at the Relying Party

In a proxy mode deployment at the relying party, Federation Manager passes identity attributes from the SAML assertion to backend applications using HTTP headers. In most cases, the headers are secure. However, if an unauthorized user knows an assertion attribute name they can set this name as a header in a browser and gain access to the target application. The target application sees an expected header value and grants access to the resource without Federation Manager consuming an assertion.

By specifying a value for the HTTP Header Prefix setting, you can protect against the following scenario:

1. An unauthorized user learns the names of HTTP headers. These header names include prefixes.
2. The malicious user sends an incoming request, including the headers, to Federation Manager.
3. Federation Manager recognizes that the headers containing prefixes come from an incoming request and are not generated internally so it removes these headers.
4. Before Federation Manager passes its own legitimate headers to the target application, it adds the specified prefix to each header and passes the headers to the target application.

To set the HTTP Header Prefix

1. Navigate to Infrastructure, Deployment Settings.
2. Enter any valid string as a prefix in the HTTP Header Prefix field.

   You only see this field if you enabled Proxy Mode when installing Federation Manager.
3. Save your changes.

SiteMinder Connector Settings

The SiteMinder Connector lets Federation Manager integrate with a SiteMinder environment for federated communication.

At the asserting party, the SiteMinder Connector can work with SiteMinder as a third-party WAM for delegated authentication. At the relying party, SiteMinder can protect the server where the target resources reside. If SiteMinder is performing access control, the SiteMinder Connector contacts the Policy Server to establish a SiteMinder session so that SiteMinder grants the user access to the target resource.

For Federation Manager to operate with SiteMinder, configure the SiteMinder Connector settings in the Federation Manager UI.

All partnerships that use the SiteMinder Connector use a single configuration and connect to a single SiteMinder environment. Define the Connector configuration in the Deployment Settings of the Federation Manager UI. To enable the Connector for a given partnership, enable it at the partnership level. Disable the Connector at the partnership level or globally by disabling it in the Deployment Settings.

Important! If the Connector is disabled at the global level, Federation Manager ignores the check box at the partnership level.

To configure the SiteMinder Connector

1. Log in to the Federation Manager UI.
2. Select a partnership from the Federated Partnerships list.

   The Partnership dialog opens.
3. Do one of the following:
   a. At the relying party, navigate to the User Identification step in the Partnership wizard.
   b. At the asserting party, navigate to the Federation Users step in the Partnership wizard.

4. Select the Enable SiteMinder Connector check box.

   The configuration fields become available.

5. (Optional) Select the Enforce UserDN Comparison check box. Selecting this check box forces a comparison of the UserDN and UserDirectory Name entries between the user directory at Federation Manager and the directory at SiteMinder.

   If you select this check box, the user directory for the Federation Manager deployment and the SiteMinder deployment must be the same physical directory. The name for both of these directories must be the same for user store lookups. If you clear the check box, Federation Manager uses the Universal ID to find the user record so the directories do not have to be the same. If you rely on the Universal ID, each user must have a unique Universal ID. If the Universal IDs are not unique, the system accessing the user record can retrieve the wrong record.

6. Save your changes.

7. Navigate to the Infrastructure tab.

8. From the Infrastructure tab, select Deployment Settings.

   The Configure Deployment Settings dialog opens.

9. Fill in all the fields in the SiteMinder Connector Settings section.

   Note: Click Help for a description of fields, controls, and their respective requirements.

10. Select Register Host and provide the administrator credentials for the SiteMinder Policy Server.

    This step registers Federation Manager as an Agent with the SiteMinder Policy Server.

    Note: You can configure failover support for the host registration process by specifying more than one Policy Server. If the registration with the primary Policy Server fails, Federation Manager moves to the next Policy Server specified until the registration process completes successfully.

11. Select Save in the SiteMinder Connector Settings section of the dialog.

    Selecting Save in the SiteMinder Connector Settings section is necessary after registering the host.

12. Restart the federation services according to your operating environment.

    - **Windows**

      Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

      a. Start, All Programs, CA, FederationManager, Stop services

      b. Start, All Programs, CA, FederationManager, Start services

- **UNIX**

  a. Open a command window.

  b. Run the following scripts:

  federation_mgr_home/fedmanager.sh stop

  federation_mgr_home/fedmanager.sh start

  Note: Do not stop and start the services as the root user.

The SiteMinder Connector configuration is complete.

Cookie Settings for Session and Identity Cookies

Federation Manager supports single sign-on security zones. Single sign-on security zones provide configurable trust relationships between groups of applications within the same cookie domain.

Although single sign-on is enforced within the same zone, a user may be rechallenged when entering a different zone, depending on the trust relationship defined between the zones. Security zones included in a trusted relationship do not rechallenge a user that has a valid session in any zone in the group.

Security zone affiliation is reflected in cookie names. For Federation Manager, the default session and identity cookies are named FEDSESSION and FEDPROFILE.

Your federation partner possibly has an application that uses its own session or identity cookie. The names of the partner cookies can conflict with the names of Federation Manager's cookies. For example, if you are communicating with a SiteMinder site, cookies named FEDSESSION and FEDPROFILE may exist because SiteMinder generates its own session and identity cookies. In this case, you can change the global cookie zone prefix for Federation Manager so its cookies get renamed.

Note: If you have an application that is using a Federation Manager SDK, the values configured for the Global Cookie Zone and Encryption Password settings must match what the SDK uses. Be sure to share the values of these settings with the appropriate parties in your organization. At the asserting party, the SDK and web access management system need these values. At the relying party, Federation Manager and the target system that hosts the application need to know these values.

For additional information, see the Federation Manager *Java SDK Guide* or the *.NET SDK Guide.*

The other cookie parameters in this group box are the open format cookie settings. The open format cookie settings are used only for the open format cookie method of delegated authentication and apply on a global level not on a partnership basis.

Note: At the relying party, the configuration of this cookie data is done at the partnership level and not at a global level.

To change the cookie settings

1. Log in to the Federation Manager UI.
2. From the Infrastructure tab, select Deployment Settings.

   The Configure Deployment Settings dialog is displayed.
3. (Optional) Modify all the settings in the Cookie Settings section, as needed.

   Note: Click Help for a description of fields, controls, and their respective requirements.
4. Click Save in the right corner of the section.

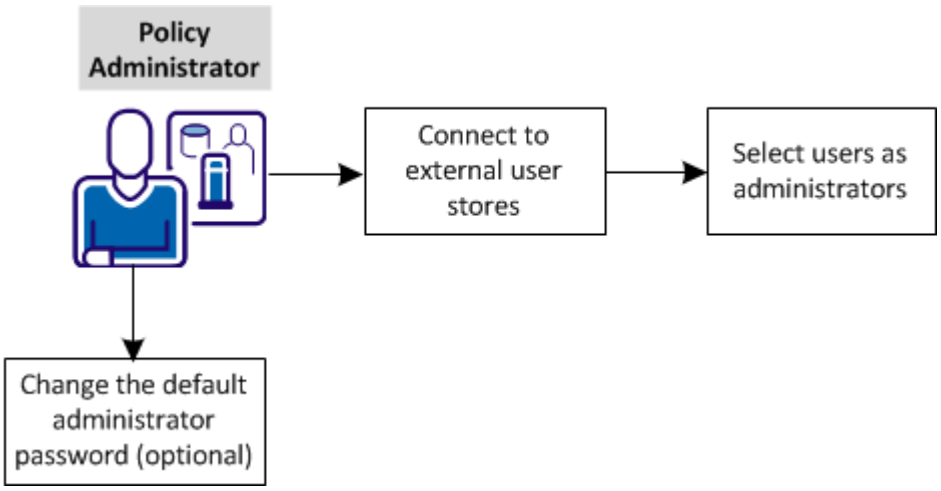
How to Configure Federation Manager Administrators

Several administrators in your company can be responsible for different aspects of federation management. Assign the administration of Federation Manager to multiple people in your organization to establish accountability and separation of responsibilities.

A default administrator account is always available to manage Federation Manager. After you add new administrators, optionally, disable the default administrator account.

Create and maintain new administrative users through the Administrative UI.

The following graphic shows the configuration tasks for configuring administrators:



Complete these tasks:

1. Connect to external user directories (see page 278).
2. Select users as administrators (see page 279).
3. Change the default administrator password (optional) (see page 280).

Connect to External User Stores

Create connections to LDAP and ODBC external user stores. This step is required before you configure multiple administrators.

LDAP and ODBC are the two types of directories that the federation system supports.

Follow these steps:

1. Click the User Directory tab.

   The View User Directories dialog displays.

2. Click Connect to LDAP or ODBC.

   Select Action, Modify to verify the configuration of an existing directory connection.

3. Configure any required settings in each section. Red dots mark the required parameters.

   Note: Click Help for a description of fields, controls, and their respective requirements.

4. Enter a value for the Universal ID Attribute (LDAP) or Universal ID Column (OCBC). This value is required to configure multiple administrators.

   The universal ID value must be unique to identify individual users in a directory. For example, enter uid as a universal ID for an LDAP directory because each user has a uid. Do not use an attribute such as a job title because many users have the same title.

5. For LDAP directories only, specify values for the Start and End User DN Lookup fields. For example:

   Start User DN Lookup

   (uid=

   End User DN Lookup

)

6. Click Test Connection to verify that the connection is valid.
7. Click Save.

   If your settings are valid, you are redirected to the View User Directories dialog.

The connection to the directory is configured.

Select Users as Administrators

After you establish connections to external user stores, select users to serve as administrators.

Follow these steps:

1. Log on to the Administrative UI.
2. Navigate to Infrastructure, Administrators.
3. Select Configure Administrative Authentication.
4. To complete these tasks, follow the configuration wizard:
   - Select an external user store.
   - Select one or more users as administrators.
   - Determine the type of access privileges for each administrator. The options are:
     - Super User
     - Federation Administrator
     - Read Only User

     Note: Click Help for a description of each privilege.
   - Decide whether to disable the default administrator. To prevent the use of a central administrator account, disable the default administrator. Without a default administrator, rely on individual administrators that you are able to audit.
5. Log out of the Administrative UI and wait several minutes for the changes to take effect.
6. Log back in to the Administrative UI with the credentials of a new administrator.
7. Return to the Administrators page to see the list of administrators is displayed.
8. (Optional). From the Action menu, modify or view an entry.

   You can change the privileges of the administrator and can enable/disable the administrator.

Multiple administrators are now available to divide ederation management tasks.

Change the Default Administrator Password (Optional)

For security reasons, change the password that gives the default administrator access to the Administrative UI. This task is optional.

Two methods are available to change the administrator password:

- Modify the password from the UI.
- Modify the password from a command line.

  If the administrator user account is locked or the administrator is not available, reset the password from the command line.

Change the Default Administrator Password from the UI

You can change the administrator password from the Administrative UI.

Follow these steps:

1. From the Infrastructure tab, select Password.

   The Change Administrator Password dialog displays.
2. Complete the fields for the old and new passwords.
3. Click Submit.
4. Restart the system.

The default administrator password is changed and active.

Change the Default Administrator Password from the Command Line

If the administrator user account is locked or unavailable, use the XPSConfig utility to change the administrator password from the command line.

Follow these steps:

1. On your federation system, open a command window.
2. Enter XPSConfig.

   On UNIX platforms, enter the name of the utility as shown here. The name is case-sensitive.

   The Products Menu displays.
3. Enter FED to select the federation product.
4. Enter 1.

   Option 1 is the option for the password.

5. Enter C to change the value of the password
6. Enter the new value at the prompt.
7. Enter Q to save and quit.

The new password is active.

Administrator Session Management

Only one administrative session can be active at a time. The single administrative session prevents simultaneous editing of federation objects if an administrator tries to establish a new session. When any new login attempt is made after an administrative session is established, you receive a warning message.

The warning message tells the administrator that a session exists. If the administrator proceeds to log in using the same credentials, the system invalidates the existing session and any unsaved data is lost. After the first session becomes invalid, the administrator of the first session is logged out. If the administrator tries any configuration activity, the system redirects the administrator to the login dialog.

The next section describes what happens when one administrator attempts to log in using the same credentials as an already established administrator session.

Administrative Session Interaction

The following scenarios result in an administrative session conflict:

Attempted Log in with Same Credentials

An administrator logs in to Federation Manager. A second administrator or the same administrator tries to log in using the same credentials as the first log in but from another browser session.

Federation Manager presents the warning dialog but the second user decides to log in, Federation Manager invalidates the first session. If the administrator of the first session tries to modify an object, Federation Manager alerts the administrator that a new session has invalidated the existing session and Federation Manager logs out the first administrator.

The second user can choose not to log in

Browser Session Closes but Administrator Not Logged out

An administrator logs in to Federation Manager. The administrator closes the browser session without logging out or the browser session closes unexpectedly and the administrator is not given a chance to log out. Another administrator logs in using the same credentials as the first administrator but from another browser session.

Federation Manager presents the warning dialog but the second user decides to log in, invalidating the first session.

If the administrator of the first session tries to resume the browser session and modify an object, Federation Manager alerts the administrator that a new session has invalidated his existing session. The first session was invalidated when the browser closed.

Note: Not all browsers permit a user to resume an unexpectedly closed browser session. For those browsers, Federation Manager does not present an alert that the existing session is invalid.

Administration is Disabled

An administrator logs in to Federation Manager. From the System Settings, the administrator disables administration. Another administrator tries to log in using the same credentials as the first administrator. Federation Manager presents the warning dialog but the second user decides to log in. Federation Manager invalidates the first session.

The first administrator, who did not log out or close the browser, tries to re-enable administration. Federation Manager displays a message telling the first administrator the session is invalid and logs the administrator out.

Disable UI Administration

The UI Settings group box lets you disable and re-enable Federation Manager administration on the local host.

The ability to disable administration of the UI is useful if two Federation Manager systems are set up to support failover. Administration of Federation Manager can only take place on the primary Federation Manager system. The configuration can then be exported to the secondary Federation Manager system.

Use the disable UI feature to disable administration on the secondary system so administration can only take place on the primary system.

To disable administration

1. Log in to the Federation Manager UI.
2. Navigate to Infrastructure, System Settings.
3. Click Disable Administration in the UI Settings group box.

   Disabling administration prevents any administrative actions.

Important! The change takes effect immediately after you confirm the action.

After you disable administration, an Administration Disabled dialog displays and all other parts of the UI become unavailable. Subsequent login attempts only display a warning message and a button to re-enable administration.

To re-enable administration

Click Enable Administration in the Administration Disabled dialog.

All parts of the UI become active again.

Chapter 16: SSL Administration for Federation Manager

This section contains the following topics:

SSL Administration for the Apache Web Server and the UI

Enable SSL for the following purposes:

- Handling federation traffic across an SSL connection.
- Enabling secure communication across the back channel for HTTP-Artifact single sign-on.
- Enabling secured access to the Administrative UI.

The embedded Apache web server lets the federation system handle SSL federation traffic and secure the back channel for HTTP-Artifact single sign-on. The embedded Tomcat web server allows secured access to the UI.

To enable SSL for the Apache and Tomcat web servers, complete the following process:

1. Create a certificate request for a server certificate.
2. Import the certificate that is issued by the Certificate Authority (CA).
3. Activate SSL in the Administrative UI. Locate the settings in Infrastructure, SSL Configuration.

Note: Federation Manager installations operating in FIPS Migrate or FIPS-only modes have FIPS-compatible encryption key algorithms available for certificates.

How to Enable SSL for the Apache Web Server and the UI

The procedure for enabling SSL for the embedded Apache web server and the Federation Manager UI is the same.

- Enable SSL for the embedded Apache web server if you want to do the following:
  - Manage federation traffic across an SSL connection
  - Secure communication across the back channel for artifact single sign-on.

  Remember that an SSL port number is specified when you run the Configuration wizard.
- Enable SSL for the Federation Manager UI to secure the connection to the UI.

  By enabling SSL, Federation Manager generates a FIPS-compatible private key for the server certificate.

Note: If you enable SSL, it affects all URLs for all services, even the Base URL parameter. This means that all service URLs must begin with https://.

To enable SSL communication:

1. Request a server certificate.
2. Specify the CA certificate that signs the server certificate.
3. Upload the signed certificate to the system.

   After the certificate is successfully uploaded, the Federation Manager activates the SSL connection.

In addition to these required steps, you can do the following:

- Retrieve a certificate signing request.
- Disable SSL.
- Delete the SSL configuration from the system.

Request an SSL Server Certificate

The first step in establishing an SSL connection is to complete a server certificate request. You send the completed request to a trusted Certificate Authority (CA), who returns a signed server certificate.

Important! Request an SSL Server certificate.

To complete a server certificate request

1. From the Federation Manager UI, select Infrastructure, SSL Configuration.

   The SSL Configuration dialog opens. In the SSL Configuration Status field, the status reads **Server cert not requested.**

2. Click Request to create a certificate request.

3. Complete the fields in the Certificate Request dialog and click Save.

   Certain fields have required values that are already assigned to them. In the Requester Name field, there is a suggested default value, but you can change it. The Requester Name value must be the fully qualified domain name that is associated with the server where Federation Manager is deployed.

   Note: Click Help for a description of fields, controls, and their respective requirements.

When the certificate request is created, Federation Manager generates a private key. The private key is stored in an internal file location.

After the request is generated, send the server certificate request to the designated CA that signs the certificate.

Based on the generated certificate request, the Certificate Authority issues a certificate. The validity duration of the certificate validity duration is equal to one of the following values:

- Certificate Authority default value.
- Value that is based on the business agreement between the requester and the Certificate Authority.

Upload the Signed Server Certificate

After you complete a certificate request, the SSL Configuration Status field reads **Server cert requested, not signed**, indicating that the certificate request is waiting to be signed. Federation Manager accepts a base-64 encoded PEM certificate or a full PKCS #7 certificate/chain response.

After you receive the signed certificate from the CA, the certificate must be uploaded to the storage location.

Note: Click Help for a description of fields, controls, and their respective requirements.

To upload the signed server certificate

1. Begin at the same SSL Configuration where you started the request.
2. Select the signed certificate response in the Signed Certificate Response field. Click Browse to locate the file.

   Note: Only one key and certificate pair is needed for the SSL features because SSL does not support more than one pair.
3. Identify the CA that signed the SSL certificate from the pull-down menu in the CA Certificate field.

   If the CA certificate is not in the key store, import a copy of the CA certificate used to sign the SSL certificate request. Import the certificate by clicking Import and completing the import steps.
4. Click Apply to upload the server certificate to Federation Manager.

   A confirmation message is displayed and the SSL Configuration changes to reflect that the certificate is now updated.
5. Restart the federation services according to your operating environment.

   - **Windows**

     Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

     a. Start, All Programs, CA, FederationManager, Stop services

     b. Start, All Programs, CA, FederationManager, Start services

   - **UNIX**

     a. Open a command window.

     b. Run the following scripts:

     federation_mgr_home/fedmanager.sh stop

     federation_mgr_home/fedmanager.sh start

     Note: Do not stop and start the services as the root user.

After the server certificate is uploaded to the system, Federation Manager updates the certificate and activates SSL. Assuming that the certificate upload was successful, the SSL Configuration Status reads **SSL Active**. The button in the configuration group box changes to Deactivate.

The UI also indicates whether the uploaded certificate is FIPS-approved or not.

Deactivate SSL

You can deactivate the SSL configuration if you no longer require SSL. For example, if back channel authentication is no longer required or you no longer want an SSL connection to the UI you can deactivate SSL.

Note: If you reconfigure a Windows system with SSL enabled, deactivate the SSL configuration before reconfiguring your system. Reactivate SSL after the reconfiguration is complete.

To deactivate SSL

1. Begin at the SSL Configuration dialog.
2. Click Deactivate in the Embedded web server or Administrative UI section.

   A confirmation prompt is displayed asking if you want to disable SSL.
3. Click Yes to complete the deactivation.
4. For the Federation Manager UI only, delete the tomcat.keystore file manually. This file is located in the following directory:

   federation_mgr_home/secure-proxy/SSL/keys

   Deactivating SSL for the Federation Manager UI does not delete the corresponding key store file. If you change the UI SSL certificate for any reason, the certificate is not updated, which results in Federation Manager using the wrong certificate. Deleting the Tomcat key store helps ensure that any updates you make to the SSL certificate are reflected.
5. Restart the federation services according to your operating environment.

   - **Windows**

     Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

     a. Start, All Programs, CA, FederationManager, Stop services

     b. Start, All Programs, CA, FederationManager, Start services

- **UNIX**

  a. Open a command window.

  b. Run the following scripts:

  federation_mgr_home/fedmanager.sh stop

  federation_mgr_home/fedmanager.sh start

  Note: Do not stop and start the services as the root user.

The SSL connection is no longer active and the SSL Configuration Status setting changes to **Server cert signed by CA, SSL ready**. The certificate and key files remain so you can re-enable SSL.

Reactivate SSL

If you deactivate SSL for any reason, reactivate it. By enabling SSL, Federation Manager generates a FIPS-compatible private key for the server certificate.

Note: If the Status setting reads **Server cert signed by CA, SSL ready**, activate the SSL connection.

To activate SSL

1. Begin at the SSL Configuration dialog.
2. Click Activate in the Embedded web server SSL configuration group box.

   The SSL Configuration Status setting changes to **SSL Active** and a confirmation message is displayed in the dialog.
3. Restart the federation services according to your operating environment.

   - **Windows**

     Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

     a. Start, All Programs, CA, FederationManager, Stop services

     b. Start, All Programs, CA, FederationManager, Start services

- **UNIX**

  a. Open a command window.

  b. Run the following scripts:

  federation_mgr_home/fedmanager.sh stop

  federation_mgr_home/fedmanager.sh start

  Note: Do not stop and start the services as the root user.

SSL is now enabled. You do not have to modify the SSL configuration until the certificate expires.

Replace or Resubmit a Certificate Signing Request for SSL

You can retrieve a copy of a certificate signing request associated with the private key/certificate pair in use by the Apache server or the UI. The ability to get a copy of the certificate signing request is useful if you delete the request file or you do not save the file. A copy of the request is also useful for resubmitting the request at a later date before the signed certificate expires.

The Retrieve function lets you obtain a copy of the certificate signing request.

Note: The Retrieve option is only available if a certificate has been requested and you have not deleted the SSL configuration by using the Restart button.

To retrieve a certificate signing request

1. From the UI, select Infrastructure, SSL Configuration.

   The SSL Configuration dialog opens.

2. Click Retrieve.

   A File Download dialog opens, prompting you to open or save the file.

3. Save the file.

The signing request is now retrieved and the UI returns to the SSL Configuration dialog.

Remove SSL from the Embedded Apache Server and the UI

- Remove SSL from the embedded Apache web server if you:
  - no longer require a back channel connection for artifact single sign-on
  - no longer want to use SSL
- Remove SSL from the UI connection if you no longer want an SSL connection to the UI.

The Restart feature lets you disable the existing SSL configuration and delete all files associated with the SSL configuration. Specifically, it deletes the private key and server certificate and the original server request file.

To disable SSL and remove related files

1. Log in to the Federation Manager UI.
2. Select Infrastructure, SSL Configuration.

   The SSL Configuration dialog opens.
3. Click Restart in the group box for the feature that does not require SSL.

   A prompt to confirm the restart is displayed.
4. Click Yes.

   The SSL configuration is removed from the system.
5. Restart the federation services according to your operating environment.
   - **Windows**

     Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

     a. Start, All Programs, CA, FederationManager, Stop services

     b. Start, All Programs, CA, FederationManager, Start services
   - **UNIX**

     a. Open a command window.

     b. Run the following scripts:

     federation_mgr_home/fedmanager.sh stop

     federation_mgr_home/fedmanager.sh start

     Note: Do not stop and start the services as the root user.

   Restarting the services lets the Apache web server and the UI return to non-SSL operation. Subsequent HTTPS requests that come in to Federation Manager will fail. With SSL removed, all service URLs now have to start with http.

How to Migrate SSL Keys and Certificates

For Federation Manager r12.5, the SSL key and certificate files for the embedded Apache and Tomcat servers are encrypted. For releases 12.0 and 12.0 SP1, these files are not encrypted. To avoid purchasing a new key/certificate pair for an encrypted file, migrate existing key or certificate files from Federation Manager r12.0/r12.0 SP1 to r12.5. You can also export these files for backup purposes without migrating them.

Important! For Federation Manager systems before r12.1, the embedded Tomcat server uses a self-signed certificate. You cannot use this self-signed certificate for a migration to r12.5. Purchase a signed certificate and upgrade the Tomcat SSL configuration with the signed certificate.

For Apache, you can migrate files for SSL connections beginning at Federation Manager r12.0. For Tomcat, you can migrate files only from Federation Manager r12.1 forward because in Federation Manager 12.0, a self-signed certificate secured the Tomcat key store. Beginning with r12.1, Federation Manager requires that a Certificate Authority signs the certificate.

Migrating SSL keys and certificate files is useful in the following situations:

- To move to a different version of Federation Manager on a new system instead of upgrading an existing system. Migrate the SSL keys or certificates from the existing system to the new system.
- To migrate SSL keys and certificates from one system in a cluster to another. Migrating lets you reuse the keys and certificates. For example, if a load balancer passes SSL requests to the Federation Manager systems in a cluster, each system must use the same keys and certificates. Therefore, you would migrate keys and certificates from one system to the other.

Note: If you upgrade a Federation Manager 12.0 system to Federation Manager r12.5, the installer automatically upgrades Apache and Tomcat SSL key and certificate files to encrypted files. This automatic does not apply to migrations.

The Federation Manager certificate and private key files are as follows:

Apache

- The server.key file contains a private key.
- The server.cert file contains a server certificate.

Tomcat

- For Federation Manager r12.0, the tomcat.keystore file contains a self-signed certificate. For Federation Manager r12.1x, the tomcat.keystore file contains a CA-signed certificate and private key pair.

To migrate or export these files, use the Federation Manager SSL utility named migratessl. The migration utility is included with Federation Manager r12.1 SP3 as a batch file for Windows systems and a shell script for UNIX systems. Federation Manager installs the tool in the federation_mgr_home/bin folder.

The process to migrate SSL files is as follows:

1. Copy the key and certificate files from the existing r12 Federation Manager system to any location on the Federation Manager r12.5 system.
2. Copy the migratessl tool to the location where you copied the key and certificate files.
3. If you migrate signed certificates, export the Certificate Authority certificate that signed the SSL certificate. Before you continue with the migration, import the CA certificate.

Copy Key and Certificate Files from the r12 System

To use the SSL migration tool, first gather the key and certificate files for the Federation Manager system from which you plan to migrate or export then copy them.

To copy the SSL key and certificate files

1. Locate the files on the existing Federation Manager system.

   The Apache SSL key and certificate files are in the following locations:

   - *federation_mgr_home*/secure-proxy/SSL/keys/server.key
   - *federation_mgr_home*/secure-proxy/SSL/certs/server.crt

   The Tomcat SSL key store file is in the following location:

   - *federation_mgr_home*/secure-proxy/SSL/keys/tomcat.keystore
2. Copy the key and certificate files to any location on the new Federation Manager machine.

Copy the SSL Migration Tool to Same Folder as the Key/Certificate Files

The SSL migration tool requires software that is deployed with Federation Manager 12.1 SP3. Run the tool on the machine where the Federation Manager 12.1 SP3 product has been installed. Specifically, the tool has to reside in the same folder where you copied the files to be migrated.

To copy the SSL utility tool

1. Navigate to *federation_mgr_home*/bin on the r12.5 system.
2. Copy the migratessl file (.bat or .sh) to the location on the r12.5 system where you copied the key and certificate files.

Migrate or Export SSL Keys and Certificates

Complete the SSL key or certificate file migration by running the migratessl utility.

Follow these steps:

1. Import the Certificate Authority certificate that originally signed the SSL certificate you are migrating.
   a. On the system from which you are migrating, export the CA certificate using the Federation Manager UI.
   b. On the new system to which you are migrating, import the CA certificate using the Federation Manager UI.
2. Open a command window on the new system where you copied the existing key or certificate files.
3. Navigate to the folder where you copied the components.
4. Specify the migratessl command with the necessary command arguments. Refer to the list of migration tool command arguments (see page 296) for all the options.

   Examples

   - To migrate the SSL server.key for Apache SSL connections, enter:

```
migratessl.bat -op migrate -keytype Apache
-sourcefile server.key -certfile server.crt
-sourcever 12.0 -sourceos Windows -oldpwd admin1
-newpwd admin2 -issueralias trustedca
```

   - To migrate a key/cert file for Tomcat SSL connections, enter:

```
migratessl.sh -op migrate -keytype Tomcat
-sourcefile tomcat.keystore -sourcever 12.1
-sourceos UNIX -issueralias trustedca
-oldpwd admin1 -newpwd admin2
```

   - To export a key/cert file for Tomcat SSL connections, enter:

```
migratessl.sh -op export -keytype Tomcat
-sourcefile tomcat.keystore -sourcever 12.1
-sourceos UNIX  -dest ca/federationmgr/secure-proxy/
SSL/keys/ -oldpwd admin1 -newpwd admin2
```

If you are migrating SSL keys and certificates as part of an entire configuration migration, complete the migration process by reactivating partnerships.

SSL Migration Tool Command Arguments

The migratessl tool is invoked at the command line. When entering a command:

- Follow each command agrument (except for Help flags) by only one value.
- Enclose values that have spaces, such as directory paths in double quotes.

Command Argument	Meaning
-op	Migrate or Export Default: Migrate When exporting for Apache, the tool exports a server.key file and a server.crt file, if you specify the -certfile argument. For Tomcat, the tool exports a tomcat.p12 file, which is a PKCS#12 key/cert file.
-keytype	Apache or Tomcat Default: Apache
-sourcefile	Name of the file containing the SSL key (Apache) or the key store containing the key and certificate (Tomcat).
-certfile	Name of the file containing the Apache SSL server certificate (Apache only).
-sourcever	Federation Manager version the key or certificate comes from, such as 12.0, 12.1. Default: 12.0
-sourceos	Operating system of the environment the key comes from, Windows or UNIX. **Note:** There is no Linux option because Linux support was introduced in r12.1 SP3. Default: The OS of the machine where the tool is being run.
-dest	Path to the folder for output files. This option is ignored for migration. Default for Export: Current folder **Important!** If you do not specify a destination folder, the files that you are migrating are overwritten.
-issueralias	The alias of the CA certificate that signed the certificate you are migrating. Import the CA certificate under this alias to the destination Federation Manager system. (Used only for Migrate; ignored for Export.)

-oldpwd	The Federation Manager administrative password of the system that is the source of the key.
-newpwd	The Federation Manager administrative password of the system to which the key is being moved.
-h	Displays these usage instructions.
-help	Displays these usage instructions.
-?	Displays these usage instructions.

Chapter 17: Error and Audit Logging

This section contains the following topics:

Logging Overview

Federation Manager supports the following types of logging:

- Error logging — records all policy engine error conditions.
- Audit logging — records policy-related transactions (authorization and authentication).

You can manage the following aspects of logging:

- Error log file name and location
- Error file log rollover
- Audit file name and location
- Authentication and authorization event auditing
- Audit log name and location
- Audit log storage type

Perform log management tasks using the command-line tool XPSConfig, which is installed with Federation Manager.

To run XPSConfig

1. Open a command-line window.
2. Enter XPSConfig at the prompt.

   Enter this command exactly as shown in this step because it is case-sensitive on UNIX platforms.

   A product menu displays.
3. Enter the letters for your product.

   A submenu of codes and associated log settings displays. You can enter control-S to stop and start the list from scrolling.

4. (Optional) Enter **f** at the command prompt to filter through the submenu settings, as the lists for each product can be long.

   For example, to find all the settings related to log rollover, enter **f**, then at the Enter Filter prompt enter **rollover**. The tool displays only those settings that contain the word rollover.

Configure Error Log Location and Rollover

You can specify when Federation Manager refreshes the error log based on an interval of time or on the maximum size of the log file. You can also set the maximum number of error log files allowed.

To specify error log rollover

1. Open a command window.
2. Type XPSConfig at the command-line prompt.

   Enter this command exactly as shown in this step because it is case-sensitive on UNIX platforms.

   The Product Menu is displayed.
3. Enter SM.

   The list of parameters and their current values is displayed.
4. (Optional) Enter **f** to filter the list of settings.

   At the Enter Filter prompt enter **rollover** to find all the settings related to log rollover or **file** to find all the settings related to the file location.
5. Enter the number of the log setting you want to modify to manage the error log rollover. The menu appears for the selected setting.

   The following settings are applicable:

   LogFile

   Specifies the default location of the policy server error log, smps.log. If you change the value of this parameter, you must provide a valid full path of the new file.

   LogFilesToKeep

   Represents the number of policy server error logs to keep, including smps.log. Older files will be deleted.

   Limits: Must be an integer.

LogRolloverDays

Represents the interval in days between log rollovers on a fixed schedule, for example, every two days. Must be used in combination with the LogRolloverTime setting, which specifies the time of day the log rolls over.

Limits: Must be an integer.

LogRolloverInterval

Represents the fixed interval in hours between log rollovers, for example, every three hours. The time interval is measured from when the Policy Server starts up.

Limits: Must be an integer.

LogRolloverOnStart

Specifies whether the error log is rolled over when the Policy Server starts up. Enter C to toggle the value.

Limits: TRUE or FLASE.

LogRolloverSize

Represents the size in Megabytes of the log file when it triggers a roll over.

Limits: Must be an integer.

LogRolloverTime

Represents the start time of a rollover on a fixed schedule. This parameter is used in combination with #83, the rollover interval in days. For example, the rollover will occur at 10:12 every three days.

Limits: A string in hh:mm format.

6. Enter c to change the value.
7. Enter the new value at the prompt.
8. Enter q until you return to the system command prompt.

   The value of the parameter is saved.

User Interface Logging

The server.log file is dedicated to UI-related events. This log file is located in the directory *federation_mgr_home*/logs/ui. This file is useful for examining what is happening with the UI and for providing important diagnostic information to Technical Support.

You can read the server.log file using a text editor, but you cannot alter the parameters directly in this file. You can change the behavior of the server.log file by editing the server.conf file, specifically controlling whether the server.log file is overwritten or appended to each time you restart Federation Manager.

The logappend setting in the server.conf file determines the behavior. The server.conf file is located in the directory *federation_mgr_home*/secure-proxy/proxy-engine/conf.

The default value of the logappend parameter is "yes," which means that logs are appended at each restart. The benefit of appending logs is that you do not lose the logs from previous Federation Manager operations.

If you want Federation Manager to overwrite the server.log file at each restart, change the logappend parameter to "no." Changing the setting to "no" can be helpful if disk space is a concern, or for any other reason you want to prevent the server.log file to increase in size.

Enable Audit Logging

Federation Manager automatically creates an audit log, smaccess.log, located in the directory *federation_mgr_home*/logs/server. This log remains empty until you enable logging for authentication events or authorization events, or both, using the XPSConfig command.

Note: XPSConfig is case-sensitive on UNIX platforms.

To enable audit logging

1. Open a command window.
2. Type XPSConfig at the command prompt.

   The Product Menu is displayed.
3. Enter SM.

   The list of parameters with their current values is displayed.
4. (Optional) Enter **f** to filter the list of settings.

   At the Enter Filter prompt enter **report** to find all the settings related to audit log.

5. Enter the number associated with the desired setting:

   ReportAuth

   Specifies the log settings for authentication events.

   Limits: Must be an integer.

   ReportAz

   Specifies the log settings for authorization events.

   Limits: Must be an integer.

6. Enter c to change the value.
7. Enter one of the following values at the prompt:

   Default

   0 = log no events

   Limits

   1 = log all events

   2 = log only rejection events

8. Enter q until you return to the system prompt.

   Audit logging is enabled.

Note: You can repeat this procedure at any time to update the settings for the audit log settings.

Set the Audit Log Name and Location

You can configure the output file name and location for the audit log.

To configure the text file name for the audit log file

1. Open a command window.
2. Type XPSConfig at the command-line prompt.

   Note: XPSConfig is case-sensitive on UNIX platforms.

   The Product Menu is displayed.

3. Enter SM.

   The list of parameters and their values is displayed.

4. (Optional) Enter **f** to filter the list of settings.

   At the Enter Filter prompt enter **text** to find the setting related to audit log text file name.

5. Enter the number associated with the ReportTextFile setting.

   The current value is displayed.

6. Enter c to change the file specification.
7. Enter the new file name. It must include a valid path.
8. Enter q enough times to return to the system command prompt.

The new file name is saved.

Specify the Audit Log Storage Type

The Federation Manager audit log is in text format, by default. You can use an ODBC database to record audit data instead of using a text-based log file.

Important! If you change the audit log storage type from TEXT to ODBC, you cannot change it back.

To use an ODBC data source for the audit log storage type

1. Open a command window.
2. Type XPSConfig at the command-line prompt.

   Note: XPSConfig is case-sensitive on UNIX platforms.

   The Product Menu is displayed.

3. Enter SM.

   The list of parameters and their current values is displayed.

4. (Optional) Enter **f** to filter the list of settings.

   At the Enter Filter prompt enter **store** to find all the settings related to audit log storage type.

5. Enter the number for the LogStoreNamespace setting.

   The currrent value is displayed.

6. Enter c to change the storage type.
7. Enter **ODBC:** at the prompt.

   Note: Include the colon in the entry.

8. Type q twice to return to the list of parameters.

9. Making this change requires configuring the following additional settings. Enter the number for each setting to modify it.

   Note: Enter **f** to filter the list of settings. At the Enter Filter prompt, enter **Db** to find all the settings related to audit log database.

   DbLogAdminName

   Specifies the data source user name for the audit log.

   Limits: A string; only applies when LogStoreNamespace is set to ODBC:.

   DbLogAdminPassword

   Specifies the data source user password for the audit log.

   Limits: A string; only applies when LogStoreNamespace is set to ODBC:.

   DbLogDataSource

   Specifies the data source name for the audit log.

   Limits: A string; only applies when LogStoreNamespace is set to ODBC:.

   DbLogMaxConnections

   Specifies the maximum number of connections to the data source for the audit log.

   Default: 15

   Limits: Must be an integer; only applies when LogStoreNamespace is set to ODBC:.

   DbLogUseDefault

   Specifies whether the audit log will use the same ODBC data source as the policy store.

   Default: FALSE

   Limits: TRUE or FALSE; only applies when LogStoreNamespace is set to ODBC:.

10. Enter q enough times to return to the system command prompt.
11. Establish a Data Source for the ODBC audit database (see page 305).

Establish a Data Source for an ODBC Audit Database

If you use an ODBC database to record audit data, configure an ODBC data source. Refer to one of the following for instructions:

- Create a SQL Server Data Source on Windows (see page 306)
- Create a SQL Server Data Source on UNIX Systems (see page 307)
- Create an Oracle Data Source on Windows (see page 307)
- Create an Oracle Data Source on UNIX Systems (see page 308)

Create a SQL Server Data Source on Windows

ODBC requires that you configure a data source for the MS SQL Server wire protocol.

To create the data source on Windows

1. Do one of the following:
   - If you are using a supported 32–bit Windows operating system, click Start and select Programs, Administrative Tools, ODBC Data Sources.
   - If you are using a supported 64–bit Windows operating system:
     a. Navigate to the *install_home*\Windows\SysWOW64.
     b. Double–click odbcad32.exe

   The ODBC Data Source Administrator appears.
2. Click the System DSN tab.

   System data source settings appear.
3. Click Add.

   The Create New Data Source dialog appears.
4. Select SiteMinder SQL Server Wire Protocol and click Finish.

   The ODBC SQL Server Wire Protocol Driver Setup dialog appears.
5. Enter the data source name in the Data Source Name field.

   Example: Federation Manager Data Source.

   Note: Take note of your data source name. This information is required as you configure your database as a policy store.
6. Enter the name of the MS SQL Server host system in the Server field.
7. Enter the database name in the Database Name field.
8. Click Test.

   The connection settings are tested and a prompt appears specifying that the connection is successful.
9. Click OK.

   The SQL Server data source is configured and appears in the System Data Sources list.

Create a SQL Server Data Sources on UNIX Systems

The Federation Manager ODBC data sources are configured using a system_odbc.ini file, which you create by renaming sqlserverwire.ini, located in *federation_mgr_home*/*siteminder*/db, to system_odbc.ini. This system_odbc.ini file contains all of the names of the available ODBC data sources as well as the attributes that are associated with these data sources. This file must be customized to work for each site. Also, you can add additional data sources to this file, such as defining additional ODBC user directories for SiteMinder.

The first section of the system_odbc.ini file, [ODBC Data Sources], contains a list of all of the currently available data sources. The name before the "=" refers to a subsequent section of the file describing each individual data source. After the "=" is a comment field.

Note: If you modify of the first line of data source entry, which is [SiteMinder Data Source], take note of the change because you will need this value when configure your ODBC database as a policy store.

Each data source has a section in the system_odbc.ini file describing its attributes. The first attribute is the ODBC driver to be loaded when this data source is used by SiteMinder. The remaining attributes are specific to the driver.

Adding a MS SQL Server Data source involves adding a new data source name in the [ODBC Data Sources] section of the file, and adding a section that describes the data source using the same name as the data source. You need to change the system_odbc.ini file if you create a new service name or want to use a different driver. You should have entries for the Oracle or SQL drivers under [SiteMinder Data Source].

Again, to configure a MS SQL Server data source, you must first create a system_odbc.ini file in the *federation_mgr_home*/*siteminder*/db directory. To do this, you need to rename sqlserverwire.ini, located in *federation_mgr_home*/*siteminder*/db, to system_odbc.ini.

Create an Oracle Data Source on Windows

To create an Oracle data source on Windows

1. Do one of the following:
   - If you are using a supported 32–bit Windows operating system, click Start and select Programs, Administrative Tools, ODBC Data Sources.
   - If you are using a supported 64–bit Windows operating system:
     a. Navigate to the *install_home*\Windows\SysWOW64.
     b. Double–click odbcad32.exe

   The ODBC Data Source Administrator appears.

2. Click the System DSN tab, and then click Add.

   The Create New Data Source dialog appears

3. Select SiteMinder Oracle Wire Protocol, and click Finish.

   The ODBC Oracle Wire Protocol Driver Setup dialog appears. The General tab is pulled to the front.

4. Enter a name that identifies the data source in the Data Source Name field.

   Note: Record this name. You will need the data source name when pointing the Policy Server to the database.

5. Enter the machine name where the Oracle database is installed in the Host Name field.

6. Enter the port number where the Oracle database is listening on the machine in the Port Number field.

7. Enter the name of the Oracle instance to which you want to connect in the SID field.

   Note: The service name is specified in the tnsnames.ora file. The SID is the system identifier for the database instance. The tnsnames.ora file contains service names and details that Oracle uses to identify and connect to Oracle instances.

   Example: if the tnsnames.ora file contains the following entry for an Oracle instance, you enter instance1 in the SID field:

   ```
   instance1 =
       (Description=
       (Address = (PROTOCOL = TCP)(Host = myhost)(Port=1521))
       (Connect_DATA_ = (SID = SIDofinstance1))
       )
   ```

8. Click Test Connection.

   The connection settings are tested and a prompt appears specifying that the connection is successful.

9. Click OK.

   The Oracle data source is configured for the wire protocol driver.

Create an Oracle Data Source on UNIX Systems

The SiteMinder ODBC data sources are configured using a system_odbc.ini file, which you create by renaming oraclewire.ini, located in *federation_mgr_home*/*siteminder*/db, to system_odbc.ini. This system_odbc.ini file contains all of the names of the available ODBC data sources as well as the attributes that are associated with these data sources. This file must be customized to work for each site. Also, you can add additional data sources to this file, such as defining additional ODBC user directories for SiteMinder.

The first section of the system_odbc.ini file, [ODBC Data Sources], contains a list of all of the currently available data sources. The name before the "=" refers to a subsequent section of the file describing each individual data source. After the "=" is a comment field.

Note: If you modify of the first line of data source entry, which is [SiteMinder Data Source], take note of the change because you will need this value when configure your ODBC database as a policy store.

Each data source has a section in the system_odbc.ini file describing its attributes. The first attribute is the ODBC driver to be loaded when this data source is used by SiteMinder. The remaining attributes are specific to the driver.

Adding an Oracle Data source involves adding a new data source name in the [ODBC Data Sources] section of the file, and adding a section that describes the data source using the same name as the data source. You need to change the system_odbc.ini file if you create a new service name or want to use a different driver. You should have entries for the SQL Server or Oracle drivers under [SiteMinder Data Source].

Again, to configure an Oracle data source, you must first create a system_odbc.ini file in the *federation_mgr_home*/*siteminder*/db directory. To do this, you need to rename oraclewire.ini, located in *federation_mgr_home*/*siteminder*/db, to system_odbc.ini.

Chapter 18: Restore a Federation Manager Configuration

This section contains the following topics:

How To Restore a System to a Previous Configuration

You can restore a system configuration by reverting to a previously backed-up configuration. If a current configuration is experiencing problems, reverting to a previous configuration can be useful.

The process for reverting to a previous configuration is as follows:

1. Back up the existing Federation Manager configuration for the system that you want to restore.
2. Run the Configuration wizard on this system using the same settings that were in place when you created the backup configuration.

   When you run the Configuration wizard, the settings must remain the same.

   The following settings must match the original configuration:

   - **Deployment Settings**

     Select the same deployment mode (proxy or standalone) for the new system.

   - **Port numbers**

     Specify the same ports that the backed-up system uses.

   - **Virtual Host Name**

     If the system used a virtual host when initially configured, use the same virtual host name. Additionally, make the appropriate entries in the host file for the system.

   - **SiteMinder Connector**

     If the system used the SiteMinder Connector, select the SiteMinder Connector again.
3. Import the backed-up configuration to the system.

The following sections detail the process.

Back up an Existing Configuration

A backup of your configuration is useful for to recover or migrate your federation system.

Note: This procedure applies to version r12.5 and higher.

To back up a configuration, export the configuration data. The XPSExport tool, included with the product, lets you export the configuration data to an XML file.

Important! During the export process, federation transactions cannot process successfully.

Follow these steps:

1. Log in to the Administrative UI.
2. Select the Federation tab and click Partnerships.

   The View Federation Partnerships window opens.
3. Select Deactivate from the Action menu next to each active partnership in the list.
4. Export the configuration by entering the following command from a command window:

   XPSExport *export_file_name* -xa -passphrase *passphrase*

   export_file_name

   Names the output file that results from the export. The output from XPSExport is in XML format, therefore, the file name must end with the extension **.xml**.

   passphrase

   Specifies the passphrase that is required to encrypt sensitive data. The passphrase must be at least eight characters and must contain at least one digit, one uppercase and one lowercase letter. If the passphrase contains a space, then it must be enclosed in quotes.

   NOTE: If you do not want to enter the passphrase directly, leave it off the command. XPSExport then prompts you for a passphrase and a passphrase confirmation, which is not echoed to the screen.

The export produces an XML file that contains encrypted configuration data.

Revert to a Backed-up Configuration

If you experience problems with an existing Federation Manager configuration, revert to a previously backed up configuration on the same system.

To restore a configuration, use the XPSImport tool shipped with the product to import an XML file.

Important! Follow the import steps exactly as outlined. Do not access the Certs & Keys tab in the Administrative UI until the procedure is complete.

Follow these steps:

1. Establish a new database instance for federation data.

   Important! Do not use an existing database for this step. The import fails if you do.

2. Run the Configuration Wizard, specifying the new database instance when prompted.

   Use the same settings for this new configuration that were used for the original configuration. These settings include:

   - Deployment Mode
   - Port numbers
   - Virtual Host Name
   - SiteMinder Connector

3. Stop Federation Manager services according to your platform.

   Windows

   Use the Federation Manager stop shortcut. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

   Select Start, All Programs, CA, FederationManager, Stop services.

   UNIX

   a. Open a command window.

   b. Run the following script:

      federation_mgr_home/fedmanager.sh stop

      Note: Do not stop and start the services as the root user.

4. Restore all configuration data using the XPSImport command:

   XPSImport *export_file_name* -passphrase *passphrase*

   export_file_name

   Names the XML file that resulted from the export of the original configuration. The filename should end with the extension **.xml**.

   passphrase

   Specifies the passphrase required to decrypt sensitive data. It must be at least eight characters and must contain at least one digit, one upper case and one lower case letter. If the passphrase contains a space, then it must be enclosed in quotes.

5. Re-run the Configuration Wizard.

   Use the same settings for this new configuration that were used for the original configuration. These settings include:

   - Deployment Mode
   - Port numbers
   - Virtual Host Name
   - SiteMinder Connector

6. Log back in to the Administrative UI.
7. Select the Federation tab and click Partnerships.

   The View Federation Partnerships window opens.

8. Select Activate from the Action menu next to each deactivated partnership in the Federation Partnership list. This re-activates all the partnerships.
9. (Optional) If the SiteMinder Connector was enabled in the original configuration, reestablish the Connector by doing the following:

   a. Click the Infrastructure tab and select Deployment Settings.

   b. Reconfigure the SiteMinder Connector settings using the same values that were used by the original configuration.

   c. Click Register Host to reregister Federation Manager with the SiteMinder Policy Server.

The configuration is restored to its original state.

Chapter 19: Troubleshooting

This section contains the following topics:

System Performance Troubleshooting

The following issue describes system performance troubleshooting.

Configure the Session Store Timeout for Heavy Load Conditions

Under heavy load conditions, long-running queries necessary for session store maintenance tasks, such as removing idled–out or expired sessions, can timeout. Adjust the timeout for session store maintenance tasks (60 seconds by default), by increasing the value of the MaintenanceQueryTimeout registry setting. Increase the value so that the maintenance thread can complete its tasks successfully.

The MaintenanceQueryTimeout registry setting can be found at the following registry location:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Netegrity\SiteMinder\CurrentVersion\
SessionServer
```

Proxy Engine Hangs and Stops Processing Requests

Symptom:

After processing requests for several days, Federation Manager's built-in proxy engine hangs.

Solution:

Modify tuning parameters in the proxy engine's server.conf for the connection between Apache web server (HTTP listener) and the proxy engine (Tomcat servlet engine).

The parameters you modify are used by the component mod_jk, which acts as the Tomcat connector to enable communication between the Apache web server and Tomcat using the Apache JServ protocol (AJP).

To modify the server.conf file

1. Navigate to the following directory:

   federation_mgr_home/secure-proxy/proxy-engine/conf

2. Open the server.conf file in an editor.

3. Modify the following parameters

   worker.ajp13.reply_timeout

   Specifies the maximum time, in milliseconds, that can elapse between any two packets received from the proxy engine. After this timeout expires, the connection between the Apache server (HTTP listener) and the proxy engine is dropped. A value of 0 indicates that the proxy engine will wait indefinitely until a response is received.

   To ensure that the connection does not wait indefinitely for a response from the proxy engine, increase this value.

   Default: 0

   worker.ajp13.retries

   Indicates the maximum number of times that the mod_jk component sends a connection request to the proxy engine in case of a communication error. After the number of retries has been met and there is no response from the proxy engine, the connection is dropped.

   Increase this value for more retry attempts for a connection request.

   Default: 2

4. Save the server.conf file.

Federation Manager Trace and Debug Logging

Troubleshoot federation operation by enabling trace and debug logging.

You can configure two kinds of logs:

- Trace logs

  These files contain general runtime activities and informational statements. The types of trace logs include:

  - Web Agent trace logs for the proxy engine embedded agent. These logs follow Web Agent runtime activities.
  - Federation Web Services trace logs to follow federation run-time activities.

- Debug logs

  These files contain a more detailed level of logging to help debug the product. The types of logging available includes:

  - Federation Manager Administration UI debug logging
  - Federation Manager Server trace and debug logging
  - Federation Database objects trace logging

Note: If you enable tracing, large log files can result.

If you use the default path values, the log files are in the directory *federation_mgr_home*\logs, under the FWS, server, and UI directories. By default, the system enables the following logs for basic informational logging:

- Server-side log (*federation_mgr_home*\ logs\server\smps.log)
- UI log (*federation_mgr_home*\logs\ui\server.log)

The XPSConfig tool, which is included with Federation Manager is required to enable some of the trace and debug functions. XPSConfig is an interactive command-line utility that allows administrators to view product parameters and edit their settings. Run XPSConfig from a system where Federation Manager is installed.

Federation Manager UI Debug Logging

The Federation Manager UI log file, by default, performs high-level trace logging. You can also enable more detailed debugging.

To obtain a detailed level of debugging information

1. Navigate to *federation_mgr_home*\secure-proxy\proxy-engine\conf.
2. Open the server.conf file in a text editor.

3. Find the loglevel parameter in the file.
4. Set it to 5.
5. Restart the federation services according to your operating environment.
   - **Windows**

     Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

     a. Start, All Programs, CA, FederationManager, Stop services

     b. Start, All Programs, CA, FederationManager, Start services

   - **UNIX**

     a. Open a command window.

     b. Run the following scripts:

     federation_mgr_home/fedmanager.sh stop

     federation_mgr_home/fedmanager.sh start

     Note: Do not stop and start the services as the root user.

Federation Manager Server Trace and Debug Logging

To enable trace logging of server-side runtime activities, configure the smtracedefault.txt file. This file defines what is written to the smtracedefault.log file.

Use the XPSConfig tool to enable server-side runtime debugging.

To enable server-side tracing

1. Open a command window.
2. Enter XPSConfig.

   Type the command as it is shown here. The command is case-sensitive.

   The Products Menu displays.
3. Enter SM.

   The Parameters Menu displays.
4. Enter the number associated with the LogTraceConfig parameter.
5. Enter c to change the value.
6. For the new value, enter *federation_mgr_home*\siteminder\config\smtracedefault.txt

   This value points to the tracing configuration file.

7. Enter q to return to the parameter list.
8. If you are finished configuring parameters, keep entering q until you exit XPSConfig.

   Changes made in XPSConfig are not recognized until you exit the XPSConfig tool. Where noted, some changes require that you restart Federation Manager services.
9. Navigate to *federation_mgr_home*\siteminder\config\smtracedefault.txt. The smtracedefault.txt file defines what Federation Manager logs in smtracedefault.log.
10. Back up the smtracedefault.txt file.
11. Open the smtracedefault.txt file in an editor. For the asserting party and relying party tracing configuration, edit the file by including the following contents.

    ```
    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/Assertion_Generator, Fed_Server/Auth_Scheme,
    Fed_Server/Configuration
    data: Date, Time, Tid, TransactionID, SrcFile, Function, Domain,
    Resource, Action, User, SessionID, Data, AuthReason, Message
    ```

    Note: In the directory *federation_mgr_home*\siteminder\config\profiler_templates, there are samples of other configuration settings you can use.

To turn off tracing, specify a space for the LogTraceConfig value by entering " ". An empty string does not work.

Server Log Rollover Settings

Configure how frequently the logging and tracing files rollover by modifying the rollover settings.

Note: Any changes to the log rollover settings apply to the smps.log file and smtracedefault.log file.

To modify the runtime log rollover settings

1. Open a command window.
2. Type XPSConfig.

   Type the command as it is shown here. The command is case-sensitive.

   The Products Menu displays.
3. Enter SM.

   The Parameters Menu displays.

4. Enter the number associated with the parameter you want to modify.

   The rollover parameters are as follows:

   LogFilesToKeep

   Represents the number of Policy Server error logs to keep. Federation Manager deletes older files.

   LogRolloverDays

   Indicates if a rollover occurs on a daily basis.

   0 = off

   1 = every day

   2 = every two days

   Enter the number that corresponds to the number of days that pass before a rollover occurs.

   LogRolloverInterval

   Indicates if a rollover occurs on an hourly basis. If this value is set, LogRolloverDays is ignored.

   0 = off

   1 = every hour

   2 = every two hours

   Enter the number that corresponds to the number of hours that pass before a rollover occurs.

   LogRolloverOnStart (enabled by default)

   Indicates whether the log file is rolled over when the services are started.

   LogRolloverSize

   Indicates at what size Federation Manager rolls over the log file. If the system reaches the size limit before the next rollover interval, the log file still rolls over.

   0 = off

   1 = 1 MB

   2 = 2 MB

   Enter the number that corresponds to the size limit of the log before a rollover occurs.

LogRolloverTime

Indicates what time of day to perform the rollover. Federation Manager uses this setting with the LogRolloverDays parameter. Enter a value in the form "hour:minutes" using a 24 hour clock.

Example: "22:00"

5. Enter c to change the parameter value and enter a new value.
6. Enter q to return to the Parameters Menu. If you are done modifying parameters, keep entering q until you exit XPSConfig.

   Changes made in XPSConfig are not recognized until you exit the XPSConfig tool. Where noted, some changes require that you restart Federation Manager services.

Federation Database Objects Trace

Enable XPS validation and federation object tracing to monitor federation database activities. Federation Manager logs these activities to the smps.log file, in the directory *federation_mgr_home*\logs\server\.

To enable general XPS and Federation Manager XPS object debugging

1. Open a command window.
2. Type XPSConfig.

   Type the command as it is shown here. The command is case-sensitive.

   The Products Menu displays.
3. Enter XPS.

   The Parameters Menu displays.
4. Enter the number associated with the LogValidationWarnings parameter.
5. Enter c to change the value to true. With a Boolean value, XPSConfig automatically changes the value to the opposite of the current setting.

   When set to true, the parameter enables tracing for XPS Validation warnings.
6. Enter the number associated with the Trace parameter.
7. Enter c to change the value to true.

   When set to true, the parameter enables XPS trace debugging.
8. Enter q until you return to the Product Menu.
9. Enter FED.

   The FED parameters menu display.

10. Enter the number associated with the TRACE parameter.
11. Enter c to enable it.

    When set to true,the TRACE parameter enables tracing for federation XPS objects.
12. Enter q to return to the Parameters Menu. If you are done modifying parameters, keep entering q until you exit XPSConfig.

    Changes made in XPSConfig are not recognized until you exit the XPSConfig tool. Where noted, some changes require that you restart Federation Manager services.
13. Restart the federation services according to your operating environment.

    - **Windows**

      Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

      a. Start, All Programs, CA, FederationManager, Stop services

      b. Start, All Programs, CA, FederationManager, Start services

    - **UNIX**

      a. Open a command window.

      b. Run the following scripts:

      federation_mgr_home/fedmanager.sh stop

      federation_mgr_home/fedmanager.sh start

    Note: Do not stop and start the services as the root user.

Proxy Server Web Agent Trace Logging

The proxy engine has an embedded Web Agent. You can monitor Web Agent run time activities by enabling tracing in the Agent LocalConfig.conf file.

To enable Web Agent tracing

1. Navigate to the following directory:

   federation_mgr_home\secure-proxy\proxy-engine\conf\defaultagent
2. Make a backup copy of the LocalConfig.conf file.

3. Edit the LocalConfig.conf file by replacing the entire contents of the file with the following text:

   LogFileName="*federation_mgr_home*\secure-proxy\Federation\log\WALog.log"

   LogFile="YES"

   TraceConfigFile="*federation_mgr_home*\secure-proxy\proxy-engine\conf\defaultagent\SecureProxyTrace.conf"

   TraceFileName="*federation_mgr_home*\logs\server\WATrace.log"

   TraceFile="YES"

   Note: Change the back slash character to a forward slash (/) in the paths if Federation Manager is installed on a Solaris operating environment.

4. Save and close the LocalConfig.conf file.
5. Open the WebAgent.conf file.
6. Remove the pound sign (#) to uncomment the localconfigfile line.
7. Save and close the WebAgent.conf file.
8. Restart the federation services according to your operating environment.

   - **Windows**

     Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

     a. Start, All Programs, CA, FederationManager, Stop services

     b. Start, All Programs, CA, FederationManager, Start services

   - **UNIX**

     a. Open a command window.

     b. Run the following scripts:

     federation_mgr_home/fedmanager.sh stop

     federation_mgr_home/fedmanager.sh start

     Note: Do not stop and start the services as the root user.

Web Agent tracing is now set.

Federation Web Services Trace Logging

You can monitor federation run-time activities by enabling logging and tracing in the LoggerConfig.properties file.

The default name for the log file is affwebserv.log and the default name for the trace log file is FWSTrace.log. You can change the names of these output files in the Loggerconfig.properties file.

To turn on federation web services tracing

1. Navigate to the following directory:

   federation_mgr_home\secure-proxy\Tomcat\webapps\affwebservices\WEB-INF\classes\

   Note: Use a forward slash (/) in the paths for a UNIX operating environment.

2. Open the LoggerConfig.properties file in a text editor.
3. Set the TracingOn parameter to Y.
4. (Optional) Modify the rollover settings for the log and trace files. The settings are:

   LogRollover

   Defines the type of rollover functionality desired for trace output files. The options are:

   0 = [default] Existing files are overwritten at startup.

   1 = Existing files are appended to at startup.

   2 = Rollover is only performed at startup.

   3 = Files rollover when they grow to the limit set by LogSize.

   4 = Files rollover at startup and then grow to the limit set by LogSize.

   LogSize

   Dictates the maximum file size in megabytes when rolling over by size. Enter the number equivalent to the MB size you want. The options are:

   0 = off

   1 = 1 MB

   2 = 2 MB

   LogCount

   Defines how many log output files to keep when logs are rolling over.

TraceRollover

Defines the type of rollover functionality desired for trace output files. The options are:

0 = [default] Existing files are overwritten at startup.

1 = Existing files are appended to at startup.

2 = Rollover is only performed at startup.

3 = Files rollover when they grow to the limit set by TraceSize.

4 = Files rollover at startup and then grow to the limit set by TraceSize.

TraceSize

Dictates the maximum file size in megabytes when rolling over by size. Enter the number equivalent to the MB size you want. The options are:

0 = off

1 = 1 MB

2 = 2 MB

TraceCount

Defines how many trace output files to keep when logs are rolling over.

5. Save and close the file.
6. Restart the federation services according to your operating environment.

   - **Windows**

     Use the stop and start shortcuts as follows. If you logged in as a network user and not a local administrator, right-click the shortcut and select Run as administrator.

     a. Start, All Programs, CA, FederationManager, Stop services

     b. Start, All Programs, CA, FederationManager, Start services

   - **UNIX**

     a. Open a command window.

     b. Run the following scripts:

     federation_mgr_home/fedmanager.sh stop

     federation_mgr_home/fedmanager.sh start

     Note: Do not stop and start the services as the root user.

Two SSO Transactions Fail Using the Same Browser Session

Symptom:

A user attempts two single sign-on transactions in the same browser session. The transactions are from the same asserting party to different relying parties. The first transaction is successful but the second transaction results in an authorization failure at the asserting party. The failure occurs because the two partnerships are configured to use different asserting party user directories.

When Federation Manager initiates a single sign-on transaction at the asserting party, it places a session cookie in the browser. This session cookie contains information about the user ID and the asserting party user directory. Only one Federation Manager session cookie can exist in the browser at a time.

When a user attempts a second transaction in the same browser session as the first transaction, the session cookie for the first transaction remains in the browser. However, this session cookie does not have the correct information for the second partnership and the authorization operation fails.

Solution:

Use the same browser session for different single sign-on transactions only if the asserting party user directory for each partnership is the same.

If different asserting party user directories are configured for each partnership, close the first browser session and start a new browser session to attempt the second transaction.

Examine Secure Proxy Engine Logs to Troubleshoot Federation Manager

Partnership-based Federation Manager contains a secure proxy engine that forwards traffic to backend servers. The secure proxy engine includes the following components:

- Apache Web Server

  Acts as the HTTP listener, handling HTTP traffic for incoming requests, and can handle HTTPS traffic, once properly configured.

- Tomcat server

  Provides a servlet container for the operation of the Federation Manager UI. The Apache web server communicates to the Tomcat server through a Tomcat connector named mod_jk.

You can supply CA Support with log files related to these components to troubleshoot problems in your Federation Manager environment.

Two Apache logs that aid Federation Manager troubleshooting are:

mod_jk.log

mod_jk.log is enabled by default with the product. After the first contact with the federation server, information begins logging to this file.

To modify this log file:

1. Navigate to *federation_mgr_home*\secure-proxy\httpd\conf
2. Open the httpd.conf file.
3. Set the following lines in the file to reflect these settings:

   `JkLogFile "path_to_mod_jk_log"`

   `JkLogLevel debug`

   `JkRequestLogFormat "%w %V %T %m %h %p %U %s"`

   Note: The path "logs/mod_jk.log" is the default location for the JkLogFile the entry. Use the default or set this path to your preferred location.

To disable the mod_jk.log, comment out or remove these lines from the file.

httpclient.log

For debug purposes only, you can enable the httpclient.log. The httpclient.log file is located in *federation_mgr_home*\secure-proxy\proxy-engine\logs.

To modify this log file:

1. Navigate to *federation_mgr_home*\secure-proxy\proxy-engine\conf.
2. Open the server.conf file
3. Change the following line:

   `httpclientlog="yes"`

To modify the location of the httpclient.log file and the log level, edit the httpclientlogging.properties file. Locate this file is in the directory *federation_mgr_home*\secure-proxy\Tomcat\properties.

Appendix A: Open Format Cookie Details

This section contains the following topics:

Contents of the Open Format Cookie

The federation open format cookie lets applications assert user attributes to Federation Manager and consume user attributes encapsulated by Federation Manager. The open format cookie has the following general characteristics:

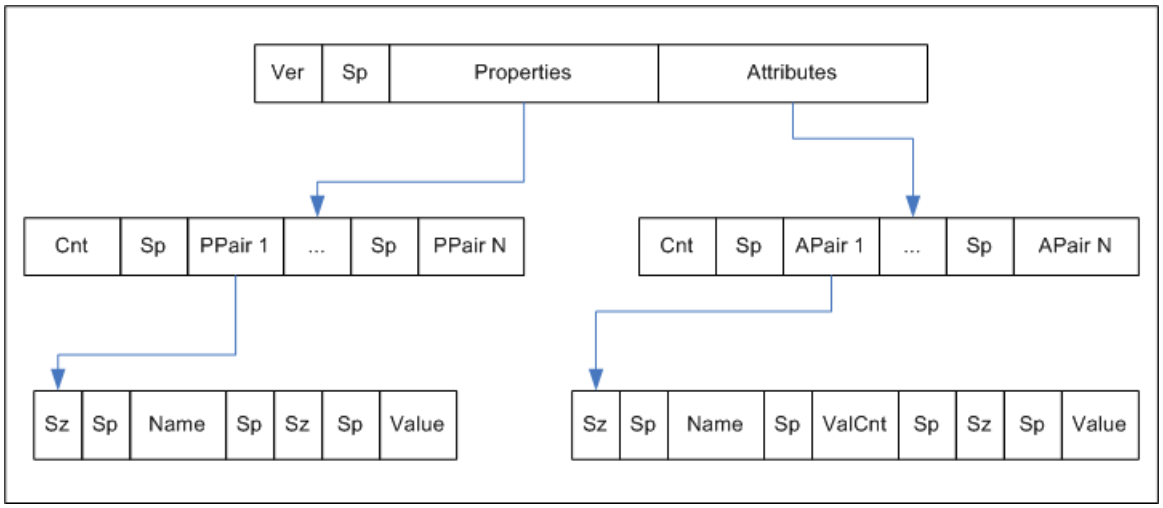
- The cookie is accessible by applications written in any programming language.
- The cookie content consists of a string of UTF-8 bytes, which supports international character sets.
- The combined size in UTF-8 bytes of each name/value pair precedes the name/value pair.
- Space characters are added for legibility.
- The cookie is simple to parse and easily extensible.

Important! If the cookie contains any unsafe characters such as '=', enclose the value in double quotes. You can specify this option through the user interface, or through the SDK.

The open format cookie contains the following property information:

- Cookie Version
- Name ID
- Name ID Format
- Session ID
- AuthnContext
- UserDN (same as User ID)
- UserConsent
- Login ID
- ExpiresON (expiration time)

The following diagram shows the open format:



Key:

- Ver — the cookie format version. This value is 1.
- Sp — an ASCII space character, used only to improve readability
- Properties — information about the principal
- Attributes — SAML attributes from the Assertion
- Cnt — the number of name value pairs that follow, represented in ASCII
- Sz — the length of the name or value that follows
- ValCnt — the number of attribute values

The Backus-Naur Form (BNF) for this format is following (0* means 0 or more; 1* means at least 1).

- DIGIT = ASCII digit (0 through 9)
- CHAR = UTF-8 character
- Sp = ASCII space (character 32)
- Token = 1*CHAR
- Cookie = Version Sp Properties Attributes
- Version = 1*DIGIT
- Cnt = 1*DIGIT
- Properties = Cnt 1*PPair
- Attributes = Cnt 0*APair

- ValCnt = 1*DIGIT
- PPair = Sz Sp Name Sp Sz Sp Value
- APair = Sz Sp Name Sp ValCnt Sp Sz Sp Value
- Sz = 1*DIGIT
- Name = Token

Value = Token

Appendix B: Encryption and Decryption Algorithms

This section contains the following topics:

Open Format Cookie Encryption Algorithms

The open format cookie supports the following options for password-based encryptions:

FIPS_Compat and FIPS_Migration Modes

PBE/SHA1/AES/CBC/PKCS12PBE-1000-128

PBE/SHA1/AES/CBC/PKCS12PBE-1000-192

PBE/SHA1/AES/CBC/PKCS12PBE-1000-256

PBE/SHA256/AES/CBC/PKCS12PBE-1000-128

PBE/SHA256/AES/CBC/PKCS12PBE-1000-192

PBE/SHA256/AES/CBC/PKCS12PBE-1000-256

PBE/SHA1/3DES_EDE/CBC/PKCS12PBE-1000-3

PBE/SHA256/3DES_EDE/CBC/PKCS12PBE-1000-3

FIPS_Only Mode

AES128/CBC/PKCS5Padding

AES192/CBC/PKCS5Padding

AES256/CBC/PKCS5Padding

3DES_EDE/CBC/PKCS5Padding

Digital Signing and Private Key Algorithms

Federation Manager uses the following algorithms for partnership signing options.

Encryption Key Algorithms

RSA-V15, RSA-OEAP

Encryption Block Algorithms

3DES, AES-128, AES-256

Federation Manager uses the following algorithms for Private Key generation (Certificate/Keys):

Key Algorithm

RSA

Sign Algorithms

MD5withRSA, SHA1withRSA, SHA256withRSA & SHA512withRSA

Back Channel Communication Algorithms

For back channel communication used for HTTP-Artifact single sign-on and SAML 2.0 Single Logout, Federation Manager supports the following ciphers, depending upon FipsMode:

FIPS_Compat and FIPS_Migration Modes—RC4 and AES

RSA_With_RC4_SHA

RSA_With_RC4_MD5

RSA_With_AES_128_CBC_SHA

RSA_With_AES_256_CBC_SHA

FIPS_Only Mode—AES only

RSA_With_AES_128_CBC_SHA

RSA_With_AES_256_CBC_SHA

Backend Communication Algorithms (SPS Server)

For Backend Communication (SPS-backend server), following ciphers are being supported depending upon FipsMode of the setup. These are defined in <fedroot>\secure-proxy\proxy-engine\conf\server.conf.

FIPS_Compat and FIPS_Migration Modes

ciphers="-RSA_With_Null_SHA,+RSA_With_Null_MD5,-RSA_With_RC4_SHA,+RSA_With_RC4_MD5,+RSA_With_RC2_CBC_MD5,+RSA_With_DES_CBC_SHA,+RSA_With_DES_CBC_MD5,+RSA_With_3DES_EDE_CBC_MD5,+RSA_Export_With_RC4_40_MD5,-RSA_Export_With_DES_40_CBC_SHA,+RSA_Export_With_RC2_40_CBC_MD5,-DH_RSA_With_DES_CBC_SHA,-DH_RSA_With_3DES_EDE_CBC_SHA,-DH_RSA_Export_With_DES_40_CBC_SHA,-DH_DSS_With_DES_CBC_SHA,-DH_DSS_Export_With_DES_40_CBC_SHA,-DH_Anon_With_RC4_MD5,-DH_Anon_With_DES_CBC_SHA,-DH_Anon_With_3DES_EDE_CBC_SHA,-DH_Anon_Export_With_DES_40_CBC_SHA,-DH_Anon_Export_With_RC4_40_MD5,-DHE_RSA_With_DES_CBC_SHA,-DHE_RSA_Export_With_DES_40_CBC_SHA,-DHE_DSS_With_DES_CBC_SHA,-DHE_DSS_Export_With_DES_40_CBC_SHA,-Null_With_Null_Null"

FIPS_ONLY Mode

fipsciphers="+DHE_DSS_With_AES_256_CBC_SHA,
+DHE_RSA_With_AES_256_CBC_SHA, +RSA_With_AES_256_CBC_SHA,
+DH_DSS_With_AES_256_CBC_SHA, +DH_RSA_With_AES_256_CBC_SHA,
+DHE_DSS_With_AES_128_CBC_SHA, +DHE_RSA_With_AES_128_CBC_SHA,
+RSA_With_AES_128_CBC_SHA, +DH_DSS_With_AES_128_CBC_SHA,
+DH_RSA_With_AES_128_CBC_SHA, +DHE_DSS_With_3DES_EDE_CBC_SHA,
+DHE_RSA_With_3DES_EDE

Java SDK Encryption Algorithms

The Federation Manager Java SDK supports the following encryption algorithms:

Without a Password

"AES/CBC/PKCS5Padding"

With a Password

"PBE/SHA1/AES/CBC/PKCS12PBE-5-128"

Federation Manager Crypto Algorithm

FMCrypto Encryption/Decryption Algorithm

AES_128

Internal Key Encryption Algorithms

Federation Manager uses the following internal key encryption/decryption algorithms, depending on the FIPS mode of operation:

FIPS_MIGRATE and FIPS_ONLY Modes

AES_128

FIPS_COMPAT Mode

RC2

SSL Key Algorithms for the Apache Web Server and Federation Manager UI

Federation Manager uses the following algorithms for the embedded Apache web server SSL communication:

Apache SSL key generation

SHA1withRSA

Key encryption

DES-EDE3-CBC

Federation Manager uses the following algorithm for SSL communication to the Federation Manager UI:

SSL Key password encryption

aes-128-cbc

Index

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W