CA Service Catalog

Implementation Guide

Release 12.8.00

CA Technologies Product References

This documentation set contains references to the following CA Technologies products:

- CA Service Catalog, which includes Accounting Component (formerly CA Service Accounting)
- CA Embedded Entitlements Manager (CA EEM)
- CA Server Automation
- CA Server Automation Reservation Manager (Reservation Manager)
- CA Business Service Insight (CA BSI, formerly CA Oblicore Guarantee)
- CA Open Space
- CA Role & Compliance Manager (CA RCM)
- CA Service Desk Manager, which includes CA CMDB
- CA SiteMinder®
- CA Asset Portfolio Management (CA APM)
- CA MICS® Resource Management
- CA JARS®
- CA Storage Resource Manager (CA SRM)
- CA Workflow
- CA Process Automation (formerly CA IT PAM)
- CA Business Intelligence
- CA Anti-Virus (formerly eTrust Antivirus)
- CA Threat Manager (formerly eTrust Integrated Threat Management [eTrust ITM])

Contact CA Technologies

Contact CA Support

For your convenience, CA Technologies provides one site where you can access the information that you need for your Home Office, Small Business, and Enterprise CA Technologies products. At http://ca.com/support, you can access the following resources:

- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

Providing Feedback About Product Documentation

If you have comments or questions about CA Technologies product documentation, you can send a message to techpubs@ca.com.

To provide feedback about CA Technologies product documentation, complete our short customer survey which is available on the CA Support website at http://ca.com/docs.

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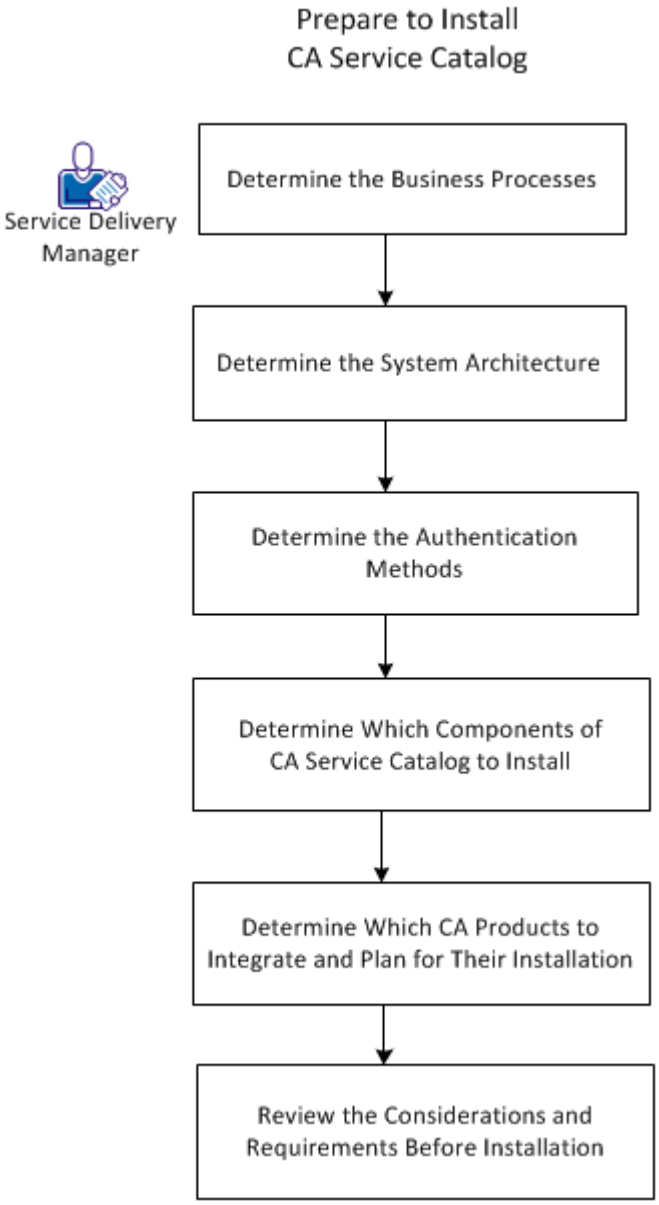
Chapter 1: Preparing to Install or Upgrade

Preparing to Install or Upgrade CA Service Catalog

The CA Service Catalog products and components are an integrated set of business applications that a Service Delivery Manager uses to manage services. To optimize your use of CA Service Catalog and the system resources that it uses, carefully prepare to install or upgrade the product.



Follow this process:

1. Determine the business processes (see page 13).
2. Determine the system architecture (see page 13) to use.
3. Determine the authentication method (see page 24) or methods to use.
4. Decide which components (see page 24) of CA Service Catalog to install.
5. Determine which CA products to integrate (see page 25) with CA Service Catalog and plan for their installation.
6. Review the considerations and requirements before installation (see page 28). We also recommend that you review these topics before upgrading the product.

After you complete these tasks, install or upgrade CA Service Catalog, using the scenario that applies to your implementation:

- *Install CA Service Catalog*
- *Upgrade CA Service Catalog on Existing Computers* (traditional upgrade)
- *Upgrade CA Service Catalog on New Computers* (migration-model upgrade)

Business Processes

Implementing CA Service Catalog requires an understanding of your current business processes. Often this effort requires a discovery process to research and obtain this information. During this process, you ask questions and collate information about your business processes. Use top-down analysis to define your business and your business needs. After you determine your business needs, implement the catalog system to address them.

System Architecture

In a production environment, CA Service Catalog supports the following types of system architecture:

- Small Architecture (see page 15)
- Medium Architecture (see page 17)
- Large Architecture (see page 19)

Demonstration-Only Deployment

In addition to small, medium, and large architectures, CA Service Catalog also supports a standalone deployment. In a standalone deployment, all the components, including the database server, are installed on a single physical computer. This deployment is for demonstration *only* and is *not* suitable for a production environment.

Key Terms and Concepts

Availability refers to the ability of an organization to deliver consistent, predictable access to applications and data.

The number of *catalog requests per minute* is the key criterion for determining the size of the architecture as small (see page 15), medium (see page 17), or large (see page 19). This criterion is much more important than the number of users in the system or other criteria. The higher the number of catalog requests per minute, the larger the recommended architecture.

A *cluster* is two or more interconnected computers that create a solution to provide higher availability, higher scalability, or both.

Clustering for CA Service Catalog and Accounting Component is accomplished through Catalog Component clustering, because all user communications with catalog and accounting functions are accomplished through Catalog Component. Thus, the term *Catalog Component clustering* includes both CA Service Catalog clustering and Accounting Component clustering.

Load balancing means dividing the amount of work between two or more computers, instead of a single computer. As a result, the system accomplishes more work in the same amount of time and typically serves all users faster.

In *horizontal clustering (clustering)*, different physical computers comprise a cluster. As a result, the load balancer forwards requests to different computers having different IP addresses. All Catalog Component installations on all computers must use the same cluster of the MDB. To implement clustering (see page 267), you make several related configuration changes *manually*. Clustering enables a single application to span several computers while presenting a single system image. Clustering can also provide increased throughput and high availability. Clustering applies to *both* Catalog Component and CA Workflow.

Note: If you are using CA Process Automation as your process automation tool, see your CA Process Automation documentation for information about using clustering with CA Process Automation.

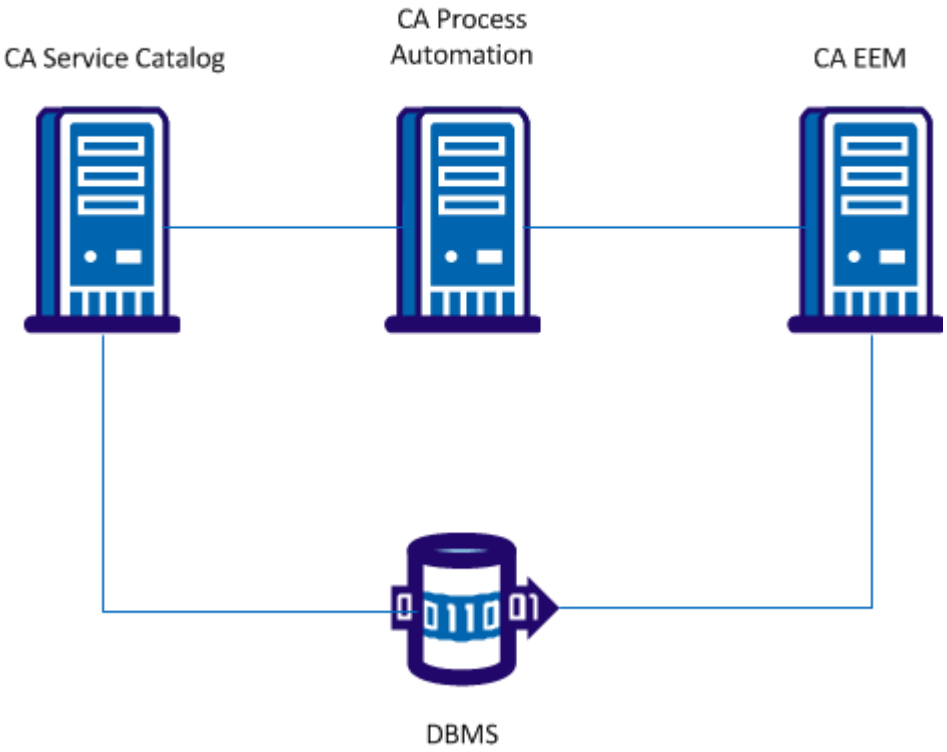
Small Architecture and Factors that Influence Size

The small architecture includes the following servers:

- Server 1 hosts CA Service Catalog, including Accounting Component.
- Server 2 hosts CA Process Automation.

  Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.
- Server 3 hosts the DBMS.
- Server 4 hosts CA EEM. You use configuration parameters to connect CA Service Catalog and CA Process Automation with CA EEM.

Small Architecture



This model applies to systems with an expected average load of 1 to 10 catalog requests per minute. Clustering does *not* apply.

Important! Verify that the DBMS is tuned for maximum performance. This directive applies to all size architectures.

If you expect more than a small percentage of these requests to be complex, consider moving to the next size, medium architecture (see page 17). Complex requests include one or more of the following items:

- Multiple (two or more) services or service options
- Attachments
- Long forms or multiple forms
- Long web service calls or multiple web service calls
- Multiple CA Process Automation processes or CA Workflow process definitions

Similarly, consider moving to a medium architecture if both of the following conditions exist:

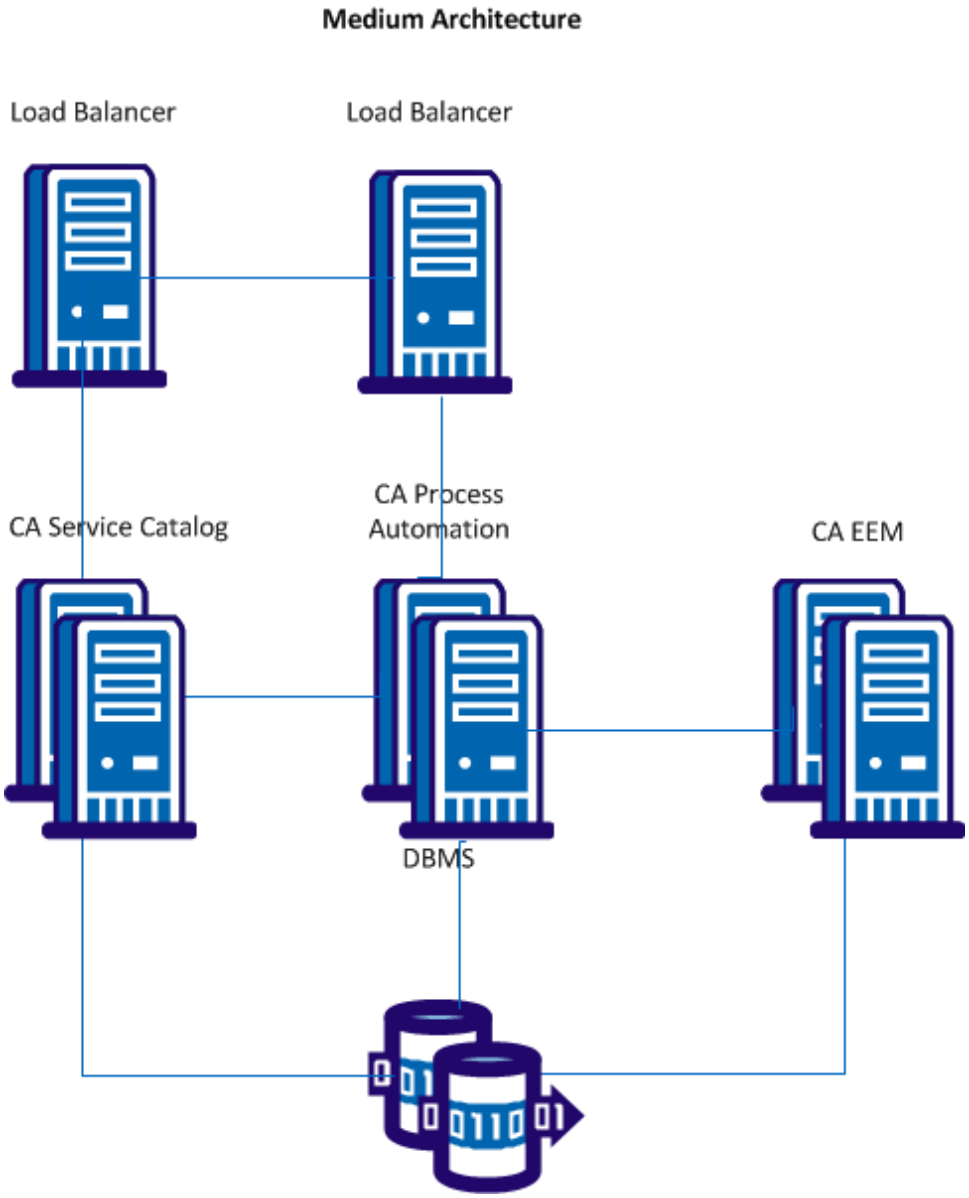
- Your implementation includes more than 5,000 users.
- You expect more than a small percentage of these users to access the catalog simultaneously.

Finally, consider the following sources to help determine your architecture:

- Stress test articles and other performance-related information for CA Service Catalog on http://ca.com/support
- Any data that you have from implementing previous releases of CA Service Catalog

Medium Architecture

The medium architecture expands the small architecture (see page 15) by implementing clustering and adding load balancers, as follows:



The medium architecture setup follows. Each mention of *two clustered servers* refers to two virtual computers that are clustered.

- Two clustered servers host CA Service Catalog.
- Two clustered servers host CA Process Automation.
- One or preferably two load balancers are the front ends to the clusters for CA Process Automation and CA Service Catalog, respectively. Both the CA Process Automation and CA Service Catalog clusters require a load balancer, which can be an existing instance. CA Process Automation and CA Service Catalog can share a load balancer.
- Two clustered servers host CA EEM. CA EEM is clustered but is not used with a load balancer. We recommend clustering CA EEM to provide failover protection. You use configuration parameters to connect CA Service Catalog and CA Process Automation with the CA EEM cluster. You can increase CA EEM performance by pointing each CA Process Automation domain server to different CA EEM servers.
- Two clustered servers host the DBMS.

  Note: You cluster the DBMS to improve throughput and responsiveness. Verify that you cluster your DBMS using a method that improves performance. For example, using an active-active database cluster can reduce performance, especially on write operations. For details about clustering your DBMS, see its documentation.
- Some virtual machine software uses scheduling algorithms that result in decreased performance when the number of CPUs increases. This performance loss is most noticeable when the virtual machines are sharing systems with other virtual machines that also have a lower number of CPUs allocated. Typically, in such cases, increasing the number of virtual machines in the cluster improves performance more than increasing the number of CPUs per virtual machine.

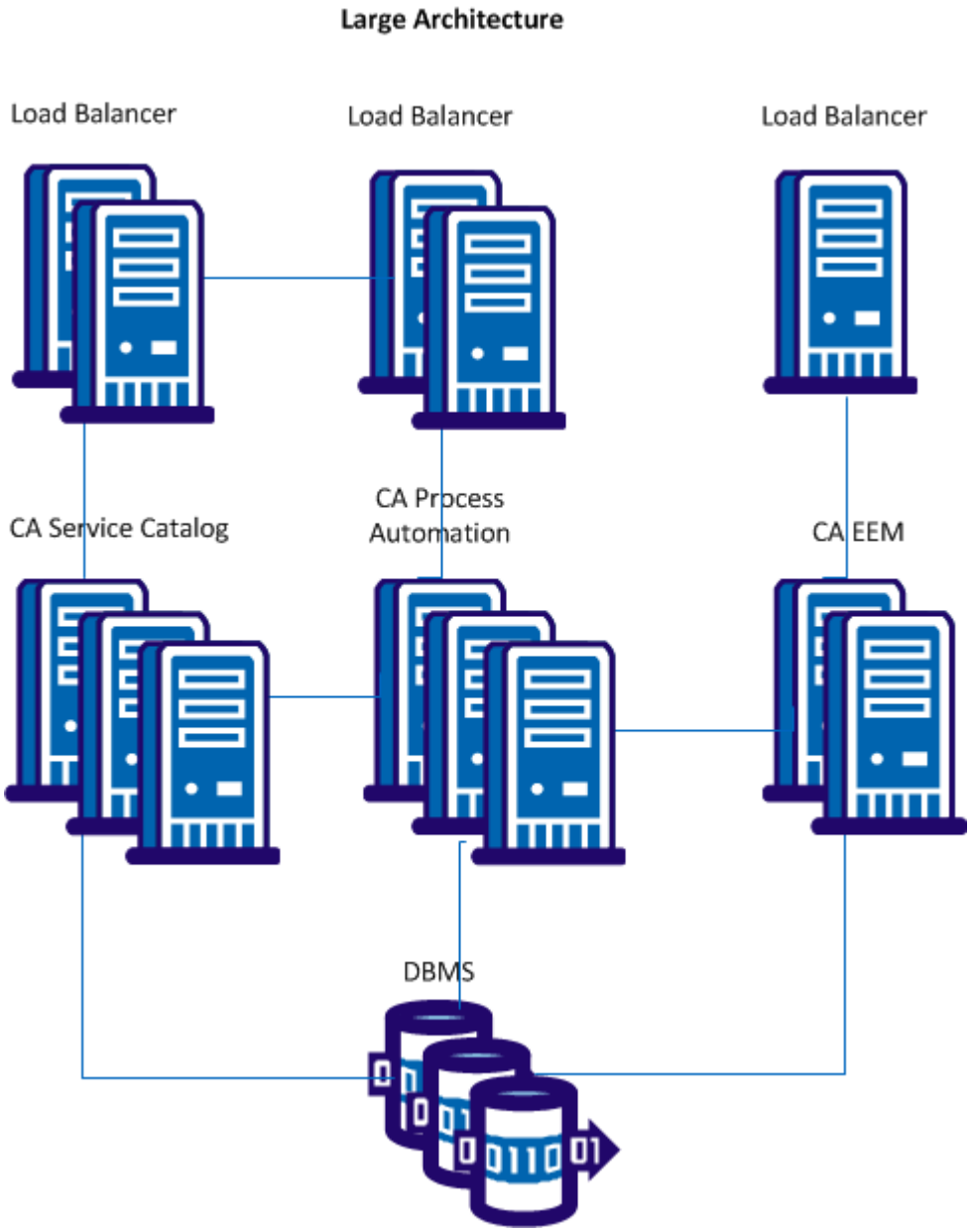
Note: You install and cluster CA Process Automation according to the specifications in the CA Process Automation documentation. Similarly, you install and cluster CA EEM according to the specifications in the CA EEM documentation.

The medium architecture can efficiently process a load of 11-50 catalog requests per minute. This architecture provides a good starting point for most implementations. You can monitor performance and you can add clustered instances, if necessary.

Consider the factors for moving from a small architecture (see page 15) to a medium architecture. The same factors in greater magnitude can cause you to move from a medium architecture to a large architecture (see page 19).

Large Architecture

The large architecture includes multiple web server clusters (see page 14) and a database cluster, as follows:



The large architecture setup follows:

- Two or more clustered servers host CA Service Catalog.
- Two or more clustered servers host CA Process Automation.
- You install and cluster CA Process Automation according to the specifications in the CA Process Automation documentation. Alternatively, you install CA Process Automation on three physical computers and place them in a separate cluster.
- Two or more load balancers are the front ends to the clusters for CA Process Automation and the Catalog Component of CA Service Catalog, respectively. Both the CA Process Automation and CA Service Catalog clusters require a load balancer, which can be an existing instance.
- Two or more clustered servers host CA EEM. CA EEM also uses a load balancer. We recommend clustering CA EEM to provide failover protection. You use configuration parameters to connect CA Service Catalog and CA Process Automation with the CA EEM cluster. You can increase CA EEM performance by pointing each CA Process Automation domain server to different CA EEM servers.
- Two or more clustered servers host the DBMS.

  Note: You cluster the DBMS to improve throughput and responsiveness. Verify that you cluster your DBMS using a method that improves performance. For example, using an active-active database cluster can reduce performance, especially on write operations. For details about clustering your DBMS, see its documentation.
- Some virtual machine software uses scheduling algorithms that result in decreased performance when the number of CPUs increases. This performance loss is most noticeable when the virtual machines are sharing systems with other virtual machines that also have a lower number of CPUs allocated. Typically, in such cases, increasing the number of virtual machines in the cluster improves performance more than increasing the number of CPUs per virtual machine.
- A filestore serves as the single location for all shared files. The filestore is shared and replicated.

The large architecture can efficiently process an average load of 50 or more catalog requests per minute. This architecture provides a good starting point for most implementations deemed larger than medium architecture (see page 17). You can monitor performance and can add computers and clusters, if necessary.

Consider the factors for moving from a small architecture (see page 15) to a medium architecture. The same factors in greater magnitude can cause you to add computers and clusters to a large architecture.

Failover Mechanisms

As part of your implementation, you can perform the following tasks to provide failover mechanisms:

- Deploy CA Service Catalog in a cluster (see page 14).
- If you use CA Workflow, Deploy CA Workflow in a cluster.
- If you use CA Process Automation, deploy clustering in CA Process Automation.
- Use *database* clusters. CA Service Catalog components are also compatible with database clusters which are recommended for environments experiencing heavy load.

  Note: For information about database clustering, see your DBMS documentation.
- Use a load balancer. Clustering requires a load balancer. To maximize the uptime of CA Service Catalog, include the load balancer and cluster computers in your failover plan.
- Implement clustering on the load balancer computer.
- Move user-generated files from the local file system to a filestore (see page 239) (a central location) on a high-availability network shared file system. Catalog maintains several user-generated files on the local file system. These files include forms and XSL and XML customizations.
- If you are using CA EEM for authentication, cluster CA EEM, using operating system level clustering.

  Note: For information about clustering and implementing failover with CA EEM, see your CA EEM documentation.
- Improve the robustness of the hardware used in your environment, by using all applicable means, including RAID hard disks, redundant power supply, and network cards.

  Note: For information about using these means, see your hardware documentation.

Session Management

Session management is very important for performance. One key factor is managing your sessions efficiently is ensuring that you are using a process automation tool (CA Process Automation or CA Workflow) efficiently, because these tools create and manage sessions.

Effective use of web service sessions is crucial for maintaining throughput as your environment scales up. Creating a web service session is a non-trivial task which requires multiple invocations of authentication and authorization logic and accounts of the majority of time and effort spent when using web services. Design CA Process Automation processes or CA Workflow process definitions and other web service clients to avoid creating extra web service sessions. Exception handling should create a session *only* when the exception is known to be the result of an invalid or expired session.

Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

Note: For details about using CA Process Automation or CA Workflow, see the *Integration Guide*.

Scenario

This topic explains how to architect the CA Service Catalog system to meet the requirements for the following scenario: "I have 60,000 end users distributed across the country and my system is located in a centralized data center owned by the service provider. We may also need to integrate with CA Service Desk Manager, CA APM, and other products. Our expected load is about 100 requests per day with an average of 1000 concurrent connections. We are planning to define CA Process Automation processes to meet our requirements."

This scenario is common. Because of the variability around usage patterns and architecture there is no simple calculator that can generate sizing estimates. However, the CA Service Catalog components are dynamically scalable.

The CA Service Catalog architecture is n-tier, stateless, and web-based. Users make HTTP requests. These HTTP requests are passed to one or more application servers and the application server performs the processing logic using a pool of connections to the database. The web server can be co-located with application server instances. In addition, several computational engines run independently from any user interactions; examples include the billing, SLA correlation, and CA Workflow engines. Several additional web servers, application servers, and computational engines can be added, as needed. The database, where state is maintained, is the potential performance bottleneck. The scalability of the database platform is very important. Therefore, the sizing and architecture of the MDB is the most critical factor.

Metrics

First, consider the concurrent connection metric: Because HTTP is connectionless, there is no "concurrent user" metric.

Next, consider the metric of 100 requests per day: This metric does not provide the peak usage, a critical factor. If the 100 requests are evenly distributed through the day, system impact would be minimal. However if the 100 requests are all made at the same time of day, then the system could potentially be challenged. Also, the type of request has a direct impact on the resource utilization.

Variations

Variations in usage and architecture are important. Consider them carefully and tune your system accordingly to account for them. You may need to adjust your tuning over time as changes in demand or system load occur.

Business Requirements and Updates

When you are implementing CA Service Catalog, it is critical to capture accurate business requirements and use them to formulate efficient technical architectures. Therefore, you start an implementation with a discovery phase per module to capture the business requirements (functional and non-functional). Next, you study the limitations and capabilities of the client operational infrastructure, and you formulate an efficient implementation architecture. With all the information you have obtained, you can formulate an initial sizing estimate.

Based on the many types of possible variations in usage and architecture, organizations should start with two instances of each component for fail-over and load balancing. Because components can be co-located, start with at least two server class machines in addition to the database server or servers. If computational engines (for example, from billing or CA Process Automation) are heavily used during peak activity times, they may require their own server or servers. Clients' usage-patterns typically change over time as they grow to understand a product's features and use them more heavily. As you discover usage patterns over time, you can dynamically add and distribute components as needed.

Authentication Methods

Administrators can authenticate users in CA Service Catalog with the following means:

- CA EEM alone
- CA EEM with an external directory; for example: an LDAP directory, such as Microsoft Active Directory

  Note: For instructions to configure CA EEM, with or without an external directory, see the *Integration Guide*.
- Windows NTLM authentication (see page 157)

Overview of Components

The CA Service Catalog components are as follows:

Catalog Component

Catalog Component provides a container that consists of services for one, several, or all business units. Services are built of one or more service option groups that describe IT services and how to charge for them.

The service catalog also enables an organization to model its business units or departments and manage the users accounts contained within those units. Services in the service catalog can be organized into folders and can contain detailed information about the price of a service. Services can represent one or more metrics and can include Service Level Agreements (SLAs).

Catalog Component also provides required common functions such as management of users, business units and accounts, reporting, event handling, and so forth.

Accounting Component

Accounting Component is the financial component of CA Service Catalog. You can use it to perform billing, chargeback, cost allocation, budgeting, and planning of services in the catalog.

Catalog Content

The installation media includes the Catalog Content, a set of many best practice model services to help you start your catalog quickly and efficiently. Using these model services helps you better align your services with business goals, improve internal customer satisfaction, and standardize your processes to achieve greater operational efficiency.

Overview of CA Technologies Common Components and Integrations

The products that integrate with CA Service Catalog can be grouped according to those that are supplied and licensed with CA Service Catalog and those that are supplied and licensed separately.

Common Components Supplied on the CA Service Catalog Installation Media

The following CA Technologies common components are included when you purchase CA Service Catalog and are licensed with it. These components are supplied on the CA Service Catalog installation media.

CA Management Database (CA MDB)

Many CA Technologies products, including CA Service Catalog, share a common, required database schema named the CA Management Database (CA MDB or the MDB).

When you configure Catalog Component, the MDB is automatically created or updated (if necessary) and is configured in the database management system (DBMS).

Note: You must install SQL Server or Oracle before installing CA Service Catalog. For more information on supported versions of the DBMS, see the *Release Notes*.

Typically, we recommend that CA Service Catalog and all CA products that integrate with it share the same CA Management Database (CA MDB). CA Service Catalog embeds CA MDB r1.5. To integrate CA Service Catalog with other CA products that embed CA MDB r1.5 or CA MDB r1.0.4, verify the CA MDB version compatibility for your integrations (see page 33).

CA Embedded Entitlements Manager (CA EEM)

CA Service Catalog uses CA EEM to manage authentication and authorization (see page 35). You can optionally use CA SiteMinder instead of CA EEM for authentication. We recommend that CA Service Catalog and all CA products that integrate with it share the same installation of CA EEM.

You install or upgrade CA EEM *before* you install or upgrade CA Service Catalog.

Common Components Supplied With CA Service Catalog

The following integrating products are included when you purchase CA Service Catalog and are licensed with it. These products are supplied on their own installation media, and are included with CA Service Catalog. You install these products individually, *either* before or after you install CA Service Catalog.

CA Process Automation

CA Process Automation uses graphical processes created by system administrators to execute operational processes automatically. It supports a fully integrated development and administrative environment to manage, create, and configure CA Process Automation components on your system. CA Process Automation also supports client applications that enable operators and other personnel to schedule, start, and monitor automated processes.

BusinessObjects Enterprise

CA products leverage the most extensive set of business intelligence capabilities, ranging from reporting, query and analysis, by using BusinessObjects Enterprise. BusinessObjects Enterprise is a flexible, scalable, and reliable business intelligence reporting system that can be tightly integrated into your information technology infrastructure.

For instructions to install and configure these components, see their documentation sets. For instructions to set up and use the *integration* between these components and CA Service Catalog, see the *Integration Guide*.

For further information about these components, see their documentation sets. The CA Process Automation documentation set is included on the CA Process Automation installation media, and the BusinessObjects Enterprise documentation is included on the BusinessObjects Enterprise installation media.

CA Workflow

CA Workflow is a common component that automates business processes. CA Service Catalog uses either CA Workflow or CA Process Automation to automate approval and fulfillment process for items requested from the catalog.

Note: For best results, including more efficient process automation, install and use CA Process Automation rather than CA Workflow. CA Process Automation is described earlier in this topic.

Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

Note: For details about installing and using CA Workflow, see the *Installing CA Service Catalog* scenario. This scenario is in the *Implementation Guide* and on http://ca.com/support. For instructions to set up and use the *integration* between CA Workflow and CA Service Catalog, see the *Integration Guide*.

Integrations Supplied Separately

The following integrating products are supplied and licensed separately from CA Service Catalog. They are purchased separately from CA Service Catalog and are supplied on their own installation media. All of these integrations are optional. Unless noted otherwise, you install these products individually, before or after you install CA Service Catalog.

CA Service Desk Manager, which includes CA CMDB

CA Service Catalog integrates with CA Service Desk Manager in several ways. CA Service Catalog can automatically open CA Service Desk Manager tickets and attach associated configuration items (assets) using CA Workflow. CA Service Catalog events can also cause a CA Service Desk Manager ticket to be created automatically.

CA Service Catalog can integrate with CA CMDB by associating catalog services with CA CMDB configuration items.

Note: For best results, CA Service Desk Manager and CA Service Catalog must share the same CA MDB and the same installation of CA EEM.

CA Business Service Insight

CA Business Service Insight automates, activates, and accelerates the management, monitoring, and reporting of business and technology service level agreements (SLAs) and service delivery agreements for enterprises and service providers. CA Business Service Insight enables organizations to understand the performance and cost implications of these agreements in real time.

Reservation Manager

Reservation Manager is a separate utility with its own user interface that integrates with CA Server Automation to provide on-demand resources to users for reserving Windows, Linux, AIX, and Solaris systems. You can use Reservation Manager to reserve physical and virtual systems from a pool of available resources in your data center.

CA Asset Portfolio Manager (CA APM)

CA Service Catalog can integrate with CA APM by connecting catalog entries with CA APM Models and connecting requested items with CA APM assets.

Note: To integrate successfully, CA APM and CA Service Catalog must share the same CA MDB.

CA SiteMinder

CA SiteMinder provides web-based single signon and enhanced authentication of CA Service Catalog users.

CA Storage Resource Manager (CA SRM)

Through the integration between Accounting Component and CA Storage Resource Manager (CA SRM), usage data that indicates storage used by a user can be invoiced to users' accounts.

CA MICS and CA JARS

Using data from CA Mainframe Information Control System Resource Management (CA MICS) or JARS to supply usage data to Accounting Component, accounts can be invoiced for using services recorded by CA MICS or JARS.

For instructions to install, set up, and use these products, see their documentation. For information about which versions of these products integrate with CA Service Catalog, see the *Release Notes*. For instructions to set up and use the *integration* between these components and CA Service Catalog, see the *Integration Guide*.

Considerations and Requirements Before Installation

Addressing the following considerations and requirements before installation helps you install the product correctly and also helps the product to run efficiently. It is also helpful to review these topics before upgrading the product.

Where applicable, find and record installation-related data and have it ready when you begin the installation.

The considerations and requirements follow:

- Release Notes (see page 29)
- System requirements and related requirements (see page 30)
- Authentication and authorization (see page 35)
- DBMS and CA MDB (see page 32)
- Operating system (see page 29) and operating system language (see page 29)
- Host names and port numbers (see page 36)
- Server architecture (see page 37)
- Web application servers (see page 29)
- Service Provider business unit (see page 37)
- Installation and Integration of a Process Automation Tool (see page 38)

Release Notes

You can find the *Release Notes* and *Readme* (if supplied) on the installation media.

The *Release Notes* contains a summary of the system requirements and related requirements (see page 30). The computers on which you install or upgrade CA Service Catalog components must meet or exceed these requirements. The *Release Notes* also contains any important installation-related information that became known after the *Implementation Guide* was finalized. Finally, the *Release Notes* also provides general information about the documentation set, integrating products, localization, and known issues.

A readme file is optional and is included *only* if necessary to explain last-minute information that became known after the other documentation was published.

For the most recent documentation, including the *Release Notes*, see Technical Support at http://ca.com/support.

Operating System

You can install CA Service Catalog products and components on supported Windows Server operating systems only!

Note: For more information about system requirements for CA Service Catalog, see the *Release Notes*.

Operating System Language

CA Service Catalog is certified on several operating system languages. Language certification means that you can install and run the product correctly for the supported operating systems in the supported language. Likewise, the product can store and retrieve data using the character set of the supported language.

Note: Verify that all server operating systems use the same language. For the list of supported languages, see the *Release Notes*.

Web Application Server

The web application server for CA Service Catalog is Apache Tomcat. When you install the base files for CA Service Catalog, from the CA Service Catalog installation media, Apache Tomcat and related files are included.

System Requirements and Related Requirements

To run efficiently, CA Service Catalog components must be installed on computers that meet the system requirements.

Note: For a summary of system requirements, see the *Release Notes*. The Support Matrix provides more related information, including details about these requirements, optional integrations, and any updates that occur after GA.

Related requirements include the following:

- General considerations and requirements (see page 30)
- Distributed considerations and requirements (see page 31)
- Network share considerations and requirements (see page 31)

General Considerations and Requirements

Review this section for important information regarding new installations and upgrades.

The following installation considerations and requirements typically apply to all implementations.

- Verify that all CA Service Catalog computers are *geographically colocated*–that is, are located in the same building, in the same room. Having all CA Service Catalog computers geographically colocated helps prevent possible performance problems that network latency could cause.

  The term *CA Service Catalog computer* means the DBMS server and any computer on which you plan to install any CA Service Catalog product or component. These products and components include CA EEM and other CA Technologies products or components included on the CA Service Catalog installation media.
- Verify that the computer on which you plan to install any CA Service Catalog component or CA Technologies common component meets the applicable system requirements.
- Before you upgrade, note the value of all Use Service Provider Catalog Option settings for all business units in your implementation. Decide which one to use as a system setting in CA Service Catalog. After you upgrade, set this parameter to match your decision.
- Back up your entire system before upgrading from a previous release of CA Service Catalog to this release. Similarly, after you have installed this release, back up your entire system before migrating from test to production.
- In this release, you use a single new administration configuration option to enable Windows NTLM authentication (see page 157). This option is named Single Signon Authentication. This option simplifies your configuration process by replacing the manual editing of XML files used in previous releases.
- Log in to CA Service Catalog computers using the Administrator account.

- We recommend that you do not add users, delete users, or change user information using CA EEM. Instead, use CA Service Catalog, which integrate with CA EEM and update CA EEM accordingly.
- If you are installing on a Windows 2008 computer with Terminal Server, close the installation dialog after you install each CA Service Catalog product and component. Otherwise, the next attempt to install a CA Service Catalog product and component could fail.
- After you complete an upgrade, verify that the events, rules, and actions that you had enabled before the upgrade are still enabled.
- The custom branding schemes that were created in the earlier releases may not apply correctly. After an upgrade, validate them, and, if necessary, update them to work correctly for this release.

Distributed Considerations and Requirements

When you install CA Service Catalog products and components on multiple computers (a distributed implementation), meet the following requirements:

- Any computer on which you install CA Service Catalog must have either your DBMS server or DBMS client installed. This requirement applies to both SQL Server and Oracle.

  Important! If you use CA Process Automation, we recommend that you do *not* install the CA Process Automation domain orchestrator and CA Process Automation components on the same computer.

Network Share Considerations and Requirements

When you install CA Service Catalog products and components on a network share, follow these considerations and requirements:

- If the installation image is on a network share, then map a drive letter to this share. You *cannot* run batch files from a UNC path.
- We recommend that you copy the installation image to a local folder with a short path name, for example, C:\ or C:\Temp. Run the installation programs locally from this folder.

  Note: Long pathnames can cause problems during the installation process.

Requirements and Considerations for the DBMS and CA MDB

These requirements and considerations are as follows:

- Database management system (see page 32)
- CA MDB character set for localization support (see page 32)
- MDB version compatibility for integrations (see page 33)
- CA MDB documentation (see page 34)
- Case sensitivity (see page 34)

Database Management System

CA Service Catalog supports the following database management systems:

- Microsoft SQL Server 2005 or 2008 running on Windows
- Oracle 10g R2 or 11g R2 running on Windows or Linux

If you are implementing CA Service Catalog in a multilingual environment, verify that your DBMS supports Unicode for double-byte languages. For example, if you are using Oracle, install Oracle with Unicode Support to help ensure that localized double-byte characters display correctly.

Important! If you are using a version of Oracle or SQL Server that CA Service Catalog does not support, do the following: Back up your database, upgrade to a supported version of DBMS software, and install CA Service Catalog.

Note: For details about supported versions of database management systems, see the *Release Notes.*

CA MDB Character Set for Localization Support

Because the CA Management Database (CA MDB) is shared, all CA products sharing the same CA MDB must use the same language. Otherwise, shared information could be expressed improperly. Follow these guidelines for collations in SQL Server and character sets in in Oracle:

- Collations in SQL Server

  CA MDB honors the default setting of the SQL Server instance collation as case insensitive. CA Service Catalog honors the setting of the CA MDB collation and inserts the default data into the database, if the local operating system supports the data set.

  If the local operating system does *not* supports the data set, then it inserts the default data as English. For example, if CA Service Catalog is deployed in a French operating system, then the default data set is inserted in French. No special configuration is required for international character support.

- Character sets in Oracle

  While you are installing Oracle server, do the following:

  - To configure CA MDB to support only the language of the operating system, select the default character setting.
  - To configure CA MDB to support multiple languages, select Unicode (AL32UTF8).

Note: For more information about the MDB, see the *CA MDB Overview*. For details about the list of languages supported for localization, see the *Release Notes*.

How to Verify CA MDB Version Compatibility for Integrations

CA Service Catalog embeds CA Management Database (CA MDB) r1.5. CA Service Catalog integrates with other CA products that embed either CA MDB r1.5 or r1.0.4. For best results, verify that CA Service Catalog and all integrated CA products share the same CA MDB, as follows:

Review the following scenarios for integrating with other CA products that run either CA MDB r1.5 or CA MDB r1.0.4. Determine the scenario that matches your environment and follow the accompanying instructions.

- You want to integrate CA Service Catalog with *only* other CA Technologies products that also embed CA MDB r1.5, such as the current release of CA Service Desk Manager.

  Install CA Service Catalog and these other products. The same CA MDB r1.5 database is automatically shared among all these CA Technologies products and runs in single-version MDB mode.

- You want to integrate CA Service Catalog with CA Technologies products that embed CA MDB r1.0.4. You have already installed at least one of them, but you have not yet installed CA Service Catalog. The CA MDB r1.0.4 products include CA CMDB r11.2, Unicenter Service Desk r11.2, and CA APM r11.3.

  When you install CA Service Catalog, the embedded CA MDB r1.5 installer automatically upgrades CA MDB r1.0.4 to CA MDB r1.5. The database is automatically shared among all these CA Technologies products and runs in mixed-version MDB mode.

- You want to integrate CA Service Catalog with CA MDB r1.0.4 products. You have already installed CA Service Catalog, and you plan to install one or more CA MDB r1.0.4 products later.

  Do the following:

  1. Apply the CA MDB r1.0.4 Compatibility Patch to enable the integration between both versions of the CA MDB.

     Note: For details about installing this patch, see the *Integration Guide*.

  2. Install any of these CA Technologies products that you have not yet installed.

     The database is shared among all these CA Technologies products and runs in mixed-version CA MDB mode.

CA MDB Documentation

Verify that the system on which you are installing the database management system software meets the MDB requirements stated in the MDB documentation.

If necessary, the MDB installation or upgrade starts automatically when you attempt to install or upgrade the first (formerly *primary*) Catalog Component computer. During this MDB installation or upgrade, you supply required parameter values, such as the server name, logon credentials, and port numbers, for your DBMS.

The *CA MDB Overview Guide* is included with the CA Service Catalog documentation, on the CA Service Catalog bookshelf. As a best practice, review this document before installing CA Service Catalog.

Note: Other CA MDB documentation is available from CA Technical Support at http://supportconnect.ca.com.

Case Sensitivity

CA Service Catalog and Accounting Component inherit CA MDB case-sensitivity characteristics. If SQL Server is the DBMS for CA MDB, then searches in CA Service Catalog and Accounting Component are case insensitive by default. Therefore, by default, you see case-sensitive search results for a field only if the field is defined explicitly as case sensitive.

Similarly, if Oracle is the DBMS for CA MDB, then searches in CA Service Catalog and Accounting Component use the Oracle DBMS characteristics. In that case, you expect case-sensitive searches.

For example, suppose you search for an account by clicking Home, Search, Account. With SQL Server, you expect case-insensitive search results. In contrast, with Oracle, you expect case-sensitive search results.

Clustering

As a CA Service Catalog administrator, you can optionally use *clustering* for CA Service Catalog to improve performance and provide *failover protection*. Here, the term *clustering* means multiple computers in a group that perform the same or similar function, essentially acting as one virtual computer. Specifically, clustering here refers to CA Service Catalog running on two or more computers. *Failover protection* means that if one computer malfunctions, becomes heavily loaded, or loses power, its workload is transferred to the other computers in the cluster. These computers retain and complete the active sessions.

Another advantage of clustering is *load-balancing:* If one of the cluster components is busy processing a request, the load is redirected to another component in the cluster. Users of the system see no interruption of access. CA Service Catalog processing continues. The loss of performance on users and business functions is minimized, even when computer availability is lost or reduced.

The CA Service Catalog installation program includes Apache Tomcat, the default web application server for CA Service Catalog, which you can optionally install and use. Moreover, you can optionally implement clustering (see page 267) for CA Service Catalog using this version of Apache Tomcat.

You can optionally install and cluster (see page 35) multiple instances of CA EEM and CA Process Automation.

Note: For details about implementing clustering for CA Service Catalog, see the *Implementation Guide*. For details about implementing clustering for CA EEM and CA Process Automation, see the CA EEM and CA Process Automation documentation, respectively.

Authentication and Authorization

You can use CA EEM to *authenticate* and *authorize* users. *Authentication* means using a user ID and password or other means to verify that the user is a valid user of the system. *Authorization* means validating that the logged in user can access particular functionality in the product.

You specify whether to use CA EEM standalone or with an external directory. When you use CA EEM standalone, CA EEM stores the user information and passwords in its data store. When you use CA EEM with an external directory, such as Microsoft Active Directory, the external directory stores the users and passwords in its data store.

- To install any CA Service Catalog component, log on to your computer as an Administrator. Verify that you have local administrator privileges on the servers that you plan to use.

- If you are using an existing CA EEM instance, have the server name and password for the EiamAdmin user available.
- CA Service Catalog can send emails in certain situations. Have your email server name available.

In addition, if the client system uses a Windows domain, you can configure CA Service Catalog to use NTLM authentication (see page 157). NTLM authentication enables a user who has been authenticated to the domain to skip the login page.

Host Names and Port Numbers

You install CA Service Catalog on the host names of your choice.

On each host computer, you specify the port number for CA Service Catalog to communicate with the web server. The default values follow. You can change them during installation. If these ports are not available, have other nonconflicting port numbers available.

- 8080 and 8085 – For the Catalog Component service for communication

After the installation, if applicable, you also specify the port number for CA Service Catalog to use to communicate with other CA products, when you configure the integration with them. Examples include CA Business Service Insight, CA Service Desk Manager, and CA APM.

The following port number is the default value for use by CA EEM. You cannot change it during installation.

- 5250 – for the iTechnology iGateway service

Server Architecture

You can install and cluster CA Service Catalog on multiple computers. Doing so helps distribute the processing loads of catalog requests, billing runs, CA Process Automation processes, and so forth.

We recommend that you install the database on a server that does *not* have CA Service Catalog installed.

You can install CA EEM on the same server as the database.

You can optionally install CA Process Automation (if used), and CA Workflow (if used) multiple times on multiple computers. You can also cluster CA Process Automation, as explained in the CA Process Automation documentation.

Note: CA Service Catalog uses Java Web Start to start the CA Workflow Process Definition Tool (IDE) on your local computer automatically, if applicable.

To distribute the processing load more evenly, you can do the following:

- Direct users to separate CA Service Catalog instances by having them use different URLs to log on to CA Service Catalog.
- Use clustering (see page 35) for CA Service Catalog, CA Process Automation (if used), and CA Workflow (if used).

Service Provider Business Unit ID

During the Catalog Component installation, you specify a “service provider” business unit ID. This ID specifies the top level (root) business unit. All other business units are structured under the root business unit. As a best practice, specify your company domain name or a short version of your company name for this ID.

Decide the “service provider” business unit ID *before* the installation. After you have installed CA Service Catalog, the following conditions exist:

- You *cannot* change the business unit *ID* of the service provider.
- You *can* change the business unit *login ID* and the business unit name service provider.

Installation and Integration of a Process Automation Tool

For best performance, CA Service Catalog requires a process automation tool. You can optionally use CA Process Automation, CA Workflow, or both to automate processes in CA Service Catalog. For best results, including more efficient process automation, install and use CA Process Automation rather than CA Workflow.

CA Process Automation

You can *install* CA Process Automation at any time.

Important! If you install two or more instances of CA Service Catalog, implement clustering (see page 35) them *before* you integrate CA Service Catalog with CA Process Automation or CA Workflow.

Note: For details about installing and using CA Process Automation, see the CA Process Automation documentation and installation media, which are included with the CA Service Catalog installation media. For details about integrating CA Process Automation with CA Service Catalog, see the *Integration Guide*. We recommend that you implement clustering for CA Process Automation; for details, see the CA Process Automation documentation.

CA Workflow

You can *install* CA Workflow at any time. After you have implemented CA Service Catalog clustering (if applicable), *integrate* CA Workflow with CA Service Catalog.

To install (or upgrade) CA Workflow, access http://ca.com/support. You can optionally install CA Workflow on a CA Service Catalog computer or on other computers. You can optionally install CA Workflow on multiple computers. In such cases, consider using CA Workflow clustering (see page 35).

Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

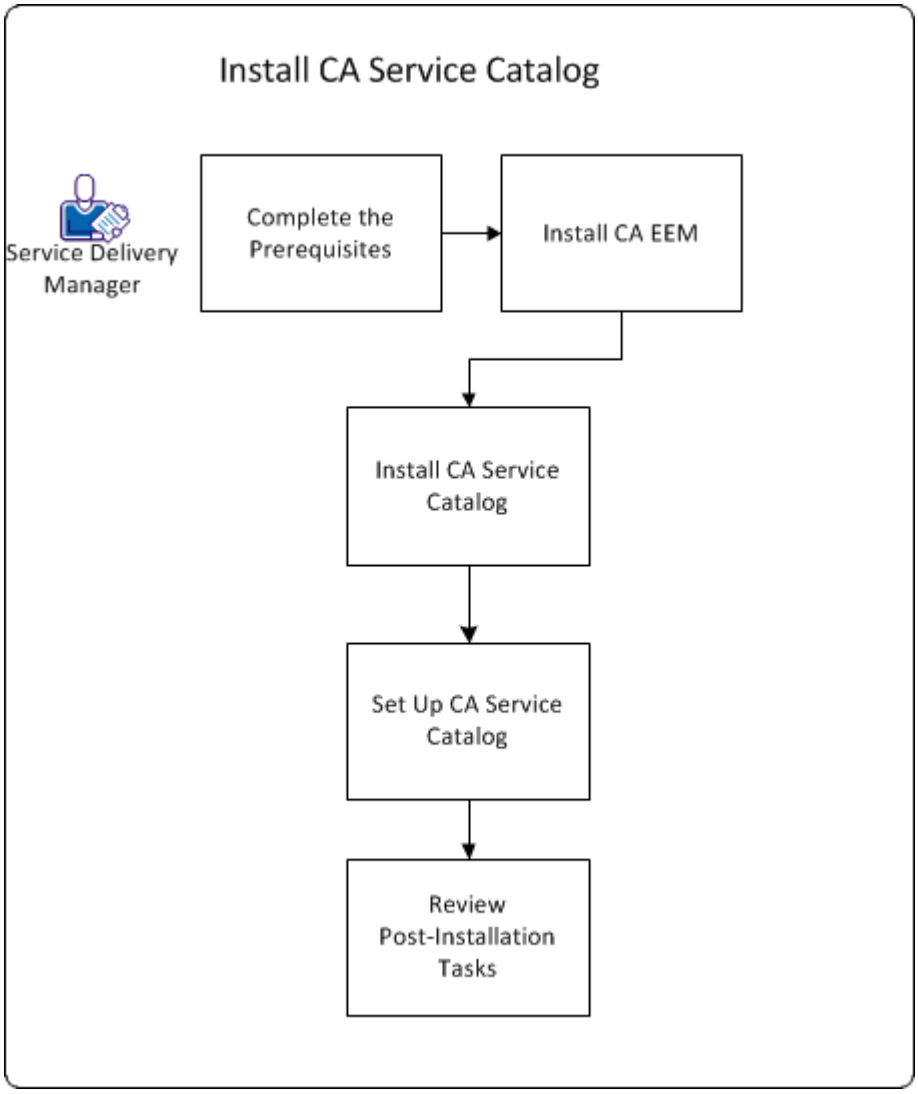
Note: For details about integrating CA Workflow with CA Service Catalog, see the *Integration Guide*.

Chapter 2: Installing

Installing CA Service Catalog

CA Service Catalog lets Service Delivery Administrators create and maintain a catalog of IT services, for example, for hardware, software, or virtual resources. The catalog includes predefined services, and you can create your own services. Users browse the catalog and request the services that they want. You can optionally use Accounting Component to provide billing and chargeback for the requested services, and to perform other financial tasks.

When you install CA Service Catalog, you install the product database. This database includes the CA Management Database (MDB). The MDB is the common, shared database for your CA Technologies products. The MDB provides the database schema for CA Service Catalog and other CA Technologies products.



Important! If you have copied the installation media to a network share, map a drive letter to this share. This mapping is required because a batch file runs as part of the installation, and a batch file cannot run from a UNC path.

To install CA Service Catalog, follow this process:

1. Verify the installation prerequisites (see page 41).

2. Install CA EEM (see page 53) on one or more computers. You can optionally install and cluster (see page 35) multiple instances of CA EEM.

   Alternatively, you can use an existing installation of CA EEM.

   Note: We recommend that CA Service Catalog and all CA products that integrate with it share the same installation of CA EEM.

3. Install CA Service Catalog on one or more computers. You can optionally install and cluster multiple instances of CA Service Catalog.

   On each computer, follow this process:

   - Run the installation program (see page 54).
   - Run the setup utility (see page 55).

     You use the setup utility to set up the database, CA EEM, and the CA Service Catalog components, as follows:

     - Set up the database (see page 57)
     - Configure CA EEM (see page 58)
     - Set up the product components (see page 59).

4. Perform the post-installation tasks (see page 61).

You have installed CA Service Catalog.

Verify the Installation Prerequisites

Verify these prerequisites *before* you install or upgrade CA Service Catalog. Unless otherwise noted, all prerequisites apply to *both* new installations and upgrades.

1. Verify that you have reviewed and followed the instructions in the *Prepare to Install or Upgrade CA Service Catalog* scenario. This scenario explains the preparation tasks for installing or upgrading CA Service Catalog and provides guidelines to determine your system architecture.

   Note: The *Prepare to Install or Upgrade CA Service Catalog* scenario is in the *Implementation Guide* and on http://ca.com/support.

   For best performance, we recommend that you do *not* install CA Service Catalog on the *same* computer as your SQL Server server or Oracle server.

2. Verify that the computers on which you plan to install CA Service Catalog meet the system requirements.

   Note: For a summary of system requirements, see the *Release Notes*. The Support Matrix provides more related information, including details about these requirements, optional integrations, and any updates that occur after GA.

3. Record the following data for the base files (see page 54) that you install on every CA Service Catalog computer. The installation program prompts you to provide this data.

   - Installation path name, if you want to change the default path name or cannot use it

     The default path name is C:\Program Files\CA\Service Catalog.

   - Startup and shutdown port numbers, if you do not want to use the default ports 8080 and 8085

     Important! We recommend that you do *not* use port 7777 as the startup or shutdown port. Port 7777 is reserved for Java Messaging Service (JMS).

     If you must use port 7777 for the startup or shutdown port, reset the JMS port number (see page 66) after you have finished running the setup utility. Otherwise, port conflicts occur, and the product does not function correctly.

     Note: No host name is needed because you install the product locally.

4. Prepare for the database setup (see page 43).

5. (CA Workflow users only) Perform *one* of the following tasks:

   - Follow the steps to use or continue using CA Workflow as the process automation tool for CA Service Catalog (see page 49).

   - Discontinue using CA Workflow as the process automation tool for CA Service Catalog. Enter the following command on all CA Workflow computers:

     ```
     pre_process_workflow.bat -uninstall
     ```

You have completed the installation-upgrade prerequisites.

How to Prepare for the Database Setup

Prepare your database for a successful CA Service Catalog installation or upgrade. This task includes recording the values for the database parameters. Before you install CA Service Catalog on a computer, you enter these parameters to establish the database connection.

1. Understand the database-related terms used in this scenario, as follows:

   When you install CA Service Catalog, you install the Catalog database. The Catalog database includes the following tables:

   - The CA Management Database (MDB) tables that apply to CA Service Catalog; their names typically begin with a CA_ prefix. The MDB is the common, shared database for CA Technologies products. The MDB provides the database schema for CA Service Catalog and other CA Technologies products.
   - The CA Service Catalog-specific tables; their names typically begin with a USM_ prefix. These tables are not included in the MDB.

2. Review the CA Management Database (MDB) documentation, which is supplied with other documents on the CA Service Catalog installation media. Note the most applicable information for your implementation plans, and keep it on hand for reference.
3. Verify that your DBMS is installed and running.
4. Apply all patches and other maintenance for your DBMS (SQL Server or Oracle).

   For details, see your SQL Server or Oracle documentation.

5. Find and record the parameter values for your DBMS:

   - Parameters for SQL Server (see page 45)
   - Parameters for Oracle (see page 46)

   You specify these values to set the database connection before you install any CA Service Catalog component.

6. Remove replication in your DBMS.

   Important! When replication has been added, the database tables are locked from any schema changes, even if replication is turned off. As a result, the upgrade cannot run successfully.

   Note: For instructions to remove replication, see your DBMS documentation. Also see that documentation for instructions to add it again, after you have completed the upgrade.

7. Verify that the DBMS client software is installed on the computer from which you plan to run the installation program.

8. (SQL Server Only) Work with your DBA to determine whether organizational policy permits the user installing or upgrading CA Service Catalog to have system administrator (SA) privileges in SQL Server. Proceed as follows:
   - If Yes, use a user ID that has SA privileges to install or upgrade CA Service Catalog. No further action is necessary.
   - If No, create the database user (see page 44) *with* the required privileges to install or upgrade the product but *without* SA privileges.
9. (CA Workflow Only) If you are using CA Workflow, review the post-installation task to update the database and re-install CA Workflow (see page 67). Read it now to become familiar with the steps required after you install or upgrade CA Service Catalog.

   Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

Create the Database User for Setting Up the Database

Note: This procedure applies to SQL Server *only*.

Follow this procedure only if the following criterion applies: You and the DBA have determined that your organizational policy prohibits a user ID with system administrator (SA) privileges from installing or upgrading CA Service Catalog. Therefore, create a database user *with* the required privileges to install or upgrade the product but *without* SA privileges.

Follow these steps:

1. In SQL Server, connect as the sa user to the master database.
2. Verify that your organization did not create the required database user earlier, for example, for a previous installation of CA Service Catalog.

   If you did create the user ID earlier, you can use it for this installation or upgrade. In that case, read the remaining steps to confirm the required rights for this user and to verify whether any of the actions apply.
3. Enter the following commands to create the user named installeruser. For the password, replace CHANGE_ME with a custom value, for example, INSTCAT~1.

```
CREATE LOGIN installuser WITH PASSWORD = 'CHANGE_ME'
CREATE USER installuser FOR LOGIN installuser

GRANT ALTER SETTINGS TO installuser
GRANT ALTER ANY LOGIN to installuser
GRANT CREATE DATABASE to installuser

GRANT EXECUTE on sp_grantdbaccess to installuser
EXECUTE sp_addsrvrolemember installuser, 'bulkadmin'
GRANT EXECUTE on sp_addsrvrolemember to installuser
```

You have created the installeruser user. Specify the login credentials of this user instead of the sa user when you run the setup utility (see page 55).

Parameters for SQL Server

Before you install CA Service Catalog on a computer, you enter these parameters to establish the connection to an SQL Server database.

For the Database Connection

Host Name

Defines the computer name of the Microsoft SQL Server (SQL Server) server.

Port

Defines the TCP Port number of the database server.

If you are using an instance name, verify the following requirements:

- The instance name has a port number set.
- Your implementation is *not* using dynamic ports.

Admin/DBA User Name and Password fields

Define the user name and password of the SQL Server database administrator (DBA). The setup utility uses these credentials to set up the CA Service Catalog database.

You can use the login credentials of either of the following users:

- System administrator (sa). This user requires dbo as its default schema.
- The user named installuser that you created earlier (see page 44), if applicable. You can optionally create this user so that the setup utility uses this user (instead of sa) to set up the CA Service Catalog database.

DBMS Instance/Service Name

Defines the SQL Server instance name for the MDB. For example, myinstance. You can specify either a primary instance or a named instance.

For the Database Configuration

Database Name

Specifies the name of the CA Service Catalog database.

To install the CA Service Catalog database schema into an existing database, specify the name of that database.

Follow these guidelines:

- If you plan to integrate CA Service Catalog with any other CA product that uses the MDB, specify mdb as the database name.
- If you want CA Service Catalog to run in its own database, you can specify a different database name other than mdb. To integrate with other CA products in the future, use the setup utility to change your custom database name to mdb.
- For an upgrade, use the same database name as you used for the previous release. Most likely, this name is mdb.

Important! If you integrate CA Service Catalog with CA Service Desk Manager or CA APM, the name of the Catalog database must be MDB. Similarly, if you are using (or plan to use) CA Workflow with CA Service Catalog, the database name *must* be mdb. CA Service Catalog embeds CA MDB r1.5.

Note: Verify that your database name complies to SQL Server standards.

User Name and Password fields

Define the user name and password for accessing this database.

This user name and password is created in the database. CA Service Catalog uses this user name and password to connect to the database. This user is the first application user. For increased flexibility of administration, you can optionally create a second application user (see page 58).

Parameters for Oracle

Before you install CA Service Catalog on a computer, you enter these parameters to establish the connection to an Oracle database.

Note: These parameters apply to Oracle running on both Windows and Linux.

For the Database Connection

Host Name

Defines the computer name of the Oracle server.

Port

Defines the TCP Port number of the database.

Admin/DBA User Name and Password fields

Define the user name and password of the Oracle database administrator (DBA).

DBMS Instance/Service Name

Defines the service name. Every Oracle database or service has a service name. The service name of an Oracle database is typically its global database name. Enter the service name of the database or other service that you want to access.

Note: A non-RAC deployment typically includes one service, one instance, and one database, each with the same name. However, in a RAC deployment, multiple instances can provide multiple services, all connecting to a single database.

Connection ID

Defines the connection ID (such as orcl) for connecting to the Oracle server, as follows:

- For a local database, this value is typically the SID.
- For a remote database, this value is typically the Net Service Name.

Tablespace Path

Defines the complete path name of the tablespace for Oracle.

MDB Administrator Password

Defines the password for the MDB Administrator. Applies to upgrades only.

DBA User Name

Defines the Oracle DBA user.

DBA Password

Defines the DBA user password.

Data Tablespace Name

(Optional) Defines the tablespace name for the data.

Index Tablespace Name

(Optional) Defines the tablespace name for the indexes.

The installer verifies whether the data and index tablespaces exist in the MDB. These tablespaces exist when either of the following conditions are met:

- The MDB is being upgraded.
- The MBD is used with another MDB. Any integrated component such as CA Process Automation or CA Service Desk Manager installed the other MDB.

If the data and index tablespaces exist, the installer displays their names. The installer also prompts you to specify whether to continue using the existing names or overwrite them with new names.

For the Database Configuration

Database Name

Specifies the name of the CA Service Catalog database.

To install the CA Service Catalog database schema into an existing database, specify the name of that database.

Follow these guidelines:

- If you plan to integrate CA Service Catalog with any other CA product that uses the MDB, specify mdb as the database name.
- If you want CA Service Catalog to run in its own database, you can specify a different database name other than mdb. To integrate with other CA products in the future, use the setup utility to change your custom database name to mdb.
- For an upgrade, use the same database name as you used for the previous release. Most likely, this name is mdb.

Important! If you integrate CA Service Catalog with CA Service Desk Manager or CA APM, the name of the Catalog database must be MDB. Similarly, if you are using (or plan to use) CA Workflow with CA Service Catalog, the database name *must* be mdb. CA Service Catalog embeds CA MDB r1.5.

Note: Verify that your database name complies to SQL Server standards.

User Name and Password fields

Define the user name and password for accessing this database.

This user name and password is created in the database. CA Service Catalog uses this user name and password to connect to the database.

How to Use or Continue Using CA Workflow

This section applies *only* if you plan to use or continue using CA Workflow as your process automation tool for CA Service Catalog. Otherwise, skip this section.

Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

To use or continue to use CA Workflow as your process automation tool for CA Service Catalog, follow this process to upgrade CA Service Catalog:

Note: All options apply to CA Service Catalog Releases 12.6 and 12.7.

1. Decide which option applies to your implementation, and follow the related procedure:

   Important! If you are upgrading CA Service Catalog, do *not* rename the database. Typically, the database name is mdb.

   - Option 1: Perform a traditional upgrade of CA Service Catalog and continue using the existing installation of CA Workflow.

     Applies to computers that have CA Workflow installed, *without* any CA Service Catalog components.

     This option retains your existing CA Workflow installations, including your customizations.

   - Option 2 (the default): Perform a migration model upgrade of CA Service Catalog and continue using the existing installation of CA Workflow.

     Applies to computers that have CA Workflow installed *with* one or more CA Service Catalog components

     This option retains your existing CA Workflow installations, including your customizations.

   - Option 3: Perform a traditional upgrade of CA Service Catalog, run workflow-related scripts, and re-install CA Workflow.

     Applies to computers that have CA Workflow installed *with* one or more CA Service Catalog components.

     Important! This option is least preferred because it removes your existing CA Workflow installations, including your customizations. This option is most useful when you have limited resources, for example, one CA Workflow installation.

   Important! You set the connection parameters for the database and CA EEM when you install or upgrade CA Service Catalog and set up the CA Service Catalog components. If you are integrating CA Service Catalog and CA Workflow, *do not update* any connection parameters for the database or CA EEM after that time. Otherwise, CA Workflow and the integration may stop working properly.

Option 1 Procedure: Perform a traditional upgrade of CA Service Catalog and continue using the existing installation of CA Workflow

1. On all CA Workflow computers, run the pre_process_workflow.bat file from Utilities/Fulfillment folder of the CA Service Catalog installation media.
2. Perform a traditional upgrade.
3. Configure CA Service Catalog to use the existing version of CA Workflow.

   Note: For instructions, see the *Integration Guide*.

Option 2 Procedure: Perform a migration model upgrade of CA Service Catalog and continue using the existing installation of CA Workflow

1. On all CA Workflow computers, run the pre_process_workflow.bat file from Utilities/Fulfillment folder of the CA Service Catalog installation media.
2. Install CA Service Catalog on new computers, as explained in this scenario. However, continue using the same MDB and CA EEM installation.
3. Configure CA Service Catalog to use the existing version of CA Workflow.
4. **Note:** For instructions, see the *Integration Guide*.

Option 3: Run workflow-related scripts, perform a traditional upgrade of CA Service Catalog, and re-install CA Workflow

1. On all CA Workflow computers, run the pre_process_workflow.bat file from Utilities/Fulfillment folder of the CA Service Catalog installation media.
2. Perform a traditional upgrade.
3. Update the database and re-install CA Workflow (see page 67).

CA EEM Installation Requirements and Considerations

Important! If you are upgrading CA Service Catalog, you can optionally upgrade CA EEM to Release 12. CA EEM Release 12 is included with the CA Service Catalog installation and upgrade media. If all CA Technologies products in your implementation are compatible with CA EEM Release 12, we recommend upgrading to CA EEM Release 12. For the latest support information for CA Service Catalog, CA EEM, and related CA Technologies products and components, see the Support Matrix for each of them on http://ca.com/support.

CA EEM authenticates users during login and authorizes users to access CA Service Catalog. You can install CA EEM from the CA Service Catalog installation media. Alternatively, if you have an existing installation of CA EEM, you can use it instead.

Consider the following items and meet the requirements *before* you install or upgrade CA EEM (see page 53):

Path, Location, and Related Requirements and Considerations

- Verify that your Windows PATH environment variable does *not* exceed the maximum length. Otherwise, the installation or upgrade can fail.

  Note: For details about setting this variable, see your Windows documentation.

- For best performance, we recommend that you install CA EEM on a different server than the DBMS server.

- If you are using an existing CA EEM instance, have the server name and password for the EiamAdmin user available.

- The installation or upgrade program backs up your existing CA EEM data to the following location:

  USM_HOME\conf-backup\upgrade-eem-backup.xml

  USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

- You can install and cluster several instances of CA EEM for high availability and fault tolerance. Similarly, an installation of CA Service Catalog can include several clustered computers. Each installation of CA Service Catalog must map to an application name in CA EEM. You can set up a single installation of CA EEM and the CA Service Catalog database for multiple installations of CA Service Catalog (for example, Test and Production).

  In this type of setup, the setup-related parameters (for example, the database, user, and application names) have the same values on every computer. Therefore, when you run the setup utility (see page 55), you can use the remote configuration feature to copy the parameter settings from one computer to another.

Version-related Requirements and Considerations

- If you plan to use CA Workflow with CA Service Catalog, do *not* install or upgrade to CA EEM Release 12. Instead, install or continue using CA EEM 8.4. Otherwise, CA Workflow and its integration with CA Service Catalog may not work properly. If necessary, install CA EEM 8.4 from the CA Service Catalog Release 12.7 installation media. If you do not already have this media, obtain it from your CA Technologies account representative or CA Technical Support. CA EEM 8.4 is *not* included on the CA Service Catalog Release 12.8 installation media.

  Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

- If CA EEM is already installed before you install CA Service Catalog for the first time, perform the post-installation task for CA EEM (see page 61), *if applicable*.

- The following point applies if you are using CA EEM Release 8.4 and plan to install it on new computers, for example, to replace old computers or to add computers to a cluster:

  If you are installing CA EEM Release 8.4 on a 64-bit computer that has CA Anti-Virus or CA Threat Manager installed, perform the following procedure: Uninstall that software before installing CA EEM and reinstall that software after installing CA EEM.

- If you have installed the 32-bit version of CA EEM Release 8.4 on a 64-bit computer, perform one of the following tasks to upgrade to CA EEM Release 12:
  - To install the 32-bit version of CA EEM Release 12, run its installation program.
  - To install the 64-bit version of CA EEM Release 12, proceed as follows:

    First, uninstall the 32-bit version of CA EEM Release 8.4.

    Next, install the 64-bit version of CA EEM Release 12.

    If you try to upgrade a 32-bit version of CA EEM Release 8.4 directly to a 64-bit version of CA EEM Release 12, the attempt fails.

Cluster-related Requirements and Considerations

- If CA EEM Release 12 is installed and clustered, Follow these steps: before you run the setup utility (see page 55):

  1. Edit the Apache load balancer configuration file named proxy.conf. This file is in the conf folder of the Apache installation directory.
  2. Record the current setting of the MaxKeepAliveRequests property.
  3. Set the MaxKeepAliveRequests property value to 0. A sample entry follows:

     ```
     MaxKeepAliveRequests 0
     ```

  4. Restart the Apache load balancer services to make the configuration changes take effect.

  Note: After you have run the setup utility, edit the file again and reset the MaxKeepAliveRequests property to its original value. Also restart the Apache load balancer services again.

Install or Upgrade CA EEM

Install or upgrade to CA EEM Release 12 on one or more computers. You can optionally install, upgrade, and cluster (see page 35) multiple instances of CA EEM.

Follow these steps:

1. Review the installation considerations (see page 51), especially if you plan to use CA Workflow.

   Important! If you plan to use CA Workflow with CA Service Catalog, do not install or upgrade to CA EEM Release 12. Instead, install or continue using CA EEM 8.4, as noted in the installation considerations.

2. On the CA Service Catalog installation media, select Utilities, CA EEM, and run the EXE file for your environment (32-bit or 64-bit).

   The installation wizard guides you through the installation process.

3. (New Installations Only) Enter the value of the EiamAdmin password that you want to use, when prompted.

   Record this password for future reference.

4. (New Installations Only) When you are prompted for the Java Home directory, leave the value empty and click Skip, unless you plan to do one or both of the following actions:

   - Integrate CA EEM with CA SiteMinder
   - Use Security Assertions Markup Language (SAML) with CA EEM

   If you plan to perform either of these tasks, enter the complete path name of your Java Runtime Environment (JRE) installation.

   Note: CA EEM and CA Service Catalog each installs and uses its own JRE. Therefore, the JRE version of each product can be different.

5. Continue following the wizard instructions and complete the CA EEM installation or upgrade.

   Note: If you are upgrading, the default folder is \CA\SharedComponents\EmbeddedEntitlementsManager, *not* your existing CA EEM folder. Use the default folder.

6. Reinstall CA Anti-Virus or CA Threat Manager, if you uninstalled it earlier. This step applies *only* if you install CA EEM Release 8.4 (see page 51).

7. (Optional) Install CA EEM on additional computers, one at a time, as follows:

   a. On each computer, specify the same password for the CA EEM administrator (EiamAdmin).

   b. If you install CA Service Catalog on multiple computers, select the Use Remote Configuration option when you run the setup utility (see page 55).

You have installed CA EEM for use with CA Service Catalog.

Note: For more instructions to configure and use CA EEM, see the *Integration Guide*.

Run the Installation Program

Run the CA Service Catalog installation program to install the base files required to run the CA Service Catalog components successfully. The base files include CA Service Catalog code, Apache Tomcat, Java Runtime Environment (JRE), and other third-party software. The base files are required on every CA Service Catalog computer.

Follow these steps:

1. On the CA Service Catalog installation media, start the CA_Service_Catalog.exe file.

   The installation program opens.

2. Supply the requested information and follow the prompts to complete the installation.

You have installed the base files.

Run the Setup Utility

Run the CA Service Catalog setup utility to set up your database, configure CA EEM, and install the product components. The components are Catalog Component, Catalog Content, and Accounting Component.

Follow these steps:

1. Start the setup utility using one of the following methods:
   - Click the option to start the setup utility after you have run the installation or upgrade program.
   - Start the setup utility from the Windows Start menu. For example, click Start, Programs, CA, Service Catalog, Setup Utility.

   The setup utility opens.

   Note: If your browser blocks access to the setup utility web page for security reasons, add the CA Service Catalog computer to the list of trusted web sites for the browser. Use the following format for the CA Service Catalog computer: http://*hostname*:*port*. An example is http://localhost:8080.

2. Specify the following parameters and log in to the utility:

   Password

   Specifies the password for logging in to the utility and running it using either of the methods described in the previous step.

   Important! Record the password for reference, because the utility requires you to specify the password each time you start it.

   You can reset the password, for example, if you lose or forget it, as follows:

   Enter the following command:

   USM_HOME\scripts\configurator.bat -resetpwd

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.The Catalog system resets the password and prompts you to perform the next action:

   Restart setup utility and specify the new password.

   Remote Configuration

   (Optional) If you have run the utility successfully on another computer (a remote computer), you can use the same configuration on this computer (the local computer). To do so, select this option and enter the URL of the remote computer. Use the following format: http://*server*:*port*/*context*. An example is http://localhost:8080/usm.

   The database setup page appears.

3. Complete this step *only* if you selected the Remote Configuration option in the previous step. Otherwise, skip to the next step.

   Supply the password for the setup utility on the remote computer.

   The local setup utility copies configuration data from the remote computer and prepopulates the corresponding local fields with this data. The local utility copies the data for the database setup, CA EEM configuration, and the name of the top-level business unit. Therefore, you do not need to enter this data manually. However, you can optionally update the copied values, if necessary. This data appears on the remaining tabs of the local setup utility and is described in the remaining steps.

   You typically use the Remote Configuration option when you plan to install multiple instances of CA Service Catalog with the following components:

   - A load balancer
   - A single installation of CA EEM and the CA Service Catalog database (see page 51)
   - Multiple installations of CA EEM (see page 53) that use the same application instance name, user name, and password.

4. Set up the database (see page 57).
5. Configure CA EEM (see page 58).
6. Configure the product components (see page 59).

You have completed the steps for running the setup utility.

Note: If you are installing CA Service Catalog for the first time on a computer, the setup utility prepopulates the fields that require input with default values. If you are re-installing or upgrading CA Service Catalog, the setup utility prepopulates these fields with the values from the current installation. The Remote Configuration option described earlier overwrites any default values or existing values with the values from the remote computer.

Set Up the Database

Set up the database so that CA Service Catalog users and the Catalog system can function correctly.

Follow these steps:

1. If necessary, log in to the setup utility (see page 55) and click Database on the left menu.

   The utility displays the page for connecting to the database and configuring it.

2. Select the DBMS that you are using and review the parameters for it. Use this information to complete the fields in the next steps.

   - Parameters for MDB on SQL Server (see page 45)
   - Parameters for MDB on Oracle (see page 46)

3. Complete the fields for Database Connectivity section.

   This step verifies that you can connect to the database. If the connection fails, verify the preparation tasks (see page 43) and the parameter values, and try the test again.

4. In the Database Settings section, specify the name of the CA Service Catalog database, typically MDB.

   This step installs or upgrades the MDB, if necessary. This step also configures the CA Service Catalog database in the MDB.

5. Create an application user (see page 58).

6. Click Save.

7. (Optional) Review the log files, as follows:

   The log files are visible *after* you have completed all tasks on the installation or upgrade program and have clicked Done to exit the program.

   - For log information for SQL Server, see the following sources:
     - See the install_mdb.log file in your MDB target installation directory. This directory is specified in %TEMP%\MDB1.5, where %TEMP% is a Windows environment variable. If the MDB installation fails, review the log files in this location.
     - After a successful installation of the MDB, the install_mdb.log file is copied to the %ProgramFiles%\CA\SC\Mdb\Windows\logs folder. This log file is renamed to install_mdb_*mm-dd,hh_mm_ss*.log (for example, install_mdb_12-03,15_29_05.log).
     - See the view.log file. Its default location is the C:\Program Files\CA\Service Catalog\logs folder.

- For log information for Oracle, see the following sources:
  - See the install_connectionID.log file in your MDB target installation directory. For example, if the connection ID is myhost_orcl, the install_connectionID.log file name is install_myhost_orcl.log. The MDB target installation directory is specified in %TEMP%\MDB1.5, where %TEMP% is a Windows environment variable. If the MDB installation fails, review the log files in this location.
  - After a successful installation of the MDB, the install_connectionID.log file is copied to %ProgramFiles%\CA\SC\Mdb\Windows\logs. This log file is renamed to install_ connectionID_*mm-dd,hh_mm_ss*.log, for example, install_myhost_orcl_12-03,15_29_05.log.
  - See the view.log file. Its default location is the C:\Program Files\CA\Service Catalog\logs folder.

You have set up the database. Next, you configure CA EEM (see page 58).

Create an Application User

The application user (often named usmuser) is a database user that CA Service Catalog uses to run certain stored procedures and to access the database. Configure a new or existing database user as an application user.

Follow these steps:

1. Decide whether to use an existing database user or a new database user as the application user.

   Important: If you are upgrading CA Service Catalog and you are using Oracle, you *cannot* use an existing database user. In that case, create an application user.

2. Enter the user name and password of this user in the Application user settings section of the setup utility.
3. Save your changes.

You have created an application user.

Configure CA EEM

After you have set up the database (see page 57), configure CA EEM for use with CA Service Catalog.

Follow these steps:

1. If necessary, log in to the setup utility (see page 55) and click Security on the left menu.

   The CA EEM section appears.

2. Do the following actions:
   a. Confirm or correct the host name of the CA EEM server.

      Separate multiple host names with a comma.

   b. For the CA EEM application instance name, specify the name of your choice.

      If you installed or upgraded multiple versions of CA EEM (see page 53), specify the same application instance name and administrator password for each one.

   c. Enter the CA EEM administrator (EiamAdmin) password.
3. Click Save.

   The utility creates the required CA Service Catalog objects in CA EEM. Examples include the *Service Catalog* application, policies, and users (including spadmin).

You have configured CA EEM for use with CA Service Catalog. Next, you configure the product components (see page 59).

Note: For detailed instructions to integrate CA Service Catalog and CA EEM, see the *Integration Guide*.

Set Up the Product Components

After you configure CA EEM (see page 58) for use with CA Service Catalog, configure the product components that you want on this computer.

Follow these steps:

1. If necessary, log in to the setup utility (see page 55) and click Components the left menu.

   The page appears for selecting the product components that you want to configure.
2. Enter the name of the service provider business unit. It is the “root” business unit above all other business units. As a best practice, specify your company domain name or a short version of your company name for the business unit ID.

   If you are installing CA Service Catalog on this computer for the first time, this value is writable. However, if you are upgrading or installing CA Service Catalog on this computer a second time, this value is read-only.

   After you have completed the CA Service Catalog installation on this computer, the following conditions exist:

   - You *cannot* change the business unit *ID* of the service provider.
   - You *can* change the business unit *login ID* and the business unit name of the service provider, using the CA Service Catalog UI.

3. Select each component that you want to use on this computer:

   Catalog Component

   Enables you to create service options and service option groups, which you use to create services that users can request from the catalog.

   This option includes the Catalog Content, which supplies the predefined services in the catalog. Examples include services for requesting hardware, software, and other IT essentials from your business unit. You can use these services as-is, or you can copy and customize them.

   This option installs a Windows service named CA Service Catalog.

   Accounting Component

   Provides billing and chargeback for the services that users request from the catalog. You can also use Accounting Component to allocate costs, prepare budgets, and plan IT services.

   This option installs a Windows service named CA Service Accounting.

4. Click Save.

   The Catalog system configures the selected components on this computer.

5. Follow the prompts and complete the setup.

6. Click the button to start the Windows services for the components that are mentioned in Step 3.

Note: You can optionally review the installation log file, view.log. Its default location is the C:\Program Files\CA\Service Catalog\logs folder. This log file is visible after you have completed all tasks of the installation or upgrade program and have clicked Done to exit the program. For details about uninstallation and aborted or canceled installations (when applicable), see the CA_Service_Catalog_Uninstallation.log file in the Windows Temp folder.

Perform the Post-Installation Tasks

As part of implementing CA Service Catalog, review the following post-installation tasks and perform the tasks that apply:

- If you installed CA EEM Release 12 in a clustered setup, you updated the MaxKeepAliveRequests property in the Apache proxy.conf file to meet the CA EEM installation requirements (see page 51). In that case, reset the MaxKeepAliveRequests property to its original value.
- Review the information about the Service Delivery Administrator (see page 62) and perform any applicable procedures.

  Verify that you can log in to CA Service Catalog as *spadmin* or another user with the Service Delivery Administrator role.
- Implement clustering (see page 35).

  Note: For details about implementing clustering, see the *Implementation Guide*.
- If you install multiple instances of CA Service Catalog, you can set up a filestore (see page 239) (a single location for shared files). Using a filestore helps improve system performance and helps reinforce best practices.

  Note: For details about setting up a filestore, see the *Implementation Guide*.
- Install and integrate a process automation tool (see page 38).

  Set configuration parameters and use customization techniques to customize the behavior and the look-and-feel of the product.

  Note: For details about these parameters and techniques, see the *Implementation Guide*.
- Reset the JMS Port number, if required (see page 66)
- Set up users, user groups, business units, and accounts.

  Create and customize services that users can request from the catalog.

  Configure the processes for managing, approving, and billing for requested services.

  Note: For details about completing these tasks, see the *Administration Guide*.
- Integrate CA Service Catalog with other CA Technologies products, including CA Service Desk Manager, Reservation Manager, and CA Business Service Insight

  Note: For details about completing these tasks, see the *Integration Guide*.
- Use a custom web application server, by deploying CA Service Catalog as a WAR file. This task applies if you do *not* want to use the Apache Tomcat version supplied with the CA Service Catalog installation program. Examples include JBoss or a version of Apache Tomcat that the CA Service Catalog installation program does *not* include.

  Note: For details about using CA Service Catalog with a custom web application server, see the *Implementation Guide*. To implement clustering for a custom web application server, see its documentation.

Service Delivery Administrator

Typically, the CA Service Catalog installation creates a user named *spadmin* and assigns it the Service Delivery administrator role. This user has complete control of the Catalog system. By default, the user name and the password are the same.

However, if *all* of the following conditions exist, then the installation *cannot* create this user.

- You have installed CA Service Catalog for the first time (*not* upgraded).
- CA EEM is already installed.
- CA EEM is already configured to use an external store, such as Microsoft Active Directory.

In this case, assign the Service Delivery Administrator role to another user (see page 62). Doing so enables this user to log in to CA Service Catalog using the Service Delivery Administrator role and to perform functions that require this role.

As a best practice and for increased security, we recommend that you log in to CA Service Catalog as the spadmin user and change its password (see page 63).

Note: For information about CA Service Catalog roles, including the Service Delivery Administrator, see the *Administration Guide*.

Assign the Service Delivery Administrator Role to a User

Create the administrative user named *spadmin* with the Service Delivery Administrator (see page 62) role if conditions prevent the installation from creating this user. In such cases, assign the Service Delivery Administrator role to another user, as explained in this topic. Moreover, you can also assign the Service Delivery Administrator role to additional users. Doing so is optional but is beneficial if redundancy is important in your organization.

Follow these steps:

1. Open the CA Service Catalog command prompt by clicking Start, Programs, CA, Service Catalog, Service Catalog Command Prompt.
2. Enter the following command at the CA Service Catalog command prompt:

   ```
   ant add-spadmin-user
   ```

   Note: For a list of ant commands and their descriptions, enter ant -p.

3. Follow the prompts to add the spadmin administrator role to a specific user, using the following information:
   - If CA EEM *is* configured to use an external directory (such as Microsoft Active directory), specify an existing user name.
   - The command utility creates the user in the CA Service Catalog user database, if both of the following conditions exist:
     - CA EEM is *not* configured to use an external directory.
     - The user name that you specify is new.
   - The utility does *not* prompt you for the password of the new or updated user.
   - If CA EEM *is* configured to use an external directory, the password is defined and stored in the external directory.
   - The new password is the same as the user name, if both of the following conditions exist:
     - CA EEM is *not* configured to use an external directory.
     - The user name that you specify is new.
4. Cancel and rerun the ant add-spadmin-user command to correct any errors, if necessary.
5. Verify that the new or updated user can perform the following tasks:
   - Log in to CA Service Catalog
   - Update the password (if applicable)
   - Perform functions that require the Service Delivery Administrator role
6. Instruct the new user to change the password.

   This action is a best practice and helps maintain security.

You have assigned the Service Delivery Administrator role to a user.

Change Your Password

You can change your password quickly and easily. You can change it at regular intervals to comply with the policies of your organization. In addition, you can also change it at any time, for various security-related reasons. Changing the password is especially recommended for the user named spadmin (see page 62) (the Service Delivery administrator).

Follow these steps:

1. Log in to CA Service Catalog with your current user name and password.
2. Click Profile.

   Your user profile appears.

3. Click the Change Password button at the top right of the page.

   The Change User Password dialog appears.

4. Enter your old and new passwords in the fields provided.

5. Click OK.

You have changed your password.

Clustering

As a CA Service Catalog administrator, you can optionally use *clustering* for CA Service Catalog to improve performance and provide *failover protection*. Here, the term *clustering* means multiple computers in a group that perform the same or similar function, essentially acting as one virtual computer. Specifically, clustering here refers to CA Service Catalog running on two or more computers. *Failover protection* means that if one computer malfunctions, becomes heavily loaded, or loses power, its workload is transferred to the other computers in the cluster. These computers retain and complete the active sessions.

Another advantage of clustering is *load-balancing:* If one of the cluster components is busy processing a request, the load is redirected to another component in the cluster. Users of the system see no interruption of access. CA Service Catalog processing continues. The loss of performance on users and business functions is minimized, even when computer availability is lost or reduced.

The CA Service Catalog installation program includes Apache Tomcat, the default web application server for CA Service Catalog, which you can optionally install and use. Moreover, you can optionally implement clustering (see page 267) for CA Service Catalog using this version of Apache Tomcat.

You can optionally install and cluster (see page 35) multiple instances of CA EEM and CA Process Automation.

Note: For details about implementing clustering for CA Service Catalog, see the *Implementation Guide*. For details about implementing clustering for CA EEM and CA Process Automation, see the CA EEM and CA Process Automation documentation, respectively.

Installation and Integration of a Process Automation Tool

For best performance, CA Service Catalog requires a process automation tool. You can optionally use CA Process Automation, CA Workflow, or both to automate processes in CA Service Catalog. For best results, including more efficient process automation, install and use CA Process Automation rather than CA Workflow.

CA Process Automation

You can *install* CA Process Automation at any time.

Important! If you install two or more instances of CA Service Catalog, implement clustering (see page 35) them *before* you integrate CA Service Catalog with CA Process Automation or CA Workflow.

Note: For details about installing and using CA Process Automation, see the CA Process Automation documentation and installation media, which are included with the CA Service Catalog installation media. For details about integrating CA Process Automation with CA Service Catalog, see the *Integration Guide*. We recommend that you implement clustering for CA Process Automation; for details, see the CA Process Automation documentation.

CA Workflow

You can *install* CA Workflow at any time. After you have implemented CA Service Catalog clustering (if applicable), *integrate* CA Workflow with CA Service Catalog.

To install (or upgrade) CA Workflow, access http://ca.com/support. You can optionally install CA Workflow on a CA Service Catalog computer or on other computers. You can optionally install CA Workflow on multiple computers. In such cases, consider using CA Workflow clustering (see page 35).

Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

Note: For details about integrating CA Workflow with CA Service Catalog, see the *Integration Guide*.

Reset the JMS Port Number, If Required

Reset the JMS port number only if necessary, that is, if you specified 7777 as the CA Service Catalog startup or shutdown port (see page 41) when you ran the installation program. We recommend that you do *not* use port 7777 as the startup or shutdown port. Port 7777 is reserved for Java Messaging Service (JMS).

Important! If you must use port 7777 for the startup or shutdown port, reset the JMS port number after you have finished running the setup utility. Otherwise, port conflicts occur, and the product does not function correctly.

Follow these steps:

1. Open the file named USM_HOME/config.properties in a text editor.
2. Update the value of the jms.port property to a new value.
3. Restart the Windows service named CA Service Catalog.

You have reset the JMS port number, if necessary.

How to Update the Database and Re-install CA Workflow

This process applies *only* if you are using CA Workflow extensively and must continue using it for the near future to keep your business operating efficiently. The CA Service Catalog installation and upgrade programs uninstall CA Workflow. Therefore, after you install or upgrade CA Service Catalog, re-install CA Workflow and configure its actors and process definitions. This process lets CA Service Catalog Release 12.8, CA Workflow, and products that interact with them function correctly.

Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool. Consider migrating to CA Process Automation as soon as possible.

Follow these steps:

1. Verify that you have completed the earlier steps for Option 3 of the process to use or continue using CA Workflow (see page 49).

   Important! This topic applies *only* to Option 3 of that process.

2. (New Installations of CA Service Catalog Only) Verify that the database name is mdb. If necessary, rename the database to mdb, as follows:

   a. Rename the database in Oracle or SQL Server.

      Note: For instructions, see your Oracle or SQL Server documentation.

   b. Run the setup utility to rename the database.

      Note: For instructions, see the *Implementation Guide*.

   Important! If you are upgrading CA Service Catalog, do *not* rename the database. Typically, the database name is mdb.

3. Run the workflow_install_helper script, as follows:

   a. Open the CA Service Catalog command prompt from the CA Service Catalog portion of the Windows Start menu.

   b. Change to the USM_HOME\scripts folder.

      USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

   c. Enter the following command:

      ```
      workflow_install_helper
      ```

4. Re-Install CA Workflow (see page 68) from the CA Service Catalog Release 12.7 installation media.

   You can optionally install and cluster (see page 35) multiple instances of CA Workflow.

5. Configure CA Workflow actors and process definitions (see page 70).

   Note: For details, see the CA EEM Release 8.4 documentation.

You have prepared the database for CA Workflow, re-installed CA Workflow, and configured its actors and process definitions.

Important! You set the connection parameters for the database and CA EEM when you install or upgrade CA Service Catalog and set up the CA Service Catalog components. If you are integrating CA Service Catalog and CA Workflow, *do not update* any connection parameters for the database or CA EEM after that time. Otherwise, CA Workflow and the integration may stop working properly.

Note: For more information to configure the integration between CA Service Catalog and CA Workflow, see the *Integration Guide*.

Re-Install CA Workflow

The CA Service Catalog installation and upgrade programs uninstall CA Workflow. Therefore, after you install or upgrade CA Service Catalog, re-install CA Workflow to continue using it.

Important! Re-Install CA Workflow from the CA Service Catalog Release 12.7 installation media. If you do not already have this media, obtain it from your CA Technologies account representative or CA Technical Support. CA Workflow is *not* included on the CA Service Catalog Release 12.8 installation media.

Follow these steps:

1. Verify that the DBMS client (Oracle client or SQL Server client) is installed locally, unless the local computer is the DBMS server.

   Note: For instructions to install the DBMS client, see your DBMS documentation.

2. Access the root folder on the installation media and run setup.exe.

   The installation Product Explorer window appears.

3. Select CA Workflow, Windows, and click Install.
4. Specify the database type and supply the parameters for your DBMS, as follows:
   - Parameters for SQL Server (see page 45)
   - Parameters for Oracle (see page 46)

   The installation wizard guides you through the installation process.
5. When prompted, specify an installation path for CA Workflow.

   Important! Do *not* install CA Workflow in the same folder as CA Service Catalog.
6. When prompted, enter or confirm the following data:
   - The CA EEM administrator (EiamAdmin) password that you specified when you configured CA EEM (see page 58) earlier.

     This setting configures CA Workflow to meet the requirement of using the same installation and application instance of CA EEM that CA Service Catalog uses.
   - The startup and shutdown ports for CA Workflow.
7. If both CA Service Catalog and CA Workflow are installed on the same computer, note the following change in procedure and inform all affected users:

   To start the CA Service Catalog command prompt, do *not* use the CA Service Catalog portion of the Windows Start menu. Instead, open a Windows command prompt from the Start menu and enter USM_HOME\usm.cmd.

You have re-installed CA Workflow and are now ready to configure the CA Workflow actors and process definitions.

Configure CA Workflow Actors and Process Definitions

If you are using CA Workflow, configure its parameters, actors, and process definitions. This task is required for CA Workflow to function correctly.

Follow these steps:

1. Perform the following steps on each newly upgraded Catalog Component computer:
   a. Log in to CA Service Catalog.
   b. Click Administration, Configuration, CA Workflow.

      The CA Workflow configuration parameters (see page 173) appear.
   c. Verify that these parameters reference the newly upgraded CA Workflow computer. If necessary, update these parameters to match the newly upgraded CA Workflow computer.
2. Configure the CA Workflow actors, as follows:
   a. On the CA Service Catalog GUI, select Administration, Configuration, CA Workflow.
   b. Click Configure.

      The Workflow actors are configured.
3. Review the process definitions that you activated in the previous release. If you want to use the new process definitions from the new release, perform the following steps:
   a. Make the process definitions from the previous release inactive and activate the equivalent process definitions supplied with the new version of CA Service Catalog.
   b. If you customized the previous process definitions, make the same customizations to the new process definitions.

   Note: For assistance, see the CA Workflow IDE online help.

4. (Only for integrations of CA Service Catalog with CA Service Desk Manager) Perform the following steps on the CA Workflow IDE for CA Service Desk Manager:

   a. Import the USM_RequestService web service actor from USM_HOME\fulfillment\scripts\actors.

      Note: This action is required because the former USM_HOME\fulfillment\scripts\service_desk\actors folder has been removed from the installation program.

      USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

   b. Verify that the USM_URLs in the process definitions imported from CA Service Catalog point to the first CA Service Catalog computer.

You have upgraded the CA Workflow actors and process definitions.

Chapter 3: Upgrading

Upgrading CA Service Catalog

CA Service Catalog lets you create and maintain a catalog of IT services, for example, for hardware, software, or virtual resources. The catalog includes predefined services, and you can create your own services. Users browse the catalog and request the services that they want. You can optionally use Accounting Component to provide billing and chargeback for the requested services, and to perform other financial tasks.

On each CA Service Catalog computer, you upgrade all product components. The components are as follows:

- Base files

  The base files are required to install and run the CA Service Catalog components successfully. The base files include CA Service Catalog code, CA Technologies licensing code, Java Runtime Environment (JRE), and other third-party software.

- Catalog Component

  Catalog Component enables you to create and maintain services in a catalog. Users browse the catalog and request the services that they want.

  Note: Service View was a component in past releases, but is no longer a component. Its functions are now included in the Catalog Component.

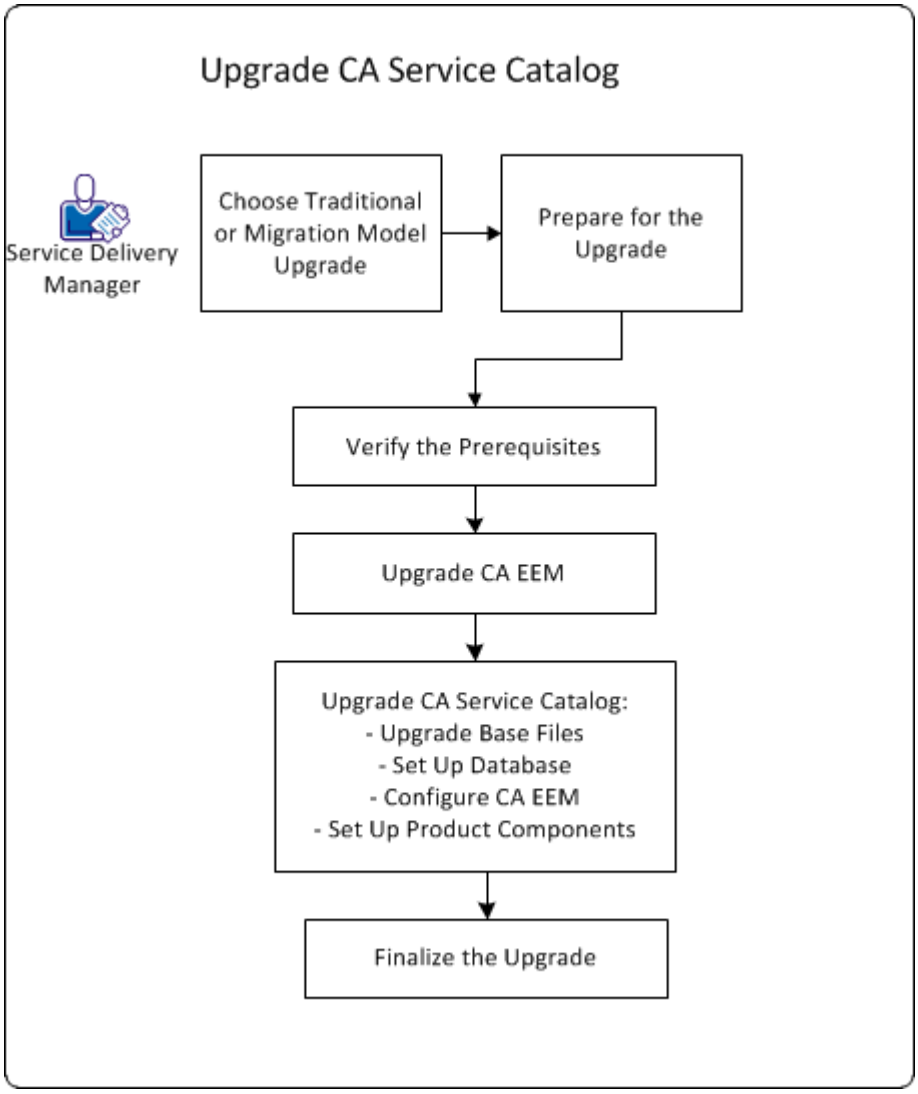
- Catalog Content

  Catalog Content supplies the predefined services in the catalog. Examples include services for requesting hardware, software, and other IT essentials from your business unit.

- Accounting Component

  Accounting Component provides billing and chargeback for the services that users request from the catalog. You can also use Accounting Component to allocate costs, prepare budgets, and plan IT services.

When you upgrade CA Service Catalog, the product database is upgraded. The database upgrade automatically includes any required updates to the CA Management Database (MDB). The MDB is the common, shared database for your CA Technologies products. The MDB provides the database schema for CA Service Catalog and other CA Technologies products.



Important! If you have copied the installation media to a network share, map a drive letter to this share. This mapping is required because a batch file runs as part of the upgrade, and batch files cannot run from a UNC path.

To upgrade CA Service Catalog, follow this process:

1. Review the differences between traditional and migration model upgrades (see page 76), and decide which technique to use.
2. Prepare for the upgrade (see page 78).
3. Verify the installation-upgrade prerequisites (see page 41).
4. Upgrade CA EEM (see page 53). Alternatively, you can use an existing installation of CA EEM.

   Note: We recommend that CA Service Catalog and all CA products that integrate with it share the same installation of CA EEM.
5. On each CA Service Catalog computer, follow this process to upgrade the product:

   Important! First, upgrade all computers that have Accounting Component (formerly CA Service Accounting) or CA Workflow installed. Next, upgrade all computers that have Catalog Component, Catalog Content, or both installed.

   - Run the upgrade program (see page 96).
   - Run the setup utility (see page 55).

     You use the setup utility to set up the database, CA EEM, and the CA Service Catalog components, as follows:

     - Set up the database (see page 57).
     - Configure CA EEM (see page 58).
     - Set up the product components (see page 59).
6. Finalize the upgrade (see page 102).

You have upgraded CA Service Catalog.

Traditional and Migration Model Upgrades

You can upgrade CA Service Catalog to Release 12.8 using *either* a migration model or a traditional model.

- In a traditional model, you run the upgrade program on existing CA Service Catalog computers.
- In a migration model, you install CA Service Catalog 12.8 products and components on *new* computers. When you install CA Service Catalog on the new computers, you use the existing CA MDB and CA EEM computers.

  The migration model provides greater flexibility than the traditional model. If a system failure or other unforeseen event occurs in the new environment, you can more efficiently restore the previous environment. In many cases, you can test the new environment more thoroughly when you use the migration model. If you select this option, follow the guidelines for migration model upgrades (see page 77).

The scope and limitations of an upgrade (see page 76) include both general and release-specific requirements for traditional and migration model upgrades.

The tasks to prepare for the upgrade (see page 78) apply to both traditional and migration model upgrades.

Scope and Limitations of an Upgrade

Important! Read and understand the scope and limitations of the upgrade *before* performing the upgrade!

The scope and limitations of the upgrade are as follows:

- If you are running CA Service Catalog Release 12.6, or 12.7, you can upgrade directly to Release 12.8 using *either* a traditional model or a migration model.
- If you are running CA Service Catalog Release r12.5, the following options apply:
  - Upgrade directly to Release 12.8 using a migration model.
  - *First* upgrade to Release 12.6. Next, use a traditional model to upgrade to Release 12.8.

  Important! If necessary, contact Technical Support (see page 4) to obtain the installation media for a previous release of CA Service Catalog, including the documentation. To perform this upgrade, follow the instructions from Technical Support, the *Implementation Guide,* and *Release Notes*.

- Verify that CA Service Catalog supports your database management system (see page 32); if necessary, update your database management system to a supported version.

  You *cannot* upgrade from one DBMS to another. For example, you cannot upgrade a CA Service Catalog Release 12.7 installation running SQL Server to a CA Service Catalog Release 12.8 installation running Oracle.

- In previous releases, you could not install new components during an upgrade. This restriction *no longer applies*. You can install any CA Service Catalog Release 12.8 component you want during an upgrade, even if it was not installed during the previous release.

Guidelines for Migration Model Upgrades

Reviewing these guidelines is a required task when you upgrade using a migration model. During a migration model upgrade, you install CA Service Catalog products and components on your new CA Service Catalog computers. During these installations, follow these guidelines:

- When you are prompted for information about the Catalog database or CA EEM, use the *existing* Catalog database specifications. These specifications include the usmuser and CA EEM values (such as the computer and application names).
- Consider this sample scenario: Your setup has Catalog Component and the Catalog database on existing Computer 1. Catalog Component and Accounting Component are on existing Computer 2, and CA Process Automation on existing Computer 3. Do the following actions:
  - Verify that CA Service Catalog supports the DBMS version on existing Computer 1.
  - Do *not* upgrade or delete the Catalog Component on existing Computer 1. Instead, install Catalog Component on new Computer 4, pointing to the existing Catalog database on existing Computer 1. Similarly, install Catalog Component and Accounting Component on new Computer 5, and install CA Process Automation on new Computer 6.
- Verify that the DBMS client software is installed on the computer from which you plan to run the upgrade program.

Prepare for the Upgrade

Preparing for the upgrade is a required task whether you upgrade using a migration model or a traditional model.

Follow these steps:

1. Review the scope and limitations of an upgrade (see page 76) for requirements regarding upgrades from specific earlier releases of CA Service Catalog.

   Important! Read and understand the scope and limitations of the upgrade *before* performing the upgrade.

2. Find and list all computers in your implementation that have one or more CA Service Catalog components installed. Use this list to help verify that you upgrade all required computers efficiently and in the correct sequence. If necessary, work with other CA Service Catalog administrators and users to verify that your list is accurate and complete.

3. Do the following actions in your current implementation:

   a. Log in to the root (highest level) business unit and click Service Builder, Configuration, System Configuration.

   b. Record whether the Use Service Provider Catalog Only option is set to Yes or No.

   c. Decide whether to continue to use this value to use as a system setting to meet the requirements of your organization.

      The Use Service Provider Catalog Only option is a System Configuration option (see page 237). Therefore, this option applies to the root business unit *only*, not any sub business units. You set this system value later at the end of the upgrade process.

4. Stop all Windows services for the existing release of CA Service Catalog. These services are named as follows:

   - Event Log Watch
   - CA Service View
   - CA Service Accounting
   - CA Service Fulfillment
   - CA Service Repository Agent
   - Message Queue 4.1 Broker

   Note: CA Service Catalog Release 12.8 includes only these Windows services: CA Service Catalog, CA Service Accounting, and CA Service Fulfillment (for CA Workflow if used).

5. Review whether you have shared any of the folders under CA Service Catalog and Shared Components. If the folders are shared, unshare them before the upgrade and restore the share after the upgrade is finished.

   Note: For details about sharing and unsharing, see your Windows documentation.

6. Verify that your *user ID* is defined as an administrator with *elevated privileges* on each *applicable Windows computer*.

   user ID

   Specifies your administrative user ID for the Windows computer (*not* your user ID for CA Service Catalog).

   elevated privileges

   Are additional rights in Windows that are available to administrative users only. To install or upgrade CA Service Catalog, administrators require the elevated privilege named Log on as Service.

   applicable Windows computer

   Specifies a Windows computer on which you plan to install or upgrade CA Service Catalog and which supports elevated privileges for administrators. An example is a Windows Server 2008 computer that has Catalog Component, CA Service Catalog, and the Catalog content installed.

7. Verify that your administrative user ID has Log on as Service rights on each applicable Windows computer, as follows:

   a. Click Start, All Programs, Administrative Tools, Local Security Policy, Security Settings, Local Policies, User Rights Assignment, Log on as Service.

   b. Verify that your administrative user ID is listed. If it is not listed, complete the next step.

8. If necessary, assign Log on as Service rights to your administrative user ID on each applicable Windows computer, as follows:

   a. Right-click the CA Service View Window Service (if installed). Select the Properties, Log on tab, and enter your administrator account credentials.

   b. Perform the previous step for Accounting Component and CA Service Fulfillment, if applicable.

   c. Start the services that you updated.

   A message appears stating that the administrator has been granted the Log on as a Service right.

9. (Migration Model Upgrade Only) If you have an existing filestore that you want to continue using after the upgrade, perform this step. Otherwise, skip this step.

   Record the computer name and the complete pathname of the filestore. Save them for reference after the upgrade.

   For traditional upgrades from CA Service Catalog Release 12.6 or 12.7, the filestore is backed up to the following location:

   C:\Program Files (x86)\CA\Service Catalog\SCA_Backup\previous_release\r12.*n*\Service Catalog

   r12.*n* is r12.6 or r12.7, depending on the version from which you are upgrading.

10. Do the following actions in your current implementation:
    - Prepare the Catalog database and the DBMS (see page 80).
    - Back up CA EEM data.

You have prepared for the upgrade.

Prepare the Catalog Database and the DBMS

Preparing the Catalog database and the DBMS is a required task whether you upgrade using a migration model or a traditional model.

Follow these steps:

1. Back up your existing Catalog database on the computer where it currently resides.

   Note: For instructions to back up the Catalog database, see your DBMS documentation.

2. Optimize the System Change Detail tables (see page 81).

3. If applicable, on your DBMS server, upgrade your Oracle or SQL Server software to a supported version: Oracle 10g or 11g or SQL Server 2005 or 2008.

4. Remove replication in your DBMS.

   Important! When replication has been added, the database tables are locked from any schema changes, even if replication is turned off. As a result, the upgrade cannot run successfully.

   Note: For instructions to remove replication, see your DBMS documentation. Also see that documentation for instructions to add it again, after you have completed the upgrade.

You have prepared the Catalog database and the DBMS.

Optimize the System Change Detail Tables

The System Change Detail tables are important for auditing and database performance. You can optimize the System Change Detail tables by eliminating redundant or obsolete records. This procedure helps optimize the performance of the database and CA Service Catalog.

Follow these steps:

1. Determine the number of each type of record, as follows:
   a. Enter the following command to determine the number of useful records:
   select count(*) from usm_system_change_detail where old_value!=new_value
   b. Enter the following command to determine the number of obsolete records:
   select count(*) from usm_system_change_detail where old_value=new_value

   Complete the remaining steps if a significant number of obsolete records exist, especially If more obsolete records than useful records exist. Otherwise, skip the remaining steps and finish preparing the Catalog database and the DBMS.
2. Enter the following command to filter the useful records from usm_system_change_detail table into a temporary table:
   Select * into usm_system_change_detail_temp from usm_system_change_detail where old_value!=new_value
3. Drop usm_system_change_detail table, as follows:
   a. Back up the indexes and database constraints for the following tables:
      - usm_system_change_detail
      - usm_system_change_detail_ext

      Note: For detailed instructions to perform the backup, see your DBMS documentation. For a sample script that restores indexes and constraints, see the sample script for SQL Server that follows these steps.
   b. Drop the foreign key constraints for the usm_system_change_detail_ext table.
   c. Drop the usm_system_change_detail table.
4. Rename the usm_system_change_detail_temp table to usm_system_change_detail.
5. Use the script that you created in Step 3a to restore the indexes and database constraints for the following tables.
   - usm_system_change_detail
   - usm_system_change_detail_ext

Sample Script

The following sample script applies to SQL Server. This script backs up indexes and database constraints. You can use this script as a model for backing up the indexes and database constraints in Step 3a.

```
ALTER TABLE [dbo].[usm_system_change_detail]
ADD CONSTRAINT [XPKusm_system_change_detail] PRIMARY KEY CLUSTERED
(
[id] ASC,
[name] ASC
)
WITH
(
PAD_INDEX = OFF,
STATISTICS_NORECOMPUTE = OFF,
SORT_IN_TEMPDB = OFF,
IGNORE_DUP_KEY = OFF,
ONLINE = OFF,
ALLOW_ROW_LOCKS = ON,
ALLOW_PAGE_LOCKS = ON
)
ON [PRIMARY]

ALTER TABLE [dbo].[usm_system_change_detail]
WITH CHECK ADD CONSTRAINT [$usm_s_r00002c5700000000] FOREIGN KEY
(
[id]
)
REFERENCES [dbo].[usm_system_change] ([id])

ALTER TABLE [dbo].[usm_system_change_detail]
CHECK CONSTRAINT [$usm_s_r00002c5700000000]
ALTER TABLE [dbo].[usm_system_change_detail_ext]
WITH CHECK ADD CONSTRAINT [$usm_s_r00002c6100000000] FOREIGN KEY
(
[id],
[name]
)
REFERENCES [dbo].[usm_system_change_detail] ([id], [name])

ALTER TABLE [dbo].[usm_system_change_detail_ext]
CHECK CONSTRAINT [$usm_s_r00002c6100000000]
```

You have optimized the System Change Detail tables. Next, finish preparing the Catalog database and the DBMS.

Verify the Installation Prerequisites

Verify these prerequisites *before* you install or upgrade CA Service Catalog. Unless otherwise noted, all prerequisites apply to *both* new installations and upgrades.

1. Verify that you have reviewed and followed the instructions in the *Prepare to Install or Upgrade CA Service Catalog* scenario. This scenario explains the preparation tasks for installing or upgrading CA Service Catalog and provides guidelines to determine your system architecture.

   Note: The *Prepare to Install or Upgrade CA Service Catalog* scenario is in the *Implementation Guide* and on http://ca.com/support.

   For best performance, we recommend that you do *not* install CA Service Catalog on the *same* computer as your SQL Server server or Oracle server.

2. Verify that the computers on which you plan to install CA Service Catalog meet the system requirements.

   Note: For a summary of system requirements, see the *Release Notes*. The Support Matrix provides more related information, including details about these requirements, optional integrations, and any updates that occur after GA.

3. Record the following data for the base files (see page 54) that you install on every CA Service Catalog computer. The installation program prompts you to provide this data.

   - Installation path name, if you want to change the default path name or cannot use it

     The default path name is C:\Program Files\CA\Service Catalog.

   - Startup and shutdown port numbers, if you do not want to use the default ports 8080 and 8085

     Important! We recommend that you do *not* use port 7777 as the startup or shutdown port. Port 7777 is reserved for Java Messaging Service (JMS).

     If you must use port 7777 for the startup or shutdown port, reset the JMS port number (see page 66) after you have finished running the setup utility. Otherwise, port conflicts occur, and the product does not function correctly.

     Note: No host name is needed because you install the product locally.

4. Prepare for the database setup (see page 43).

5. (CA Workflow users only) Perform *one* of the following tasks:

   - Follow the steps to use or continue using CA Workflow as the process automation tool for CA Service Catalog (see page 49).

   - Discontinue using CA Workflow as the process automation tool for CA Service Catalog. Enter the following command on all CA Workflow computers:

     ```
     pre_process_workflow.bat -uninstall
     ```

You have completed the installation-upgrade prerequisites.

How to Prepare for the Database Setup

Prepare your database for a successful CA Service Catalog installation or upgrade. This task includes recording the values for the database parameters. Before you install CA Service Catalog on a computer, you enter these parameters to establish the database connection.

1. Understand the database-related terms used in this scenario, as follows:

   When you install CA Service Catalog, you install the Catalog database. The Catalog database includes the following tables:

   - The CA Management Database (MDB) tables that apply to CA Service Catalog; their names typically begin with a CA_ prefix. The MDB is the common, shared database for CA Technologies products. The MDB provides the database schema for CA Service Catalog and other CA Technologies products.
   - The CA Service Catalog-specific tables; their names typically begin with a USM_ prefix. These tables are not included in the MDB.

2. Review the CA Management Database (MDB) documentation, which is supplied with other documents on the CA Service Catalog installation media. Note the most applicable information for your implementation plans, and keep it on hand for reference.
3. Verify that your DBMS is installed and running.
4. Apply all patches and other maintenance for your DBMS (SQL Server or Oracle).

   For details, see your SQL Server or Oracle documentation.

5. Find and record the parameter values for your DBMS:

   - Parameters for SQL Server (see page 45)
   - Parameters for Oracle (see page 46)

   You specify these values to set the database connection before you install any CA Service Catalog component.

6. Remove replication in your DBMS.

   Important! When replication has been added, the database tables are locked from any schema changes, even if replication is turned off. As a result, the upgrade cannot run successfully.

   Note: For instructions to remove replication, see your DBMS documentation. Also see that documentation for instructions to add it again, after you have completed the upgrade.

7. Verify that the DBMS client software is installed on the computer from which you plan to run the installation program.

8. (SQL Server Only) Work with your DBA to determine whether organizational policy permits the user installing or upgrading CA Service Catalog to have system administrator (SA) privileges in SQL Server. Proceed as follows:
   - If Yes, use a user ID that has SA privileges to install or upgrade CA Service Catalog. No further action is necessary.
   - If No, create the database user (see page 44) *with* the required privileges to install or upgrade the product but *without* SA privileges.
9. (CA Workflow Only) If you are using CA Workflow, review the post-installation task to update the database and re-install CA Workflow (see page 67). Read it now to become familiar with the steps required after you install or upgrade CA Service Catalog.

   Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

Create the Database User for Setting Up the Database

Note: This procedure applies to SQL Server *only*.

Follow this procedure only if the following criterion applies: You and the DBA have determined that your organizational policy prohibits a user ID with system administrator (SA) privileges from installing or upgrading CA Service Catalog. Therefore, create a database user *with* the required privileges to install or upgrade the product but *without* SA privileges.

Follow these steps:

1. In SQL Server, connect as the sa user to the master database.
2. Verify that your organization did not create the required database user earlier, for example, for a previous installation of CA Service Catalog.

   If you did create the user ID earlier, you can use it for this installation or upgrade. In that case, read the remaining steps to confirm the required rights for this user and to verify whether any of the actions apply.
3. Enter the following commands to create the user named installeruser. For the password, replace CHANGE_ME with a custom value, for example, INSTCAT~1.

```
CREATE LOGIN installuser WITH PASSWORD = 'CHANGE_ME'
CREATE USER installuser FOR LOGIN installuser

GRANT ALTER SETTINGS TO installuser
GRANT ALTER ANY LOGIN to installuser
GRANT CREATE DATABASE to installuser

GRANT EXECUTE on sp_grantdbaccess to installuser
EXECUTE sp_addsrvrolemember installuser, 'bulkadmin'
GRANT EXECUTE on sp_addsrvrolemember to installuser
```

You have created the installeruser user. Specify the login credentials of this user instead of the sa user when you run the setup utility (see page 55).

Create an Application User

The application user (often named usmuser) is a database user that CA Service Catalog uses to run certain stored procedures and to access the database. Configure a new or existing database user as an application user.

Follow these steps:

1. Decide whether to use an existing database user or a new database user as the application user.

   Important: If you are upgrading CA Service Catalog and you are using Oracle, you *cannot* use an existing database user. In that case, create an application user.

2. Enter the user name and password of this user in the Application user settings section of the setup utility.
3. Save your changes.

You have created an application user.

Parameters for SQL Server

Before you install CA Service Catalog on a computer, you enter these parameters to establish the connection to an SQL Server database.

For the Database Connection

Host Name

Defines the computer name of the Microsoft SQL Server (SQL Server) server.

Port

Defines the TCP Port number of the database server.

If you are using an instance name, verify the following requirements:

- The instance name has a port number set.
- Your implementation is *not* using dynamic ports.

Admin/DBA User Name and Password fields

Define the user name and password of the SQL Server database administrator (DBA). The setup utility uses these credentials to set up the CA Service Catalog database.

You can use the login credentials of either of the following users:

- System administrator (sa). This user requires dbo as its default schema.
- The user named installuser that you created earlier (see page 44), if applicable. You can optionally create this user so that the setup utility uses this user (instead of sa) to set up the CA Service Catalog database.

DBMS Instance/Service Name

Defines the SQL Server instance name for the MDB. For example, myinstance. You can specify either a primary instance or a named instance.

For the Database Configuration

Database Name

Specifies the name of the CA Service Catalog database.

To install the CA Service Catalog database schema into an existing database, specify the name of that database.

Follow these guidelines:

- If you plan to integrate CA Service Catalog with any other CA product that uses the MDB, specify mdb as the database name.
- If you want CA Service Catalog to run in its own database, you can specify a different database name other than mdb. To integrate with other CA products in the future, use the setup utility to change your custom database name to mdb.
- For an upgrade, use the same database name as you used for the previous release. Most likely, this name is mdb.

Important! If you integrate CA Service Catalog with CA Service Desk Manager or CA APM, the name of the Catalog database must be MDB. Similarly, if you are using (or plan to use) CA Workflow with CA Service Catalog, the database name *must* be mdb. CA Service Catalog embeds CA MDB r1.5.

Note: Verify that your database name complies to SQL Server standards.

User Name and Password fields

Define the user name and password for accessing this database.

This user name and password is created in the database. CA Service Catalog uses this user name and password to connect to the database. This user is the first application user. For increased flexibility of administration, you can optionally create a second application user (see page 58).

Parameters for Oracle

Before you install CA Service Catalog on a computer, you enter these parameters to establish the connection to an Oracle database.

Note: These parameters apply to Oracle running on both Windows and Linux.

For the Database Connection

Host Name

Defines the computer name of the Oracle server.

Port

Defines the TCP Port number of the database.

Admin/DBA User Name and Password fields

Define the user name and password of the Oracle database administrator (DBA).

DBMS Instance/Service Name

Defines the service name. Every Oracle database or service has a service name. The service name of an Oracle database is typically its global database name. Enter the service name of the database or other service that you want to access.

Note: A non-RAC deployment typically includes one service, one instance, and one database, each with the same name. However, in a RAC deployment, multiple instances can provide multiple services, all connecting to a single database.

Connection ID

Defines the connection ID (such as orcl) for connecting to the Oracle server, as follows:

- For a local database, this value is typically the SID.
- For a remote database, this value is typically the Net Service Name.

Tablespace Path

Defines the complete path name of the tablespace for Oracle.

MDB Administrator Password

Defines the password for the MDB Administrator. Applies to upgrades only.

DBA User Name

Defines the Oracle DBA user.

DBA Password

Defines the DBA user password.

Data Tablespace Name

(Optional) Defines the tablespace name for the data.

Index Tablespace Name

(Optional) Defines the tablespace name for the indexes.

The installer verifies whether the data and index tablespaces exist in the MDB. These tablespaces exist when either of the following conditions are met:

- The MDB is being upgraded.
- The MBD is used with another MDB. Any integrated component such as CA Process Automation or CA Service Desk Manager installed the other MDB.

If the data and index tablespaces exist, the installer displays their names. The installer also prompts you to specify whether to continue using the existing names or overwrite them with new names.

For the Database Configuration

Database Name

Specifies the name of the CA Service Catalog database.

To install the CA Service Catalog database schema into an existing database, specify the name of that database.

Follow these guidelines:

- If you plan to integrate CA Service Catalog with any other CA product that uses the MDB, specify mdb as the database name.
- If you want CA Service Catalog to run in its own database, you can specify a different database name other than mdb. To integrate with other CA products in the future, use the setup utility to change your custom database name to mdb.
- For an upgrade, use the same database name as you used for the previous release. Most likely, this name is mdb.

Important! If you integrate CA Service Catalog with CA Service Desk Manager or CA APM, the name of the Catalog database must be MDB. Similarly, if you are using (or plan to use) CA Workflow with CA Service Catalog, the database name *must* be mdb. CA Service Catalog embeds CA MDB r1.5.

Note: Verify that your database name complies to SQL Server standards.

User Name and Password fields

Define the user name and password for accessing this database.

This user name and password is created in the database. CA Service Catalog uses this user name and password to connect to the database.

CA EEM Installation Requirements and Considerations

Important! If you are upgrading CA Service Catalog, you can optionally upgrade CA EEM to Release 12. CA EEM Release 12 is included with the CA Service Catalog installation and upgrade media. If all CA Technologies products in your implementation are compatible with CA EEM Release 12, we recommend upgrading to CA EEM Release 12. For the latest support information for CA Service Catalog, CA EEM, and related CA Technologies products and components, see the Support Matrix for each of them on http://ca.com/support.

CA EEM authenticates users during login and authorizes users to access CA Service Catalog. You can install CA EEM from the CA Service Catalog installation media. Alternatively, if you have an existing installation of CA EEM, you can use it instead.

Consider the following items and meet the requirements *before* you install or upgrade CA EEM (see page 53):

Path, Location, and Related Requirements and Considerations

- Verify that your Windows PATH environment variable does *not* exceed the maximum length. Otherwise, the installation or upgrade can fail.

  Note: For details about setting this variable, see your Windows documentation.

- For best performance, we recommend that you install CA EEM on a different server than the DBMS server.

- If you are using an existing CA EEM instance, have the server name and password for the EiamAdmin user available.

- The installation or upgrade program backs up your existing CA EEM data to the following location:

  USM_HOME\conf-backup\upgrade-eem-backup.xml

  USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

- You can install and cluster several instances of CA EEM for high availability and fault tolerance. Similarly, an installation of CA Service Catalog can include several clustered computers. Each installation of CA Service Catalog must map to an application name in CA EEM. You can set up a single installation of CA EEM and the CA Service Catalog database for multiple installations of CA Service Catalog (for example, Test and Production).

  In this type of setup, the setup-related parameters (for example, the database, user, and application names) have the same values on every computer. Therefore, when you run the setup utility (see page 55), you can use the remote configuration feature to copy the parameter settings from one computer to another.

Version-related Requirements and Considerations

- If you plan to use CA Workflow with CA Service Catalog, do *not* install or upgrade to CA EEM Release 12. Instead, install or continue using CA EEM 8.4. Otherwise, CA Workflow and its integration with CA Service Catalog may not work properly. If necessary, install CA EEM 8.4 from the CA Service Catalog Release 12.7 installation media. If you do not already have this media, obtain it from your CA Technologies account representative or CA Technical Support. CA EEM 8.4 is *not* included on the CA Service Catalog Release 12.8 installation media.

  Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

- If CA EEM is already installed before you install CA Service Catalog for the first time, perform the post-installation task for CA EEM (see page 61), *if applicable*.

- The following point applies if you are using CA EEM Release 8.4 and plan to install it on new computers, for example, to replace old computers or to add computers to a cluster:

  If you are installing CA EEM Release 8.4 on a 64-bit computer that has CA Anti-Virus or CA Threat Manager installed, perform the following procedure: Uninstall that software before installing CA EEM and reinstall that software after installing CA EEM.

- If you have installed the 32-bit version of CA EEM Release 8.4 on a 64-bit computer, perform one of the following tasks to upgrade to CA EEM Release 12:
  - To install the 32-bit version of CA EEM Release 12, run its installation program.
  - To install the 64-bit version of CA EEM Release 12, proceed as follows:

    First, uninstall the 32-bit version of CA EEM Release 8.4.

    Next, install the 64-bit version of CA EEM Release 12.

    If you try to upgrade a 32-bit version of CA EEM Release 8.4 directly to a 64-bit version of CA EEM Release 12, the attempt fails.

Cluster-related Requirements and Considerations

- If CA EEM Release 12 is installed and clustered, Follow these steps: before you run the setup utility (see page 55):

  1. Edit the Apache load balancer configuration file named proxy.conf. This file is in the conf folder of the Apache installation directory.
  2. Record the current setting of the MaxKeepAliveRequests property.
  3. Set the MaxKeepAliveRequests property value to 0. A sample entry follows:

     ```
     MaxKeepAliveRequests 0
     ```

  4. Restart the Apache load balancer services to make the configuration changes take effect.

  Note: After you have run the setup utility, edit the file again and reset the MaxKeepAliveRequests property to its original value. Also restart the Apache load balancer services again.

How to Use or Continue Using CA Workflow

This section applies *only* if you plan to use or continue using CA Workflow as your process automation tool for CA Service Catalog. Otherwise, skip this section.

Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool.

To use or continue to use CA Workflow as your process automation tool for CA Service Catalog, follow this process to upgrade CA Service Catalog:

Note: All options apply to CA Service Catalog Releases 12.6 and 12.7.

1. Decide which option applies to your implementation, and follow the related procedure:

   Important! If you are upgrading CA Service Catalog, do *not* rename the database. Typically, the database name is mdb.

   - Option 1: Perform a traditional upgrade of CA Service Catalog and continue using the existing installation of CA Workflow.

     Applies to computers that have CA Workflow installed, *without* any CA Service Catalog components.

     This option retains your existing CA Workflow installations, including your customizations.

   - Option 2 (the default): Perform a migration model upgrade of CA Service Catalog and continue using the existing installation of CA Workflow.

     Applies to computers that have CA Workflow installed *with* one or more CA Service Catalog components

     This option retains your existing CA Workflow installations, including your customizations.

   - Option 3: Perform a traditional upgrade of CA Service Catalog, run workflow-related scripts, and re-install CA Workflow.

     Applies to computers that have CA Workflow installed *with* one or more CA Service Catalog components.

     Important! This option is least preferred because it removes your existing CA Workflow installations, including your customizations. This option is most useful when you have limited resources, for example, one CA Workflow installation.

   Important! You set the connection parameters for the database and CA EEM when you install or upgrade CA Service Catalog and set up the CA Service Catalog components. If you are integrating CA Service Catalog and CA Workflow, *do not update* any connection parameters for the database or CA EEM after that time. Otherwise, CA Workflow and the integration may stop working properly.

Option 1 Procedure: Perform a traditional upgrade of CA Service Catalog and continue using the existing installation of CA Workflow

1. On all CA Workflow computers, run the pre_process_workflow.bat file from Utilities/Fulfillment folder of the CA Service Catalog installation media.
2. Perform a traditional upgrade.
3. Configure CA Service Catalog to use the existing version of CA Workflow.

   Note: For instructions, see the *Integration Guide*.

Option 2 Procedure: Perform a migration model upgrade of CA Service Catalog and continue using the existing installation of CA Workflow

1. On all CA Workflow computers, run the pre_process_workflow.bat file from Utilities/Fulfillment folder of the CA Service Catalog installation media.
2. Install CA Service Catalog on new computers, as explained in this scenario. However, continue using the same MDB and CA EEM installation.
3. Configure CA Service Catalog to use the existing version of CA Workflow.
4. **Note:** For instructions, see the *Integration Guide*.

Option 3: Run workflow-related scripts, perform a traditional upgrade of CA Service Catalog, and re-install CA Workflow

1. On all CA Workflow computers, run the pre_process_workflow.bat file from Utilities/Fulfillment folder of the CA Service Catalog installation media.
2. Perform a traditional upgrade.
3. Update the database and re-install CA Workflow (see page 67).

Install or Upgrade CA EEM

Install or upgrade to CA EEM Release 12 on one or more computers. You can optionally install, upgrade, and cluster (see page 35) multiple instances of CA EEM.

Follow these steps:

1. Review the installation considerations (see page 51), especially if you plan to use CA Workflow.

   Important! If you plan to use CA Workflow with CA Service Catalog, do not install or upgrade to CA EEM Release 12. Instead, install or continue using CA EEM 8.4, as noted in the installation considerations.

2. On the CA Service Catalog installation media, select Utilities, CA EEM, and run the EXE file for your environment (32-bit or 64-bit).

   The installation wizard guides you through the installation process.

3. (New Installations Only) Enter the value of the EiamAdmin password that you want to use, when prompted.

   Record this password for future reference.

4. (New Installations Only) When you are prompted for the Java Home directory, leave the value empty and click Skip, unless you plan to do one or both of the following actions:

   - Integrate CA EEM with CA SiteMinder
   - Use Security Assertions Markup Language (SAML) with CA EEM

   If you plan to perform either of these tasks, enter the complete path name of your Java Runtime Environment (JRE) installation.

   Note: CA EEM and CA Service Catalog each installs and uses its own JRE. Therefore, the JRE version of each product can be different.

5. Continue following the wizard instructions and complete the CA EEM installation or upgrade.

   Note: If you are upgrading, the default folder is \CA\SharedComponents\EmbeddedEntitlementsManager, *not* your existing CA EEM folder. Use the default folder.

6. Reinstall CA Anti-Virus or CA Threat Manager, if you uninstalled it earlier. This step applies *only* if you install CA EEM Release 8.4 (see page 51).

7. (Optional) Install CA EEM on additional computers, one at a time, as follows:

   a. On each computer, specify the same password for the CA EEM administrator (EiamAdmin).

   b. If you install CA Service Catalog on multiple computers, select the Use Remote Configuration option when you run the setup utility (see page 55).

You have installed CA EEM for use with CA Service Catalog.

Note: For more instructions to configure and use CA EEM, see the *Integration Guide*.

Run the Upgrade Program

Run the CA Service Catalog upgrade program to upgrade the base files required to run the CA Service Catalog components successfully. The base files include CA Service Catalog code, CA Technologies licensing code, Apache Tomcat, Java Runtime Environment (JRE), and other third-party software. The base files are required on every CA Service Catalog computer. You can optionally upgrade and cluster (see page 35) multiple instances of CA Service Catalog.

Follow these steps:

1. On the CA Service Catalog installation media, run the CA_Service_ Catalog.exe file.

   The upgrade program opens.

2. Supply the requested information and follow the prompts to complete the upgrade.

   Important! If you want to use custom port numbers, specify them in the fields provided. This requirement applies even if you specified custom port numbers in the previous release.

3. (Optional) If necessary, upgrade CA Service Catalog on additional computers, one at a time, using the previous steps.

You have upgraded the base files.

Run the Setup Utility

Run the CA Service Catalog setup utility to set up your database, configure CA EEM, and install the product components. The components are Catalog Component, Catalog Content, and Accounting Component.

Follow these steps:

1. Start the setup utility using one of the following methods:
   - Click the option to start the setup utility after you have run the installation or upgrade program.
   - Start the setup utility from the Windows Start menu. For example, click Start, Programs, CA, Service Catalog, Setup Utility.

   The setup utility opens.

   Note: If your browser blocks access to the setup utility web page for security reasons, add the CA Service Catalog computer to the list of trusted web sites for the browser. Use the following format for the CA Service Catalog computer: http://*hostname*:*port*. An example is http://localhost:8080.

2. Specify the following parameters and log in to the utility:

   Password

   Specifies the password for logging in to the utility and running it using either of the methods described in the previous step.

   Important! Record the password for reference, because the utility requires you to specify the password each time you start it.

   You can reset the password, for example, if you lose or forget it, as follows:

   Enter the following command:

   USM_HOME\scripts\configurator.bat -resetpwd

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.The Catalog system resets the password and prompts you to perform the next action:

   Restart setup utility and specify the new password.

   Remote Configuration

   (Optional) If you have run the utility successfully on another computer (a remote computer), you can use the same configuration on this computer (the local computer). To do so, select this option and enter the URL of the remote computer. Use the following format: http://*server*:*port*/*context*. An example is http://localhost:8080/usm.

   The database setup page appears.

3. Complete this step *only* if you selected the Remote Configuration option in the previous step. Otherwise, skip to the next step.

   Supply the password for the setup utility on the remote computer.

   The local setup utility copies configuration data from the remote computer and prepopulates the corresponding local fields with this data. The local utility copies the data for the database setup, CA EEM configuration, and the name of the top-level business unit. Therefore, you do not need to enter this data manually. However, you can optionally update the copied values, if necessary. This data appears on the remaining tabs of the local setup utility and is described in the remaining steps.

   You typically use the Remote Configuration option when you plan to install multiple instances of CA Service Catalog with the following components:

   - A load balancer
   - A single installation of CA EEM and the CA Service Catalog database (see page 51)
   - Multiple installations of CA EEM (see page 53) that use the same application instance name, user name, and password.

4. Set up the database (see page 57).
5. Configure CA EEM (see page 58).
6. Configure the product components (see page 59).

You have completed the steps for running the setup utility.

Note: If you are installing CA Service Catalog for the first time on a computer, the setup utility prepopulates the fields that require input with default values. If you are re-installing or upgrading CA Service Catalog, the setup utility prepopulates these fields with the values from the current installation. The Remote Configuration option described earlier overwrites any default values or existing values with the values from the remote computer.

Set Up the Database

Set up the database so that CA Service Catalog users and the Catalog system can function correctly.

Follow these steps:

1. If necessary, log in to the setup utility (see page 55) and click Database on the left menu.

   The utility displays the page for connecting to the database and configuring it.

2. Select the DBMS that you are using and review the parameters for it. Use this information to complete the fields in the next steps.

   - Parameters for MDB on SQL Server (see page 45)
   - Parameters for MDB on Oracle (see page 46)

3. Complete the fields for Database Connectivity section.

   This step verifies that you can connect to the database. If the connection fails, verify the preparation tasks (see page 43) and the parameter values, and try the test again.

4. In the Database Settings section, specify the name of the CA Service Catalog database, typically MDB.

   This step installs or upgrades the MDB, if necessary. This step also configures the CA Service Catalog database in the MDB.

5. Create an application user (see page 58).

6. Click Save.

7. (Optional) Review the log files, as follows:

   The log files are visible *after* you have completed all tasks on the installation or upgrade program and have clicked Done to exit the program.

   - For log information for SQL Server, see the following sources:
     - See the install_mdb.log file in your MDB target installation directory. This directory is specified in %TEMP%\MDB1.5, where %TEMP% is a Windows environment variable. If the MDB installation fails, review the log files in this location.
     - After a successful installation of the MDB, the install_mdb.log file is copied to the %ProgramFiles%\CA\SC\Mdb\Windows\logs folder. This log file is renamed to install_mdb_*mm-dd,hh_mm_ss*.log (for example, install_mdb_12-03,15_29_05.log).
     - See the view.log file. Its default location is the C:\Program Files\CA\Service Catalog\logs folder.

- For log information for Oracle, see the following sources:
  - See the install_connectionID.log file in your MDB target installation directory. For example, if the connection ID is myhost_orcl, the install_connectionID.log file name is install_myhost_orcl.log. The MDB target installation directory is specified in %TEMP%\MDB1.5, where %TEMP% is a Windows environment variable. If the MDB installation fails, review the log files in this location.
  - After a successful installation of the MDB, the install_connectionID.log file is copied to %ProgramFiles%\CA\SC\Mdb\Windows\logs. This log file is renamed to install_ connectionID_*mm-dd,hh_mm_ss*.log, for example, install_myhost_orcl_12-03,15_29_05.log.
  - See the view.log file. Its default location is the C:\Program Files\CA\Service Catalog\logs folder.

You have set up the database. Next, you configure CA EEM (see page 58).

Configure CA EEM

After you have set up the database (see page 57), configure CA EEM for use with CA Service Catalog.

Follow these steps:

1. If necessary, log in to the setup utility (see page 55) and click Security on the left menu.

   The CA EEM section appears.

2. Do the following actions:
   a. Confirm or correct the host name of the CA EEM server.

      Separate multiple host names with a comma.

   b. For the CA EEM application instance name, specify the name of your choice.

      If you installed or upgraded multiple versions of CA EEM (see page 53), specify the same application instance name and administrator password for each one.

   c. Enter the CA EEM administrator (EiamAdmin) password.

3. Click Save.

   The utility creates the required CA Service Catalog objects in CA EEM. Examples include the *Service Catalog* application, policies, and users (including spadmin).

You have configured CA EEM for use with CA Service Catalog. Next, you configure the product components (see page 59).

Note: For detailed instructions to integrate CA Service Catalog and CA EEM, see the *Integration Guide*.

Set Up the Product Components

After you configure CA EEM (see page 58) for use with CA Service Catalog, configure the product components that you want on this computer.

Follow these steps:

1. If necessary, log in to the setup utility (see page 55) and click Components the left menu.

   The page appears for selecting the product components that you want to configure.

2. Enter the name of the service provider business unit. It is the "root" business unit above all other business units. As a best practice, specify your company domain name or a short version of your company name for the business unit ID.

   If you are installing CA Service Catalog on this computer for the first time, this value is writable. However, if you are upgrading or installing CA Service Catalog on this computer a second time, this value is read-only.

   After you have completed the CA Service Catalog installation on this computer, the following conditions exist:

   - You *cannot* change the business unit *ID* of the service provider.
   - You *can* change the business unit *login ID* and the business unit name of the service provider, using the CA Service Catalog UI.

3. Select each component that you want to use on this computer:

   Catalog Component

   Enables you to create service options and service option groups, which you use to create services that users can request from the catalog.

   This option includes the Catalog Content, which supplies the predefined services in the catalog. Examples include services for requesting hardware, software, and other IT essentials from your business unit. You can use these services as-is, or you can copy and customize them.

   This option installs a Windows service named CA Service Catalog.

   Accounting Component

   Provides billing and chargeback for the services that users request from the catalog. You can also use Accounting Component to allocate costs, prepare budgets, and plan IT services.

   This option installs a Windows service named CA Service Accounting.

4. Click Save.

   The Catalog system configures the selected components on this computer.

5. Follow the prompts and complete the setup.

6. Click the button to start the Windows services for the components that are mentioned in Step 3.

Note: You can optionally review the installation log file, view.log. Its default location is the C:\Program Files\CA\Service Catalog\logs folder. This log file is visible after you have completed all tasks of the installation or upgrade program and have clicked Done to exit the program. For details about uninstallation and aborted or canceled installations (when applicable), see the CA_Service_Catalog_Uninstallation.log file in the Windows Temp folder.

Finalize the Upgrade

Finalizing the upgrade is the last required task when you upgrade CA Service Catalog.

Follow these steps:

1. If you upgraded to CA EEM Release 12 in a clustered setup, you updated the MaxKeepAliveRequests property in the Apache proxy.conf file to meet the CA EEM installation requirements (see page 51). In that case, reset the MaxKeepAliveRequests property to its original value.

2. Reset the JMS port number, if required (see page 66).

3. Log in to the root business unit of CA Service Catalog as a Service Delivery administrator.

4. Perform the following steps:

   a. Click Service Builder, Configuration, System Configuration.

      The System Configuration options (see page 237) appear.

   b. Set the value of the Use Service Provider Catalog Only option to Yes or No. You decided the value at the beginning of this upgrade process.

      Note: The value that you set applies to the entire Catalog system, in other words, to all business units.

5. Verify that you and other users can log in to CA Service Catalog on the new computers. Verify that the CA Service Catalog components are working properly.

6. (For CA Workflow *only*) Perform all applicable tasks:
   - If you are performing Option 3 of the process to use or continue using CA Workflow (see page 49), then finish that process by updating the database and re-installing CA Workflow (see page 67).
   - If you have installed or upgraded CA Workflow as part of the upgrade process, configure CA Workflow.

     Note: For instructions to configure CA Workflow, see the *Integration Guide*.
7. If you integrated CA Service Catalog with CA Service Desk Manager in the previous release, update the host computer names. Also reconfigure the other connection details between the two products.

   Note: For instructions, see the *Integration Guide*.
8. Enable Windows NTLM authentication (see page 157), if you enabled in the previous release.

   Important! This option is disabled by default, for both new installations and upgrades. If applicable, enable it again.

   Note: For instructions, see the *Implementation Guide*.
9. Set up shared and customized files (see page 104).
10. (Multiple Catalog Component Computers) Perform the following steps:
    a. If you have not already done so, set up the filestore (see page 238) (the single location for shared files).
    b. Click Administration, Configuration, Filestore on any Catalog Component computer. Verify that the filestore location is correct. If necessary, correct the location.
    c. Access the filestore computer and verify that the filestore folder includes the themes folder. If necessary, copy the themes folder to the filestore folder, as explained in the next step.
11. To use the old filestore location, proceed as follows. Otherwise, skip this step.
    a. Copy the themes folder from the local filestore to the old filestore. This folder is part of the feature named custom branding (see page 352).

       Note: Custom branding, including the themes folder, started with CA Service Catalog Release 12.7. For information about custom branding, including the themes folder, see the *Implementation Guide*.
    b. Click Administration, Configuration, Filestore.
    c. Specify the original filestore location. You recorded this location before the upgrade.
12. Restore the Tomcat customizations, including the server.xml keystore files. You recorded these customizations earlier when you completed the installation prerequisites (see page 41).

13. (Migration Model Upgrades Only) Uninstall (see page 375) the previous versions of CA Service Catalog products and components from the "old" CA Service Catalog computers. If you installed a new version of CA EEM, uninstall the old version of CA EEM from the old CA Service Catalog computers.
14. (CA Workflow Users Only) Update the database and re-install CA Workflow (see page 67).

You have finalized the upgrade.

Reset the JMS Port Number, If Required

Reset the JMS port number only if necessary, that is, if you specified 7777 as the CA Service Catalog startup or shutdown port (see page 41) when you ran the installation program. We recommend that you do *not* use port 7777 as the startup or shutdown port. Port 7777 is reserved for Java Messaging Service (JMS).

Important! If you must use port 7777 for the startup or shutdown port, reset the JMS port number after you have finished running the setup utility. Otherwise, port conflicts occur, and the product does not function correctly.

Follow these steps:

1. Open the file named USM_HOME/config.properties in a text editor.
2. Update the value of the jms.port property to a new value.
3. Restart the Windows service named CA Service Catalog.

You have reset the JMS port number, if necessary.

How to Set Up Shared and Customized Files

Setting up shared and customized files is a required task when you finalize the upgrade (see page 102).

Follow these steps:

1. Copy all filestore contents (files shared by all users in the environment) from the previous filestore location to the new location, as follows:
   - Documents: Copy from USM_HOME\view\documents to %USM_HOME\filestore\documents
   - Images: Copy from USM_HOME\view\webapps\usm\images\offerings to %USM_HOME\filestore\images\offerings

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

- Images: Copy from USM_HOME\view\webapps\usm\images\rateplans to USM_HOME\filestore\images\rateplans
- Forms: Copy from USM_HOME\view\forms to USM_HOME\filestore\forms
- Custom directory: Copy any files that you want to update or replace from USM_HOME\view\webapps\usm\custom to USM_HOME\filestore\custom

Note: Your installation can have some or all of these folders, depending on the previous version of CA Service Catalog that was installed.

2. If you customized files, such as category.xml or requestshared.xml, restore or verify your customizations, as follows:
   - (Migration model upgrade only) Compare each customized file that you backed up earlier with the new version supplied by the upgrade. Update the new file with your customizations from the backup file.

     Important! You can replace certain new files with your backup files, in certain cases. However, *before* doing so, contact Technical Support and verify each file that you want to replace. For details, contact Technical Support (see page 4).
   - (Traditional upgrade only) Review any CA Service Catalog files that you customized, such as custom.xml or requestshared.xml. Verify that your customizations are intact and are applicable for this release.

     The traditional upgrade program automatically backs up customized files before the upgrade and restores them after the upgrade.
3. Do the following if you customized the CA Service Repository Agent in the previous release and you want to use the same customizations for the new release.

   Note: The CA Service Repository Agent is also named the Data Mediation Data Repository Agent. This repository agent automates the process of importing usage data stored in Delimiter Separated File or Fixed Length File format.

   a. Find the files from the previous release. These files are located in the following folders:
      - USM_HOME\Repagent\data
      - USM_HOME\Repagent\config

   b. Open each file and find the customizations that you want to continue using. Make the same or equivalent customizations to the files with the same names in the new folders. The new folders are as follows:
      - USM_HOME\Repagent\data
      - USM_HOME\Repagent\config

      Important! Do *not* simply overwrite the new files with the old files. Doing so does *not* work.

   c. Complete these updates on all CA Service Catalog computers.

You have set up shared and customized files.

How to Update the Database and Re-install CA Workflow

This process applies *only* if you are using CA Workflow extensively and must continue using it for the near future to keep your business operating efficiently. The CA Service Catalog installation and upgrade programs uninstall CA Workflow. Therefore, after you install or upgrade CA Service Catalog, re-install CA Workflow and configure its actors and process definitions. This process lets CA Service Catalog Release 12.8, CA Workflow, and products that interact with them function correctly.

Important! CA Workflow is no longer being enhanced, and its maintenance and technical support are scheduled to be discontinued as of December 31, 2013. Therefore, we strongly recommend using CA Process Automation as your process automation tool. Consider migrating to CA Process Automation as soon as possible.

Follow these steps:

1. Verify that you have completed the earlier steps for Option 3 of the process to use or continue using CA Workflow (see page 49).

   Important! This topic applies *only* to Option 3 of that process.

2. (New Installations of CA Service Catalog Only) Verify that the database name is mdb. If necessary, rename the database to mdb, as follows:

   a. Rename the database in Oracle or SQL Server.

      Note: For instructions, see your Oracle or SQL Server documentation.

   b. Run the setup utility to rename the database.

      Note: For instructions, see the *Implementation Guide*.

   Important! If you are upgrading CA Service Catalog, do *not* rename the database. Typically, the database name is mdb.

3. Run the workflow_install_helper script, as follows:

   a. Open the CA Service Catalog command prompt from the CA Service Catalog portion of the Windows Start menu.

   b. Change to the USM_HOME\scripts folder.

      USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

   c. Enter the following command:

      ```
      workflow_install_helper
      ```

4. Re-Install CA Workflow (see page 68) from the CA Service Catalog Release 12.7 installation media.

   You can optionally install and cluster (see page 35) multiple instances of CA Workflow.

5. Configure CA Workflow actors and process definitions (see page 70).

   Note: For details, see the CA EEM Release 8.4 documentation.

You have prepared the database for CA Workflow, re-installed CA Workflow, and configured its actors and process definitions.

Important! You set the connection parameters for the database and CA EEM when you install or upgrade CA Service Catalog and set up the CA Service Catalog components. If you are integrating CA Service Catalog and CA Workflow, *do not update* any connection parameters for the database or CA EEM after that time. Otherwise, CA Workflow and the integration may stop working properly.

Note: For more information to configure the integration between CA Service Catalog and CA Workflow, see the *Integration Guide*.

Re-Install CA Workflow

The CA Service Catalog installation and upgrade programs uninstall CA Workflow. Therefore, after you install or upgrade CA Service Catalog, re-install CA Workflow to continue using it.

Important! Re-Install CA Workflow from the CA Service Catalog Release 12.7 installation media. If you do not already have this media, obtain it from your CA Technologies account representative or CA Technical Support. CA Workflow is *not* included on the CA Service Catalog Release 12.8 installation media.

Follow these steps:

1. Verify that the DBMS client (Oracle client or SQL Server client) is installed locally, unless the local computer is the DBMS server.

   Note: For instructions to install the DBMS client, see your DBMS documentation.

2. Access the root folder on the installation media and run setup.exe.

   The installation Product Explorer window appears.

3. Select CA Workflow, Windows, and click Install.
4. Specify the database type and supply the parameters for your DBMS, as follows:
   - Parameters for SQL Server (see page 45)
   - Parameters for Oracle (see page 46)

   The installation wizard guides you through the installation process.
5. When prompted, specify an installation path for CA Workflow.

   Important! Do *not* install CA Workflow in the same folder as CA Service Catalog.
6. When prompted, enter or confirm the following data:
   - The CA EEM administrator (EiamAdmin) password that you specified when you configured CA EEM (see page 58) earlier.

     This setting configures CA Workflow to meet the requirement of using the same installation and application instance of CA EEM that CA Service Catalog uses.
   - The startup and shutdown ports for CA Workflow.
7. If both CA Service Catalog and CA Workflow are installed on the same computer, note the following change in procedure and inform all affected users:

   To start the CA Service Catalog command prompt, do *not* use the CA Service Catalog portion of the Windows Start menu. Instead, open a Windows command prompt from the Start menu and enter USM_HOME\usm.cmd.

You have re-installed CA Workflow and are now ready to configure the CA Workflow actors and process definitions.

Configure CA Workflow Actors and Process Definitions

If you are using CA Workflow, configure its parameters, actors, and process definitions. This task is required for CA Workflow to function correctly.

Follow these steps:

1. Perform the following steps on each newly upgraded Catalog Component computer:
   a. Log in to CA Service Catalog.
   b. Click Administration, Configuration, CA Workflow.

      The CA Workflow configuration parameters (see page 173) appear.
   c. Verify that these parameters reference the newly upgraded CA Workflow computer. If necessary, update these parameters to match the newly upgraded CA Workflow computer.
2. Configure the CA Workflow actors, as follows:
   a. On the CA Service Catalog GUI, select Administration, Configuration, CA Workflow.
   b. Click Configure.

      The Workflow actors are configured.
3. Review the process definitions that you activated in the previous release. If you want to use the new process definitions from the new release, perform the following steps:
   a. Make the process definitions from the previous release inactive and activate the equivalent process definitions supplied with the new version of CA Service Catalog.
   b. If you customized the previous process definitions, make the same customizations to the new process definitions.

   Note: For assistance, see the CA Workflow IDE online help.

4. (Only for integrations of CA Service Catalog with CA Service Desk Manager) Perform the following steps on the CA Workflow IDE for CA Service Desk Manager:

   a. Import the USM_RequestService web service actor from USM_HOME\fulfillment\scripts\actors.

      Note: This action is required because the former USM_HOME\fulfillment\scripts\service_desk\actors folder has been removed from the installation program.

      USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

   b. Verify that the USM_URLs in the process definitions imported from CA Service Catalog point to the first CA Service Catalog computer.

You have upgraded the CA Workflow actors and process definitions.

Chapter 4: How to Install or Upgrade CA Service Catalog in Silent Mode

Service Delivery administrators can install or upgrade CA Service Catalog in silent mode. The silent installation or upgrade does not prompt the user to enter any input data. Instead, the program reads this data from property files that the administrator has configured. A silent installation or upgrade is helpful when an administrator or other user wants to run one or more installations without user input. Examples include integrations with other applications (such as CA solutions), batch jobs, and so forth.

To install or upgrade the product in silent mode, follow this process:

1. Complete the prerequisites (see page 112).
2. Perform one of the following tasks:
   - Install CA Service Catalog in silent mode using the silent command (see page 113)
   - Install CA Service Catalog in silent mode using the properties file (see page 113)
3. Perform the post-installation tasks (see page 114).

This section contains the following topics:

Complete the Prerequisites

Complete the following prerequisites so that you can install or upgrade CA Service Catalog in silent mode:

- General prerequisites
  - Verify that you have reviewed and followed the instructions in the *Prepare to Install or Upgrade CA Service Catalog* scenario. This scenario explains the preparation tasks for installing or upgrading CA Service Catalog and provides guidelines to determine your system architecture.

    Note: The *Prepare to Install or Upgrade CA Service Catalog* scenario is in the *Implementation Guide* and on http://ca.com/support.
  - If you are installing CA Service Catalog, complete the installation prerequisites.

    Note: For details, see the *Install CA Service Catalog* scenario. This scenario appears in the *Implementation Guide* and on http://ca.com/support.
  - If you are upgrading CA Service Catalog, complete the installation prerequisites.

    Note: For details, see the *Upgrade CA Service Catalog* scenario. This scenario appears in the *Implementation Guide* and on http://ca.com/support.
- Prerequisites for the properties files
  - Rename the installer_template.properties file to installer.properties.
  - Rename the config_template.properties file to config.properties.
  - Specify custom values in the installer.properties and config.properties files.

    Note: These files are on the CA Service Catalog installation media. For help determining the appropriate value for any parameters, see the descriptions of equivalent parameters in the *Install CA Service Catalog* and *Upgrade CA Service Catalog* scenarios.
  - The location of the properties files varies, depending on the location of the CA_Service_Catalog.exe file. The config.properties file *must* be in the same location as the CA_Service_Catalog.exe file.
- Prerequisites for performing the installation
  - If a properties file contains errors, or if the target computer does not meet the requirements (for example, the system requirements), the silent installation aborts silently. Therefore, prepare for and verify silent installations carefully.
  - Typically, installation is a one-time task that administrators perform using either the UI installation or the silent installation, but not both. However, if a silent installation fails, you can update the values in the properties files and can retry the installation. Moreover, you can also rename the properties files back to installer_template.properties and config_template.properties, and use the UI installation instead.

Install or Upgrade CA Service Catalog in Silent Mode Using Silent Command

You can install CA Service Catalog in silent mode by running the silent command.

Follow these steps:

1. Open the CA Service Catalog command prompt by clicking Start, Programs, CA, Service Catalog, Service Catalog - Command Prompt.
2. Change the directory to where the CA_Service_Catalog.exe is located and run the following command.

   cmd /c CA_Service_Catalog.exe -i silent
3. Supply the required configuration values for the config.properties and installer.properties files.

You have installed CA Service Catalog in silent mode using the silent command.

Install or Upgrade CA Service Catalog in Silent Mode Using the Properties File

You can install or upgrade CA Service Catalog in silent mode by specifying the properties file from the command line. If you do not specify any file, then the installer automatically scans the directory for the installer.properties or installername.properties file. The installer.properties takes precedence if both the files exist in the same directory.

Follow these steps:

1. Open the CA Service Catalog command prompt by clicking Start, Programs, CA, Service Catalog, Service Catalog - Command Prompt.
2. Verify that the config.properties file and the CA_Service_Catalog.exe reside in the same location.
3. Change to the directory where CA_Service_Catalog.exe is located and run the following command.

   cmd /c CA_Service_Catalog.exe -i silent –f <path to installer.properties>

   For example: cmd /c CA_Service_Catalog.exe -i silent -f C:\installer.properties
4. Press Enter.

You have installed CA Service Catalog in silent mode using the properties file.

Perform the Post-Installation Tasks

Perform these tasks after installing or upgrading the product to prepare it for use.

Follow these steps:

1. Start the Windows services: CA Service Catalog, CA Service Accounting, and CA Service Fulfillment (for CA Workflow, if used).
2. Verify that you and other users can log in to CA Service Catalog. Verify that the CA Service Catalog components are working properly.

You have performed the post-installation tasks.

Chapter 5: Migrating

This section contains the following topics:

Migration

You can migrate CA Service Catalog from one system to another system, to replicate your environment. Typically, you perform such a migration to move from a test system to a production system or as part of disaster recovery procedures. You can also perform such a migration as part of upgrading using a migration model.

For clarity, this documentation uses these terms:

- *test system* refers to all computers *from* which you are migrating
- *production system* refers to all computers *to* which you migrating

Thus, this documentation uses these terms to describe a typical scenario, migrating from a test system to a production system. If you are migrating for other reasons, the test system is the *source* system and the production system is the *target* or *destination* system.

This documentation assumes a multicomputer setup. For example, the "medium architecture" system referenced in System Architecture (see page 13) consists of three computers: one computer for the DBMS (including the MDB), one computer for CA Service Catalog and Accounting Component and one computer for CA Workflow. Unless indicated otherwise, *system* refers to *all* CA Service Catalog computers in your test or production system, including the DBMS computer. If you are migrating one stand-alone CA Service Catalog system to another stand-alone system, ignore references to multiple computers.

Note: For information about migrating a product that integrates with CA Service Catalog, see its documentation. For example, for information about migrating CA Process Automation, see the CA Process Automation documentation. Similarly, for information about migrating CA Service Desk Manager, see the CA Service Desk Manager documentation.

Disaster Recovery

The main goal of migrating (see page 117) a CA Service Catalog installation from one system to another system is to replicate your environment in a new setting. The goals and instructions for migrating also apply to both standard test-to-production updates and disaster recovery.

How to Perform Prerequisite Tasks

Perform the following prerequisite tasks before you migrate (see page 117) CA Service Catalog. These tasks are required to help ensure that you can complete the migration process successfully.

1. Verify that the setup on the production system matches the setup on the test system. In other words, verify that the production system has CA Service Catalog installed on the same number of computers as the test system. Verify that the same products and components are installed on each computer in the production system as its "matching" computer in the test system.

   Thus, each test computer must have a matching production computer, and both of these computers must have the same CA Service Catalog components installed.

   For example, suppose the first test computer has installed CA Service Catalog, the Catalog Content (Best Practices Foundation), and Accounting Component. In that case, the first production computer must also have each of these components installed. Moreover, the production computer must not have any *additional* CA Service Catalog products and components installed.

2. Plan your migration. You migrate from the old system to the new system incrementally in pairs. Each increment consists of a migration process from one test computer to the "matching" production computer.

3. Verify that the business unit ID of the service provider is *the same* in both systems.

   Important! The service provider business unit ID for the new installation *must match* the previous installation.

4. Verify that all computers in both systems are at the same patch level for all important software. Examples include the DBMS, the MDB, any patches for CA Service Catalog products and components, including CA EEM, and so forth.

5. Verify that the CA EEM Application Name for CA Service Catalog is the same on both the test and production systems. By default, this name is *Service Catalog*.

   If necessary, update the Application Name, on either or both systems. For instructions, see your CA EEM documentation.

6. Back up an existing data that you want to keep for use after the migration, and copy the backed up data to a different computer. Any existing data is overwritten during the migration process.

7. Using the Windows Control Panel, stop the CA Service Catalog services on all CA Service Catalog computers: CA Service Catalog, Accounting Component, and CA Service Fulfillment (if used).
8. Back up the MDB of your *production* system, on the computer where the MDB is installed. This requirement applies, regardless of whether the system is installed on one computer or multiple computers.

   For instructions to back up the database, see your DBMS documentation.
9. Back up the MDB database of your *test* system, on the computer where the MDB is installed. This requirement applies, regardless of whether the system is installed on one computer or multiple computers.

You have performed the prerequisite tasks for migrating CA Service Catalog.

How to Migrate

You migrate CA Service Catalog products and components from one system to another for several reasons. Examples include upgrades, test-to-production moves, best practices, governance, security, or resource-related reasons. To migrate from one system to another, for example, from test to production, perform these tasks:

1. Restore the MDB database backup of the test system into your production system. You backed up this system while performing the prerequisite tasks (see page 116).

   During this process, select the option for overwriting the existing MDB database.

   For instructions to restore the database, see your DBMS documentation.
2. Unregister the CA EEM application used by the production system, as follows:
   a. Log in to the Global Application of CA EEM as the EiamAdmin user
   b. Select Configure, Applications, Service Catalog application.

      If your systems use a different name than *Service Catalog* for the CA Service Catalog application name, use that name instead.
   c. Click the UnRegister button.

3. Back up the CA EEM data on the CA Service Catalog computer in your test system, as follows.

   If you have multiple CA Service Catalog computers, perform this step on the *first* (formerly *primary*) CA Service Catalog computer. You run this command once, regardless of how many CA Service Catalog computers your system has.

   a. Open the CA Service Catalog command prompt by clicking Start, Programs, CA, Service Catalog, Service Catalog Command Prompt.

   b. Run the following command at the command prompt:

      ant backup-eem-app

      This action generates a file named eem-backup.xml in the USM_HOME directory.

      USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

4. Copy the following files from the CA Service Catalog computer in the test system to the CA Service Catalog computer in the production system.

   If you have multiple CA Service Catalog computers, perform this step on the *first* (formerly *primary*) CA Service Catalog computer in each system. You copy these files once, regardless of how many CA Service Catalog computers your system has.

   - USM_HOME\seeddata.properties
   - USM_HOME\filestore folder

     This folder may exist on a different computer than the current computer. To verify its location, select Administration, Configuration, Filestore Information. If no filestore location is specified, you do not need to copy this folder now. However, as a best practice, soon after the migration, set up a single location for shared files (see page 239).
   - USM_HOME\eem-backup.xml

5. Run the following commands–in the order shown–on all CA Service Catalog computers in the production system.

   Important! Follow these steps: on each computer, one computer at a time, until you have run them on all CA Service Catalog computers. For example: first, Follow these steps: on computer1; next, Follow these steps: on computer2; third, Follow these steps: computer3; and so on.

   a. Update the password of the database user (see page 244) to help ensure that CA Service Catalog continues to run efficiently throughout your environment.

      Verify that the password you specify adheres to your organizational standards.

b. Update the host name, port, instance, or service name for the database (see page 246), as needed.

   CA Service Catalog components use these settings to communicate with each other and the database.

   Important! The database host name that you specify must be different than the one used in the test system. Updating the other settings is optional.

c. Run the ant restore-eem-app command.

   This command restores the CA EEM database from the test system to the production system, using the eem-backup.xml that you copied earlier.

d. Run the ant update-usm-host command.

   This command enables you to change the host name and port number for a computer running CA Service Catalog, CA Workflow, or both.

   Important! All host names for CA Service Catalog and CA Workflow on the production system must be different from the ones in the test system. Updating the other settings is optional.

   For details about this command, see How to Update the Host Name and Port Number for CA Service Catalog and CA Workflow (see page 250).

6. Start all CA Service Catalog services on all computers in the production system: CA Service Accounting, CA Service Catalog, and CA Service Fulfillment (if used).

7. Log in to CA Service Catalog in the production system and do the following:

   a. Select Administration, Configuration, and update the configuration sections for the following:

      Important! If your post-migration environment does *not* include any option in the list, update the configuration settings accordingly to *remove* the integration! Similarly, if your post-migration environment *does* include any of these options, do the following: Verify that the host names, port numbers, and other configuration data are correct for your post-migration environment. Remember that setting up a filestore location is a best practice, as mentioned earlier.

      - Filestore
      - CA Service Desk Manager integration
      - CA CMDB integration
      - CA Workflow

b. Select Administration, Configuration, Workflow, and click Configure.

The actors are reconfigured to use the new environment.

8. Test by verifying that the same users, services, requests, and so forth that existed in the test system also exist in the production system.

You have migrated CA Service Catalog.

Chapter 6: Using Content Packs

This section contains the following topics:

Content Packs

A content pack is a collection of CA Service Catalog objects, such as services, forms, policies, events, report data objects, and CA Process Automation processes.

Who Creates, Exports, or Imports Content Packs

Both customers and CA Technologies can create content packs, as follows:

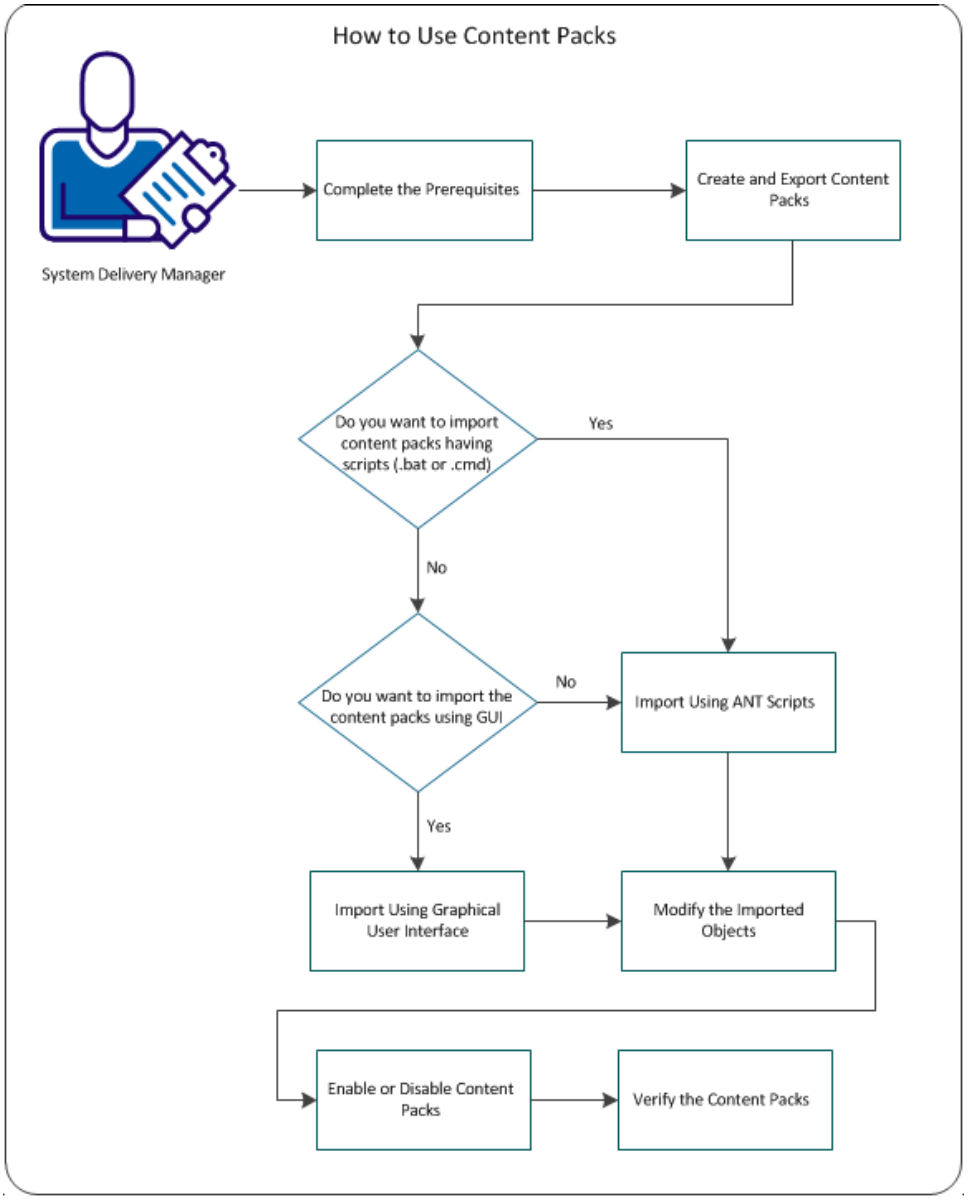
- CA Technologies typically creates content packs that include new objects or updated versions of existing objects, including sample objects and fixes.
- Customers typically create content packs that include objects that are customized to meet specific organizational requirements.
- Customers can optionally copy content packs from CA Technologies and customize the content packs before they apply them across their implementations.
- You can export and import multiple content packs for a single business unit. Similarly, you can export and import multiple content packs for all business units. If a conflict occurs between the existing content pack and the one you are activating, the new content pack automatically overrides the old one.
- As a producer or designer, you create and export content packs to package customized versions of the CA Service Catalog objects efficiently and accurately.
- As a consumer or adopter, you import content packs so that you can use the customized objects without having to perform the same customization processes.

Typically, the customizations in a content pack are focused to configure CA Service Catalog system for the optimal use of a specific feature, service, or environment. Content packs enable you to repeat the customizations efficiently and accurately from one system to another, multiple times.

Using Content Packs

This section describes the procedures involved in using the content packs.

The following diagram illustrates the high-level process to use the content packs:



To manage the content packs, perform the following tasks:

1. Complete the prerequisites (see page 124), and test all content that you want to export, to verify that it works correctly (without errors).
2. Create and export the content pack (see page 124) from an existing computer.
3. Import Content Packs (see page 127)
   - Import using the GUI (see page 129).
   - Import using the ant scripts (see page 128) on a new computer.
4. Modify the Imported Objects (see page 130). If applicable, set the permissions or perform limited editing on the objects.
5. Enable or the Disable Content Packs (see page 132) in a business unit. If necessary, you can disable the content pack.

   Note: If you copy and customize an object from a content pack, the customized object is *not* affected by disabling or enabling the content pack.
6. Verify (see page 134) if the import of the content packs was successful.

Using content packs enables you to do *both* of the following tasks:

- As, a producer or designer of content packs you package a library of objects including your updates and customizations in a single location.
- As, a consumer or adopter of content packs, you import the customized objects programmatically in a single operation, as many times as necessary.

You do not have to repeat individual operations for each object type. Content packs provide an efficient method of packaging and applying such updates and customizations, especially when you move from one implementation to another, for example:

- Test-to-production migrations and other same-release migrations
- Replacement of a decommissioned computer
- Restoration of CA Service Catalog customizations after upgrades

Complete the Prerequisites

Before you import the content packs, complete the following prerequisites:

- If you are using CA Process Automation as your process automation tool, verify that you have performed the following tasks:
  - Installed and configured CA Process Automation.

    Note: For instructions, see the CA Process Automation documentation.
  - Integrated CA Service Catalog with CA Process Automation.

    Note: For instructions, see the *Integration Guide*.
- If you use content packs to import CA Process Automation objects and if *both* CA Process Automation and CA Service Catalog are using secure socket layer (SSL), verify that you have completed all applicable tasks for configuring CA Service Catalog to use SSL (see page 159). As part of that process, you configure CA Process Automation to communicate with CA Service Catalog using SSL (see page 166).

  Note: For instructions, see the *Implementation Guide*.

Create and Export the Content Pack

You create content packs to record (export) customizations so that you can reuse them in another implementation. For example, consider a test-to-production migration: You can reuse customizations by exporting a content pack on the test system and importing it on the production system. Using content packs provides greater efficiency and accuracy than repeating multiple customization processes manually.

Follow these steps:

1. Decide and record the objects that you want to include in the content pack.

   You can include any or all of the following categories:

   - API plug-ins
   - CA Process Automation processes
   - Events, including rules, and actions
   - Form Designer forms
   - Policies
   - Report data objects
   - Services, including service hours and request SLAs

2. For each category that you select, decide and record which objects to include, as follows:

   - All objects in your implementation; that is, all objects in all business units (domains)
   - All objects from one or more specific business units only
   - Only the objects that you specify by object names, for example, in a comma-separated list
   - Only the objects that you specify by object-specific criteria

     For example, for services, you can specify the last modified date.

   Note: Events, rules, actions, and report data objects (including API plug-ins) are *not* specific to any business units. That is, they always apply to *all* business units. The exception is *attached* actions. Attached actions apply *only* to the individual service options that you specify explicitly. Attached actions are service option elements of the service option for which they were created. For details about attached actions (and attached policies), see the *Administration Guide*.

3. On the source computer, select Start, Programs, CA, CA Service Catalog, Service Catalog Command Prompt.

   The CA Service Catalog command prompt opens.

4. Run the following command at this command prompt:

   ```
   ant create-contentpack
   ```

   The Catalog system creates the folder structure for the content pack.

   The Catalog system also prompts you to specify the following information:

   - Simple identification data for the content pack, such as a name, author, and description.
   - The message with which to prompt the user during an import.

5. Answer the prompts. For assistance, see the help text that accompanies the prompts

   Note: We recommend that you name the *folder* to include the name, version, and locale (language) of the content pack.

   The ant command creates the content pack folder named *USM_HOME*\FileStore\contentpacks*folder-name*.

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

   This folder includes the contentpack.properties file. This file stores the identification data for the content pack.

   This folder also contains several subfolders, including the following and others:

   - Forms
   - Policies
   - Reports
   - Services

   If applicable, you populate these subfolders later in this procedure.

6. Answer the prompt about whether to export the objects into this content pack now or later, as follows:

   - If you specify Yes, skip to the next step.
   - If you specify No, run the following command on the source computer:

     ant export-to-contentpack

7. Answer the prompts about which objects must be exported, and their attributes. Use your answers to Steps 1 and 2 for reference.

   The ant command performs the following functions:

   - An XML file for each object is created, using the attributes that you specified
   - In most cases, copies the XML file to the appropriate subfolder

   For example, if you exported services, the ant command performs the following functions:

   - A services.xml file is created using the attributes that you specified
   - Copies the services.xml file to the Services subfolder of the content pack folder

   The ant command copies some (but not all) categories of objects to their subfolders. Therefore, you copy the remaining categories of objects to their folders manually, as explained in the next step.

8. When prompted, copy the objects that you want to include (if any) to the following subfolders of the content pack folder depicted in Step 5:

   Processes

   Stores CA Process Automation processes.

   Images\Offerings

   Stores images for the services that you have included the Services subfolder.

   Images\RatePlans

   Stores images for the service option groups that you have included in the Services subfolder.

   Prescripts

   Stores custom scripts to run *before* you import the content pack. Examples include scripts, required to unzip files that are needed for the import or scripts to display the critical information.

   Postscripts

   Stores custom scripts to run *after* you import the content pack. Examples include scripts that load data into the Catalog system or that prompt the user for configuration specifications.

   Plug-ins

   Stores custom API plug-ins.

You have created and exported the content pack on the source computer. You are now ready to import it on the target computer.

Import Content Packs

You import content packs so that you can reuse customizations that you (or another administrator) previously exported from another implementation.

Note: As a best practice, use scheduled down time. Verify that no users are active on CA Service Catalog before you import, enable, or disable content packs.

You can import the content packs using one of the following methods:

- Import Content Packs from the GUI (see page 129)
- Import Content Packs using the Ant Scripts (see page 128)

Import Content Packs Using the Ant Scripts

This section describes importing the content packs using the ant scripts.

Follow these steps:

1. Copy the content pack folder (*USM_HOME**FileStore**contentpacks**folder-name* folder) from the source computer to a location on the target computer. Record the location for reference.
2. On the target computer, select Start, Programs, CA, CA Service Catalog, Service Catalog Command Prompt.
3. Run the following command at this command prompt:

   ant import-contentpack
4. When prompted, enter the complete path name of the folder that stores the content pack to import.

   The ant command displays the prompt message that you (or another administrator) specified when you created the content pack.
5. When prompted, perform the following steps:
   a. Confirm that you want to continue the import.
   b. Enter the business unit ID for the content pack. You can specify any business unit, including the root business unit.
   c. Answer the object-specific prompts. When applicable, consider carefully whether to import objects as disabled.

      For example, you import a new rule action that affects the emails that the Catalogs system sends. Before you enable the new rule action, you likely want to update the configuration of your mail server.

      Note: If you import objects as disabled, you must manually enable them before you can use them.
6. The ant command guides you through the remaining steps of the import.
7. If the content pack includes events, rules, or actions, restart the Windows service named CA Service Catalog. Restart this service on all Catalog Component computers in your environment.

   Important! If you do not restart the CA Service Catalog service on all Catalog Component computers, unpredictable results can occur.

You have imported the content pack using the ant scripts. All imported objects are either read-only or permit only limited editing.

Import Content Packs from the GUI

This section describes how you can import the content packs from the GUI.

Follow these steps:

1. Click Catalog, Configuration in CA Service Catalog UI.

   The Configuration options is displayed.

2. In the left menu, click Content Packs.

3. Click Import tab.

   The text field Enter Zip File Path of the Content Pack is displayed.

   Specify the folder where the content pack is stored. Select the content pack zip file and click Open.

4. Clear the Continue import with default values check box if you want to import the Content Pack without the default values.

5. Click Start Import.

   If the Content Pack includes any CA Process Automation Objects in it, the following three options appear:

   - Set imported version of CA Process Automation objects as the current version:
     - If the option is selected, the imported version of CA Process Automation objects and the current version is same.
     - If the option is not selected, the imported version of CA Process Automation objects and current version is different.
   - Make imported custom operators or sensors available:
     - If the option is selected the operators or sensors that are imported are in Available status in CA Process Automation.
     - If the option is not selected, the operators or sensors are imported as it is present in the content pack.
   - Enter the name of CA Process Automation configuration and import the process definitions to specific CA Process Automation instance.

6. If the content pack includes events, rules, or actions, the Import rules, actions in a disabled state option appears.
   - If the option is selected, the events, rules, or actions in the content pack are imported in disabled state irrespective of the content pack status.

7. Restart the Windows service named CA Service Catalog on *all* Catalog Component computers in your environment.

   Important! If you do not restart the CA Service Catalog Windows service on *all* CA Service Catalog computers, unpredictable results can occur.

   For example, you import a new rule action that affects the emails that the Catalog system sends. Before you enable the new rule action, you likely want to update the configuration of your mail server.

   Note: Enable the objects manually if you import the objects as disabled.

8. If the content pack includes policies, the Import policies in a disabled state option appear.

   - If the option is selected, the policies in the content pack are imported in disabled state irrespective of the content pack status.

9. Click Continue Import.

   The content pack import is successful.

   Note: The import of the content packs is blocked with the availability of any .bat or .cmd files in the content packs. Ant scripts are used import the content packs containing .bat or .cmd files.

You have imported the content pack in CA Service Catalog UI. All imported objects are either read-only or permit only limited editing.

When the import of the content pack is complete, the images of the services are copied to the *USM_HOME**Filestore**Images* folder. Simultaneously, the Plug-ins are copied to the *USM_HOME**Filestore**Plugins* folder.

Modify the Imported Objects

The actions that you can perform on the objects that are imported from a content pack vary by object. When applicable, you perform certain actions on certain imported objects so that users can view and use the objects. The following table shows which actions apply to which objects.

Object	Enable or Disable	Set Permissions	Limited Editing
Services	Y	Y	Y
Service option groups	Y	Y	Y
Policies	Y	Y	Y
Events	N	Y	N
Rules	Y	Y	N

Actions	Y	Y	N
Forms	N	Y	N
Report data objects	N	Y	N
Images	N	N	N

The actions are as follows:

Enable or disable (see page 132)

You enable objects so that users and the Catalog system can use them. For example, suppose that your content pack includes policies. You enable these policies so that the Catalog system can use them and manages requests. Similarly, your content pack includes services and you enable these services for the users to view and request the services. For any reason, such as a problem occurring, you can disable any objects that you have enabled.

Set permissions

To set permissions for each Catalog role on an imported object, use the portion of the UI that stores and maintains the object. For example, to set permissions for services, select Catalog, Service Offerings, Services, Permission, and edit the service details.

Edit limited attributes

Typically, imported objects are read-only. You can perform only limited editing on certain imported objects, as follows:

- For services and service options, you can change the date available and date unavailable.
- For policies, you can add or subtract approvers, change the priority, and set the status as active or inactive.

Otherwise, to customize an imported object, copy, and modify it. For example, to customize an imported report data object, copy and modify it. Similarly, to customize an imported rule or action, copy and modify it, as you would typically do to customize a predefined rule or action.

Note: For information about copying and modifying specific objects, see the *Administration Guide.*

Enable or the Disable Content Packs

You can enable and disable either an entire content pack or individual objects (if applicable) in the content pack. You enable objects in a content pack so that the Catalog system can use the objects. Enabling the imported objects and setting permissions on them work together to let users view and use the imported objects. After you enable objects in a content pack you can disable them, for example, if a problem occurs.

Note: As a best practice, use scheduled down time, verify that no users are active on CA Service Catalog to import, enable, or disable content packs.

Follow these steps:

1. Log in to the business unit that contains the content pack that you want to enable or disable.
2. Click Catalog, Configuration.

   The Configuration options is displayed.
3. In the left menu, click Content Packs.
4. Click the content pack that you want and enable.

   The content pack details appear, including the overview and the list of objects in each category displayed in the UI.

5. Enable or disable objects in the list, as follows:

   - Activate *all objects* in the content pack by clicking the Enable button for the entire content pack. This button appears on the Content Pack Details bar.

     Important! Use this option with caution. The content pack contains rules, action, or policies that perform redundant or conflicting tasks, causing unpredictable results. Therefore, if you are not certain regarding the purpose or goal of the content pack, then enable each object individually.

   - Conversely, deactivate *all objects* in the content pack by clicking the Disable button for the entire content pack.

   - Enable or disable individual objects within a category by clicking the Enable or Disable button for the object.

     You can enable or disable objects in any or all of the following categories:

     Services

     Enabling a service activates its Date Available setting: The service uses its Date Available setting to determine whether and when it is available to users.

     Service Option Groups

     Enabling a service option group activates its Date Available setting: The service option group uses its Date Available setting to determine whether and when it is available to users.

     Note: Enabling a service or service option group sets its status to System Object--Available (6). Similarly, disabling a service or service option group sets its status to System Object--Unavailable (7).

Policies

You enable a policy to set its status to Active, and disable a policy to set its status to Inactive.

You can make only limited updates to imported polices that you have enabled. To make more updates to such policies, copy and modify them.

Rules

You enable or disable rules individually, without affecting the status of any other rules in the same event.

Note: Enabling or disabling a rule does not automatically enable or disable the actions in the rule. The actions remain in the original status.

Actions

You enable or disable actions individually, without affecting the status of any other actions in the same rule. Similarly, enabling or disabling an action does not affect the status of the rule that contains the action.

Note: Enabling and disabling does not apply to the following objects: Events, forms, reports, images, and CA Process Automation processes. You specified during the import process whether to make CA Process Automation processes active or inactive.

6. Click Done when you are finished.
7. (Optional) Verify that the object is enabled (active) or disabled (inactive) by viewing its status. For example, select Services, *folder-name*, and open a service that you enabled. Verify that its status is System Object--Available. Also verify that its Date Available meets your requirements.

You have enabled or disabled objects in the content pack. All objects that you enabled are available in the Catalog system.

Verify the Content Packs

After you import the content packs in CA Service Catalog, you can verify if the content packs were imported successfully in CA Service Catalog.

Follow these steps:

1. Click Catalog, Configuration.
2. In the left menu, click Content Packs.

3. Click Search tab, and select the content pack that you imported.
4. Verify the following criteria:
   - The Content Pack Details section lists the details that you specified when you created the content pack, for example, the name, version, and status.
   - The Content section lists the object that you specified, according to the criteria that you specified.
5. Verify that the user interface menus include the imported objects.

For example

Select CA Service Catalog, Service Offerings, Offerings, Services, and verify that the list of services includes any services that you imported.

Similarly, select Administration, Events, and verify that the list of events includes any services that you imported.

Chapter 7: Content Configuration Form

This section contains the following topics:

Overview of Content Configuration Form

You can optionally create a content configuration form (see page 138) to specify any custom configuration information required to use your content pack. These forms are typically not required but can be helpful, especially under the following circumstances:

- The imported objects require configuration before you can use them.
- The administrator who imports the content pack did not export it.
- You require custom values for variables in API plug-ins or CA Process Automation processes. Instead of hard-coding specific values, you can retrieve values from fields on content configuration forms (see page 140). Typically, you use this tactic when the values can change and cause the API plug-ins or CA Process Automation processes to fail, leading to system downtime. Examples include a server URL that can change, for example, because of a test-to-production move or a migration from a low-security to high-security environment.

Content configuration forms can be helpful when your imported content requires a custom configuration for one or more of the following:

- CA Process Automation processes and plug-ins that require configuration data
- A plug-in that needs access to an external data source (not the MDB), such as web service or database

  An example is an Active Directory query that supplies CA EEM. The configuration form can list a *server name=field-name* field. The Active Directory query references this field in the form, rather than a hard-coded server name.
- Organization-specific requirements, such as user names and passwords that change both at regular intervals and intermittently as-needed.

Content configuration forms are specific to the business unit for which you create them. Parent business units have access to the forms of their child business units.

Administrators of each business unit can define their own configuration forms in the same way as they can define request forms. Additionally, the Service Builder, Configuration, Content Configuration page includes the Change Business Unit button. This button behaves the same way as on other Service Builder pages: it opens a dialog that lets you select another business unit that you are authorized to access. If you change business units, the list of configuration forms on the left pane of the page updates to display the forms of the current business unit.

Create the Content Configuration Form

To create a content configuration form, follow this process:

Note: For more details about creating forms using the Form Designer, see the *Administration Guide*.

1. Decide the purpose of the configuration form. Examples include specifying custom *parameter=value* expressions for API plug-ins or CA Process Automation processes.

   Note: These custom expressions are *not* the same as the parameters on the Administration Configuration page, the Accounting Configuration page, or the CA Service Catalog Configuration page. Moreover, these expressions are *not* the same as any other parameters on the CA Service Catalog GUI. Custom parameters can *complement* the GUI parameters, but they are not required to do so.

2. Determine the fields required on the form. Create fields that require user input to determine configuration data that the Catalog system saves and uses.

   Examples include the following fields, which supply database parameters:

   - Server name or URL
   - User name
   - Password
   - Port number

   Note: This form applies to your business unit *only*. Therefore, queries to the fields on the form from API plug-ins or CA Process Automation processes must specify the business unit.

3. Create the form in the Form Designer. Follow these guidelines:

   - For the Form attributes, specify a value of configuration for the Form Type attribute.
   - Be careful to create *unique* configuration forms, especially if you use multiple configuration packs. A unique configuration form has unique value for the _id attribute in the Form attributes. Verify that no other configuration form in your business unit has the same value for that attribute.

4. Open the form on the Catalog, Configuration, Content Configuration page and specify the values you want in each field. Follow these guidelines:
   - As a best practice, specify default values that can help run the content pack successfully without the user changing any data. Doing so is helpful if the user creating or exporting the content pack is not familiar with it.
   - Optionally specify _.bu and _.user JSON objects as values. You *cannot* specify any other JSON objects as values.
5. Save the form.

   Note: If you import configuration forms using content packs, the values for the form fields are not available until you save them on this page. This page is the Catalog, Configuration, Content Configuration page that you opened previously.

Retrieve Values from Fields on Content Configuration Forms

At times, you require custom values for variables in API plug-ins or CA Process Automation processes. In such cases, instead of hard-coding specific values, you can save such values on the content configuration form. Typically, you use this tactic when the values can change and cause the API plug-ins or CA Process Automation processes to fail, leading to system downtime. Examples include a server URL that can change, for example, because of a test-to-production move or a migration from a low-security to high-security environment.

Important! The values on a content configuration form can have a maximum length of 4,000 characters for single-byte languages, for example, English. The values can have a maximum length of 2,000 characters for double-byte languages, for example, Chinese or Japanese. For example, a select box with a very large number of options can exceed this limit and cause errors.

Follow these steps:

1. (API plug-in) If you use a custom API plug-in, locate the com.ca.usm.plugins.apis.PluginContext object. In that object, use one of the following methods to retrieve values from fields on a content configuration form:

   Object getCatalogConfigValue(String configGroup, String tenantId, String configName);

   Queries *one* field on the form. This method returns the value of the configuration parameter.

   Specify values for the following parameters:

   configName specifies the value of the _id attribute of the field on the form.

   configGroup specifies the literal value "ca_cc_" followed by the value of the _id attribute of the form. An example is ca_cc_form1.

   tenantId specifies the business unit ID, for example, ca.com.

   Map<String, Object> getCatalogConfigValues(String configGroup, String tenantId);

   Queries *all* fields on the form. This method returns the map of key value pairs, where the keys are the values of the _id attributes of the fields on the form.

   For configGroup and tenantId, the same values apply as for the previous method, Object getCatalogConfigValue.

2. (CA Process Automation) If you use a custom CA Process Automation process, link the process to one of the following methods in the CA Service Catalog web services.

   You link the process and the method so that you can retrieve values from fields on a content configuration form:

   public String getConfigurationValue(String sessionId, String configGroup, String tenantId, String configName)

   public Map<String, Object> getConfigurationValues(String sessionId, String configGroup, String tenantId)

   The parameter explanations are the same as for the methods in the previous step, except session ID.

   session ID uniquely identifies the session. It is a required parameter that the client uses for the remaining web service calls.

   Note: For more information about creating CA Process Automation processes and Start Request Forms, see the CA Process Automation documentation. For more information about web services, see the *Administration Guide* and the Web Services API Documentation.

You have retrieved values from the form fields.

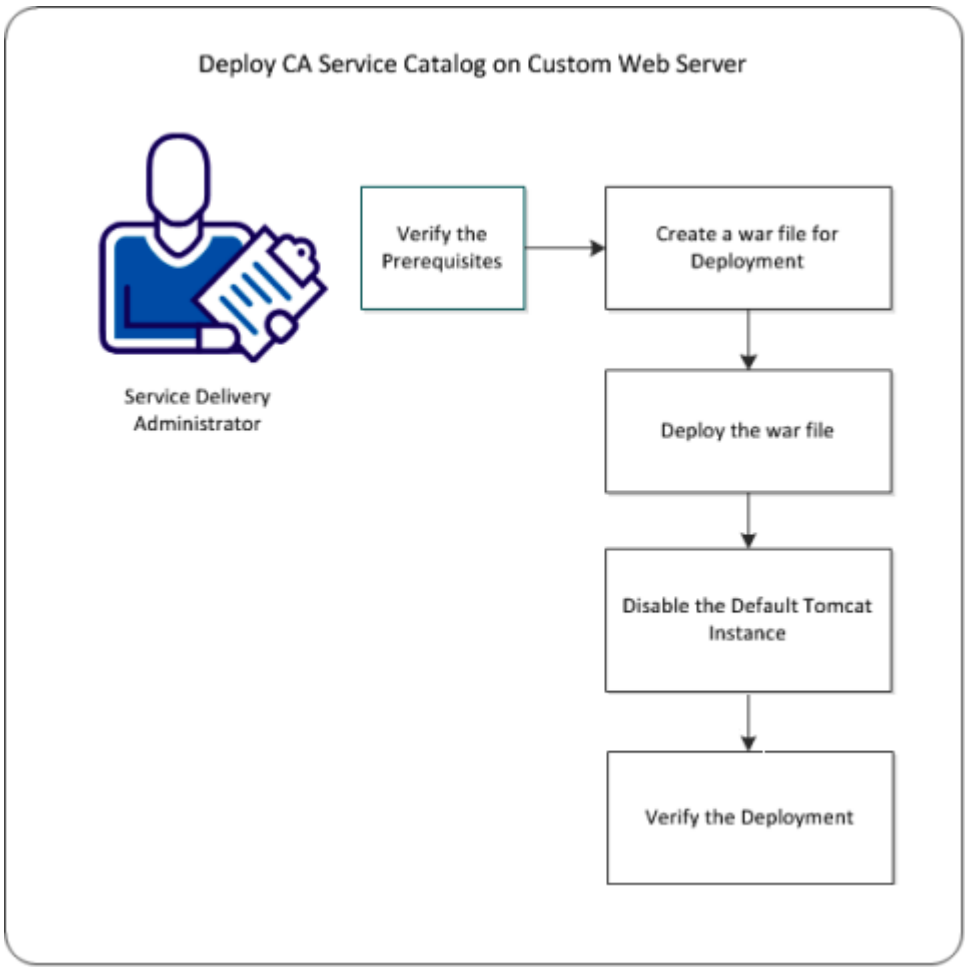
Chapter 8: Configuring

This section contains the following topics:

Deploying CA Service Catalog on a Custom Web Server

Deploying CA Service Catalog on a custom web server lets you use CA Service Catalog with another supported web server instead of the default Tomcat web server. Such a deployment also lets you use the same instance of the web server for multiple applications, including CA Service Catalog. For example, CA Service Catalog and CA RCM are installed on the same computer. You can use the same instance of the JBoss web server for CA Service Catalog and CA RCM. Such sharing helps your environment run more efficiently.

The following illustration explains how to deploy CA Service Catalog on the custom web server.



To deploy CA Service Catalog on the custom web server, follow this process:

1. Verify the prerequisites (see page 145).
2. Review the limitations (see page 146).
3. Create a WAR file for deployment (see page 146).
4. Deploy the WAR file (see page 148).
5. Disable the default Tomcat instance (see page 148).
6. Verify the deployment (see page 149).

Prerequisites

Verify that you have met the following prerequisites, so that you can deploy the WAR file successfully:

- Install or upgrade the following applications on the same computer:
  - CA Service Catalog
  - The applications that you plan to share the same instance of the custom web server as CA Service Catalog, for example, CA RCM
  - The custom web server

    You can use one of the following options as your custom web server:

    - Tomcat 6 or 7
    - JBoss 5.1

    You can use either a new or existing installation of a supported web server, one of the following options:

    - A version that was supplied by installing another application. For example, CA RCM installs JBoss 5.1.

      In this case, this entire scenario applies, including the procedure to deploy the WAR file (see page 148).
    - A stand-alone version that you installed manually. For example, you can download and install a supported web server from the Apache web site, apache.org, or the JBoss web site, jboss.org.

      In this case, this entire scenario applies, *except for* the procedure to deploy the WAR file. Instead, see your web server documentation for instructions to deploy the WAR file.
- Be an experienced administrator for the web server and database that you are using with CA Service Catalog.

Limitations

Verify that you understand the following limitations, so that you can implement a custom web server for CA Service Catalog successfully. At publication time, the following limitations apply:

- You *cannot* use the same custom web server for both CA Service Catalog and CA Process Automation.
- To stop, start, or restart CA Service Catalog, you stop, start, or restart the web server, which restarts *all* products that use the web server. You cannot stop, start, or restart CA Service Catalog by itself. However, you can individually restart other products that use the web server.

  For example, CA Service Catalog and CA RCM use the same web server. You can restart CA RCM alone, but you cannot restart CA Service Catalog alone. To restart CA Service Catalog, you restart the web server, which restarts *both* products.
- JMX Diagnosis is not available for war deployment.

  Note: For further details about this limitation, see the information about JVM Metrics in the *Administration Guide*.

If any updates occur after publication time, they are listed in the Support Matrix. For the latest support information for CA Service Catalog, CA EEM, and related CA products and components, see the Support Matrix for CA Service Catalog on http://ca.com/support.

Create the WAR File

Create the war file from CA Service Catalog to deploy it on a custom web server.

Note: The war file that is generated from a computer must be deployed on the same computer. For example, in a clustered set-up,generate the war file on each node, and deploy the war file on the nodes.

Follow these steps:

1. Click Start, Programs, CA, CA Service Catalog Service Catalog Command Prompt.
2. (Optional) Run the following command at the command prompt if the custom web server is running on a port other than the port used for installation of CA Service Catalog (typically 8080).

   ant update-usm-host

   You are prompted to enter the new port number. Enter the port number of the custom web server.
3. Run the following command at the command prompt:

   ant create-war

4. Select one of the following options from the list:

   Tomcat

   Creates the war file for Tomcat 6 or 7.

   Jboss

   Creates the war file for JBoss 5.1

   Other

   Do not use this option as it is reserved for future use.

   For Tomcat, the usm.war file is generated in the USM_HOME\war folder.

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

   For Jboss, the usm.war folder is created.

5. (Optional) Change the war file name to reflect the name of the catalog, business unit (tenant), or other meaningful entity, as follows:

   a. In Windows, manually rename the usm.war file, for example, to catalog.war or FinanceBU.war.

   b. Update the file name in the synchronization utility properties file: Specify the new name *without the .war extension* in the EIAMUser.Context=*filename* parameter in the syncuputil.properties file. This file resides in the USM_HOME folder.

      For example, if the new file name is FinanceBU.war, then the updated entry is EIAMUser.Context=FinanceBU.

      Note: For details about the synchronization utility and this properties file, see the *Integration Guide*.

   c. Update the file name in the administration configuration settings on the UI: Log in to CA Service Catalog as a Service Delivery administrator (for example, spadmin). Then select Administration, Configuration, Server Information, Context Path, and specify the new file name.

      Note: For details about the administration configuration settings, see the *Implementation Guide*.

The war file is created and available for deployment.

If you are migrating or upgrading CA Service Catalog, follow these steps:

- Apply the patch on the installed CA Service Catalog before generating the war file.
- Deploy the WAR file on the same web server.

Deploy the WAR File

Deploy the war file so that you can use the custom web server for CA Service Catalog with other applications, for example, Roles and Compliance Manager. Using the same web server for CA Service Catalog and other applications helps your system run more efficiently. This procedure uses Roles and Compliance Manager for illustration. Follow this procedure as a model for deploying your WAR file with other applications.

Follow these steps to deploy the WAR file with Roles and Compliance Manager

1. Review the prerequisites (see page 145) to verify that this procedure applies to *your implementation* of a supported custom web server.
2. Copy the usm.war folder to the *RCM_HOME*\Server\eurekify-jboss\server\eurekify\deploy folder.

   RCM_HOME is the Roles and Compliance Manager installation folder; the default is C:\Program Files\CA\RCM.
3. Edit the *RCM_HOME*\Server\eurekify-jboss\bin\run.bat file, as follows:
   a. Locate the *set PATH=* statement.
   b. At the end of this statement, add the path name of the database client, for example:
      - The default path name for SQL 2008 R2 is C:\Program Files\Microsoft SQL Server\100\Tools\Binn.
      - The default path name for Oracle 11g is C:\app\Administrator\product\11.2.0\dbhome_1\BIN.

Troubleshooting

After you deploy the war file with Roles and Compliance Manager, if you are not able to start it, you may receive the following error message:
Provider org.apache.xalan.xsltc.trax.TransformerFactoryImpl not found” in eurekify.log"

Note: The log files reside in this folder: C:\Program Files\CA\RCM\Server\eurekify-jboss\server\eurekify\log\eurekify.log.

If you are not able to start Roles and Compliance Manager, Follow these steps:

1. If the xalan-x.x.x.jar and serilizer.jar files exist in the following folder, delete them.
   RCM_HOME\Server\eurekify-jboss\server\eurekify\deploy\eurekify.war\WEB-INF\lib
2. Copy the xalan-2.7.0.jar and serilizer.jar files from the following folder:
   RCM_HOME\Server\eurekify-jboss\server\eurekify\deploy\usm.war\WEB-INF\lib

   to the following folder:
   RCM_HOME\Server\eurekify-jboss\server\eurekify\deploy\eurekify.war\WEB-INF\lib
3. Restart the JBoss server.

Disable the Default Tomcat Instance

After you deploy the war file on the custom web server, stop the CA Service Catalog Windows service. Stopping the CA Service Catalog service disables the default Tomcat instance. Optionally, you can disable the service to prevent it from starting automatically.

Note: The CA Service Accounting service needs no modifications.

Verify the Deployment

After you deploy the custom web server, you can verify whether the deployment is successful.

Follow these steps:

1. Access the following catalog URL: http://*computer_name:port/context*

   Computer name

   Defines the name of the computer on which CA Service Catalog is installed.

   Port

   Defines the port number on which the web server is configured to run.

   Context

   Defines the name of the war file that is created during deployment. The default is usm.war.

   If you renamed the war file when you created it (see page 146), use the new name here.

2. Verify that you can access CA Service Catalog, for example, by creating, submitting, and acting on requests.

   You have verified the deployment.

Integrations

Some of the most important post-installation tasks focus on configuring the integrations (see page 25) between CA Service Catalog and other products, as follows:

- Importing, managing, and synchronizing the CA Service Catalog user database, using either the embedded solution CA EEM or an external directory, such as Microsoft Active Directory. This integration is required.

  Important! If you use an external directory, configure CA EEM and CA Service Catalog to work with it.

- Authenticating users who log in to CA Service Catalog, using either CA EEM or CA SiteMinder.
- Integrating with CA Business Service Insight.
- Integrating with Reservation Manager.
- Integrating with CA Service Desk Manager, which includes CA CMDB.
- Setting up automated workflows to manage the requests for services that users make through CA Service Catalog, using either CA Process Automation (the preferred solution) or CA Workflow.
- Integrating with the asset management solution, CA APM. This integration is especially helpful when your organization tracks physical assets included in CA Service Catalog requests.
- Integrating with CA SRM.
- Integrating with CA MICS or CA JARS.

Note: For details to perform each of these tasks, see the *Integration Guide*.

Service Delivery Administrator

Typically, the CA Service Catalog installation creates a user named *spadmin* and assigns it the Service Delivery administrator role. This user has complete control of the Catalog system. By default, the user name and the password are the same.

However, if *all* of the following conditions exist, then the installation *cannot* create this user.

- You have installed CA Service Catalog for the first time (*not* upgraded).
- CA EEM is already installed.
- CA EEM is already configured to use an external store, such as Microsoft Active Directory.

In this case, assign the Service Delivery Administrator role to another user (see page 62). Doing so enables this user to log in to CA Service Catalog using the Service Delivery Administrator role and to perform functions that require this role.

As a best practice and for increased security, we recommend that you log in to CA Service Catalog as the spadmin user and change its password (see page 63).

Note: For information about CA Service Catalog roles, including the Service Delivery Administrator, see the *Administration Guide*.

Assign the Service Delivery Administrator Role to a User

Create the administrative user named *spadmin* with the Service Delivery Administrator (see page 62) role if conditions prevent the installation from creating this user. In such cases, assign the Service Delivery Administrator role to another user, as explained in this topic. Moreover, you can also assign the Service Delivery Administrator role to additional users. Doing so is optional but is beneficial if redundancy is important in your organization.

Follow these steps:

1. Open the CA Service Catalog command prompt by clicking Start, Programs, CA, Service Catalog, Service Catalog Command Prompt.
2. Enter the following command at the CA Service Catalog command prompt:

   ```
   ant add-spadmin-user
   ```

   Note: For a list of ant commands and their descriptions, enter ant -p.

3. Follow the prompts to add the spadmin administrator role to a specific user, using the following information:
   - If CA EEM *is* configured to use an external directory (such as Microsoft Active directory), specify an existing user name.
   - The command utility creates the user in the CA Service Catalog user database, if both of the following conditions exist:
     - CA EEM is *not* configured to use an external directory.
     - The user name that you specify is new.
   - The utility does *not* prompt you for the password of the new or updated user.
   - If CA EEM *is* configured to use an external directory, the password is defined and stored in the external directory.
   - The new password is the same as the user name, if both of the following conditions exist:
     - CA EEM is *not* configured to use an external directory.
     - The user name that you specify is new.
4. Cancel and rerun the ant add-spadmin-user command to correct any errors, if necessary.
5. Verify that the new or updated user can perform the following tasks:
   - Log in to CA Service Catalog
   - Update the password (if applicable)
   - Perform functions that require the Service Delivery Administrator role
6. Instruct the new user to change the password.

   This action is a best practice and helps maintain security.

You have assigned the Service Delivery Administrator role to a user.

Change Your Password

You can change your password quickly and easily. You can change it at regular intervals to comply with the policies of your organization. In addition, you can also change it at any time, for various security-related reasons. Changing the password is especially recommended for the user named spadmin (see page 62) (the Service Delivery administrator).

Follow these steps:

1. Log in to CA Service Catalog with your current user name and password.
2. Click Profile.

   Your user profile appears.
3. Click the Change Password button at the top right of the page.

   The Change User Password dialog appears.
4. Enter your old and new passwords in the fields provided.
5. Click OK.

You have changed your password.

Verify that Browser Security Settings Permit Login

This topic applies *only* if you are using Internet Explorer to access CA Service Catalog. Your browser security settings can prevent you from seeing the user name and password prompts when you attempt to log in to CA Service Catalog. Therefore, verify your browser security settings to help ensure that you can access CA Service Catalog.

Verify that security settings permit login

1. Open Internet Explorer on the computer you want to use for accessing CA Service Catalog.
2. Enter the URL to start CA Service Catalog in the browser address field, in the format http://*computer-name:port number*/usm/.

   computer-name

   Specifies the name of the computer that you want to log in to.

   port number

   Specifies the CA Service Catalog port number of that computer.

3. Verify that you see the CA Service Catalog login page, including the user name and password prompts.

   If Yes, this verification procedure is complete, and you can skip the remaining steps.

   If No, complete the remaining steps.

4. In Internet Explorer, open Internet Options, click Security, and do *one* of the following:

   - Change the security level for the Local Intranet to Medium-High or Medium
   - Add the login URL for CA Service Catalog to your Trusted sites

5. Close and reopen your browser.

6. Enter the URL to start CA Service Catalog in the browser address field. Verify that you see the CA Service Catalog login page with the user name and password prompts.

You have verified your browser security settings to help ensure that you can access CA Service Catalog.

How to Enhance Security

To enhance security in your CA Service Catalog implementation, *consider* making the following configuration changes:

- Disable the Apache JServ Protocol (AJP) port, port 8009 while performing the initial setup, if you are *not* implementing clustering (see page 267).

  To do so, edit the USM_HOME\view\conf\server.xml file and verify that the AJP tags are commented out.

- Reduce the timeout of CA Service Catalog user sessions. By default, sessions time out after 60 minutes of inactivity.

  To do so, log in to CA Service Catalog, click Administration, Configuration, User Default (see page 184). Adjust the Session Timeout parameter at your discretion.

- Configure the CA EEM password policies to be more secure, if CA EEM is *not* configured to use an external directory.

  Specifically, consider locking user accounts after three to five failed login attempts. To set this value, log in to CA EEM and click Configure, EEM Server, Password Policies.

- Update the list of roles that can run web services. By default, only the Certificate user and users with the service provider (SP) administrator role can run web services.

  To change this list, log in to CA EEM with the Application set to Service Catalog. Click Manage Access Policies, Policies, Acess Policies, USM_Resource. Edit the policy whose permissions you want to update, and add the resource named usm_webservice__all to that policy.

  Note: For details about editing these policies, see your CA EEM documentation.

- Enable Secure Socket Layer (SSL) for web services so that passwords are not sent in plain text when you use the logIn(String,String,String) method. If SSL is not available, consider using the logInToken(String) method instead. This method takes an CA EEM artifact as a parameter and is encrypted.

- Install antivirus software on the filestore computer, if you are using a filestore (see page 239) (a single location for shared files). We strongly suggest that you use a filestore.

- Harden CA Service Catalog computers.

  Hardening is the process of securing a computer by removing or disabling components or access points, to render the computer less vulnerable to outside attacks. Hardening may include disabling all ports on a computer initially and afterwards manually enabling individual ports as needed. Other basic hardening steps include the following: Limit the number of users permitted access to a computer, strengthen password and access control, install intrusion-detection software, and close ports.

  If you have hardened CA Service Catalog computers, verify that the required ports are open (see page 155) on these computers.

Other security-related instructions that apply to specific tasks or integrations are mentioned where applicable in the CA Service Catalog documentation.

Required Open Ports

CA Service Catalog requires the following ports for communication with products and components. If you have disabled these ports, for hardening purposes or for any other reasons, enable them.

Note: For instructions to enable ports, see your Windows documentation.

Product or Component	Default Port
CA Service Catalog (includes access for CA Service Catalog and Accounting Component)	8080

CA Process Automation, CA Service Desk Manager, BusinessObjects Enterprise, other CA products that integrate with CA Service Catalog	8080
Visualizer port for CA Service Desk Manager	9080
CA Workflow	8090
SQL Server server	1433
Oracle server	1521
CA EEM	5250
IMQ port of CA EEM	7676

If you are using nondefault ports, verify that they are open.

You do not need to open the shutdown ports for the products and components listed.

If you plan to implement clustering (see page 267) for CA Service Catalog, CA Workflow, or both, open all Apache JServ Protocol (AJP) and load balancing ports.

If you have implemented HTTPS, open all ports that are required for HTTPS to function properly.

How to Enable External Authentication of Users

By default, CA Service Catalog uses CA EEM to authenticate users. However, you can optionally configure CA Service Catalog to authenticate users with external applications such as CA SiteMinder, IBM Tivoli, and others. The process consists of the following tasks:

1. Install and implement the external authentication application, according to its documentation.

   Note: If you are using CA SiteMinder as your external authentication application, see the *Integration Guide* for instructions to integrate CA Service Catalog and CA SiteMinder.

2. Do one of the following:

   - Configure NTLM authentication on Windows (see page 157), if applicable.
   - Configure the single sign-on type setting (see page 158) to match the external authentication application.

3. For reference, review the following examples to see how these applications typically send user authentication to CA Service Catalog. If applicable, adjust your settings to match these examples.
   - CA SiteMinder sends user identity information (authenticated user) with sm-user artifact name in the request header
   - IBM Tivoli sends user identity information with iv_user artifact name in the request header
   - Microsoft Internet Information Server (IIS) sends user identity information with request when configured for Windows NTLM
   - Apache sends user identity information with request when configured for Windows NTLM
   - For other external authentication applications, see their documentation
4. Test the configuration on both CA Service Catalog and the external authentication application.
5. Verify that CA Service Catalog successfully receives and processes the authenticated users that the external authentication application passes. If necessary, adjust the parameters on both systems as needed.

Configure NTLM Authentication on Windows

By configuring NTLM Authentication on Windows, you can enable single sign-on (also named single sign-in or single signin) for CA Service Catalog. Doing so means that once users log in to your domain, they can access CA Service Catalog without logging in to it. If you do not enable single sign-on, the login page is the first CA Service Catalog screen that users see. This topic explains how to modify the CA Service Catalog configuration to skip the login page.

If you are planning to use Catalog Component clustering (see page 267) with NTLM authentication, skip this procedure. Instead, you set up NTLM authentication for each cluster.

Follow these steps:

1. Verify that your environment meets the following requirements:
   - You are using Windows domain authentication.
   - You have configured CA EEM to use Active Directory.

     Note: For more instructions to configure and use CA EEM, see the *Integration Guide*.
   - The CA EEM server has joined the Windows domain that you are configuring for single sign-on.
   - You are running a version of HTTP *higher* than 1.0. Windows NTLM authentication is supported with versions of HTTP higher than 1.0.

- If both of the following conditions exist, you cannot use single sign-on using NTLM with HTTPS:
  - The client computer operating system is Windows Server.
  - The Internet Explorer Enhanced Security Configuration Windows Component is installed.

  If you are using Windows Server, do one of the following to use single sign-on using NTLM:
  - Use HTTP instead of HTTPS.
  - Uninstall the Internet Explorer Enhanced Security Configuration Windows Component.

2. Click Administration, Configuration, Single Sign On Authentication.

   The Single Sign On Authentication page appears.

3. Locate the property named Single Sign On Type and click its Modify icon (by default, a pencil).

   The Edit Configuration dialog for this property appears.

4. Select the option named NTLM (NT LAN Manager) and click Update Configuration.

   The dialog closes, and you return to the Sign On Authentication page.

You have configured NTLM Authentication on Windows.

Configure Single Sign-on Type Setting for External Authentication

Configuring the external authentication parameters is a required task to enable external authentication of users (see page 156) through an external application such as CA SiteMinder or IBM Tivoli. This topic applies if you use external authentication. In that case, verify that the Single Sign-on Type setting for external authentication is correct for your implementation.

Follow these steps:

1. Click Administration, Configuration, Single Sign On Authentication.

   The Single Sign On Authentication page appears.

2. Locate the property named Single Sign On Type and click the Modify icon (a pencil icon by default).

   The Edit Configuration dialog for this property appears.

3. Select the option named Artifact Based Single Sign-on and click Update Configuration.

   The dialog closes, and you return to the Sign On Authentication page.

You have configured the Single Sign-on Type setting for external authentication.

How to Configure CA Service Catalog to Use Secure Socket Layer

You can optionally configure CA Service Catalog to use Secure Socket Layer (SSL). To do so, perform the following tasks. When you configure a product to use SSL, you change its communication method from HTTP to HTTPS.

Follow these steps:

1. Verify that you have a valid keystore containing a trusted certificate. If you have one for another product, you can reuse it for CA Service Catalog.
2. (Optional) Create a keystore file (see page 160). This procedure includes generating a certificate and a keystore for testing purposes, using the Java keytool command.
3. Use a single keystore for all integrated products, if possible. This approach is recommended.

   However, if you have multiple keystores for different products and cannot use a single keystore for all of them, you can optionally merge keystore files (see page 161). This procedure includes merging the contents of the individual keystore files, resulting in one keystore containing all certificates.
4. Configure CA Service Catalog to Use Secure Socket Layer (see page 162).
5. If you are integrating CA Service Catalog with CA Process Automation, do the following:
   a. Configure CA Process Automation to use Secure Socket Layer

      Note: For instructions, see your CA Process Automation documentation.

   b. Configure CA Process Automation to communicate with CA Service Catalog using Secure Socket Layer (see page 166)
6. If you are integrating CA Service Catalog with CA Workflow, do the following:
   a. Configure CA Workflow to use Secure Socket Layer (see page 163)
   b. Configure CA Workflow to communicate with CA Service Catalog using Secure Socket Layer (SSL) (see page 165)

7. If you are integrating CA Service Catalog with BusinessObjects Enterprise, do the following:
   a. Configure BusinessObjects Enterprise to use Secure Socket Layer

      Note: CA Business Intelligence packages and delivers BusinessObjects Enterprise. Therefore, you use CA Business Intelligence to configure BusinessObjects Enterprise to use SSL; for instructions, see your CA Business Intelligence documentation.

   b. Configure BusinessObjects Enterprise to communicate with CA Service Catalog using Secure Socket Layer (see page 167)
8. Add self-signed certificates to the keystore (see page 168), if applicable.

Create a Keystore File

A keystore file is required to enable SSL. Create a keystore file to enable SSL for CA Service Catalog if you do not have one already for another CA product that integrates with CA Service Catalog. You can use a keystore file for a single product or for multiple products. If you must create individual keystores for each product, you can optionally merge your keystore files (see page 161).

Follow these steps:

1. Open a command window on the Catalog Component server.
2. Enter the following command to create a keystore file for CA Service Catalog:

   keytool -genkey -alias *alias_name* -keyalg RSA -keystore "USM_HOME\.keystore" –keysize 1024

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

   alias_name

   Specifies the name of your keystore file for CA Service Catalog and possibly for other products.
3. Record this alias name for future reference.
4. Enter the password you want at the “Enter keystore password” prompt.

   To make configuring Tomcat easier, you can use “changeit” as the password.
5. Record your password for future reference.
6. Enter your password at the prompt.

You have created the keystore file.

Merge Keystore Files

A keystore file is required to enable SSL. We recommend this approach, if possible: If you are using SSL for two or more products and have two or more keystore files, use a single keystore for all integrated products. However, if you have multiple keystores for different products and cannot use a single keystore for all of them, you can optionally do the following: Merge the contents of the individual keystore files, resulting in one keystore containing all certificates.

Follow these steps:

1. Copy all keystore files to the USM_HOME folder. These files include, for example, any keystore files for CA Process Automation, CA Workflow, CA CMDB, CA Service Desk Manager, or other products that integrate with CA Service Catalog.
2. Find and record all required keystore files, keystore aliases, and keystore passwords for the products of interest.

   For example, for CA Process Automation, at publication time, you can retrieve the c2okeystore password from KEYSTOREID property of the OasisConfig.properties file. A sample value follows:

   KEYSTOREID=475ba811-62cd-4ec8-b757-cd7710de3fa8

   Note: For further details, see the documentation for those products.
3. Restart Catalog Component.
4. Enter the keytool command to merge the keystore of the first product, using the following command as a model:

   keytool -importkeystore -srckeystore "*.product1_keystore*" -destkeystore "USM_HOME\.keystore" -srcalias *product1_alias* -destalias *alias_name* -srckeypass "*product1_password*" -destkeypass "changeit"

   .product1_keystore"

   Specifies the name of keystore file (including the complete path name) for the product you are merging.

   product1_alias

   Specifies the keystore alias for the product you are merging.

   product1_password

   Specifies the keystore password for the product you are merging.

   alias_name

   Specifies the *alias_name* that you specified when you created a keystore file (see page 160) for CA Service Catalog.

For example, the following command merges the contents of the CA Process Automation keystore (.c20_keystore) into the CA Service Catalog keystore:

```
keytool -importkeystore -srckeystore "%ITPAM_HOME%\server\c2o\.config\c2okeystore" -destkeystore
"USM_HOME\.keystore" -srcalias c2o-j -destalias tomcat -srckeypass
"475ba811-62cd-4ec8-b757-cd7710de3fa8" -destkeypass "changeit"
```

Another example follows. The following command merges the contents of the CA CMDB keystore (.cmdb_keystore) into the CA Service Catalog keystore:

```
keytool -importkeystore -srckeystore ".cmbd_keystore" -destkeystore
"USM_HOME\.keystore" -srcalias cmdb -destalias tomcat
-srckeypass "changeit" -destkeypass "changeit"
```

5. Respond No when you are prompted to overwrite the source alias.
6. Repeat the previous two steps for each product whose keystores you are merging.
7. Verify if all the certificates that you want are in one keystore, using the following command:

   ```
   keytool -list -keystore "USM_HOME\.keystore"
   ```

   This command lists the contents of the merged keystore.

You have merged keystore files.

Configure CA Service Catalog to Use Secure Socket Layer

Configure CA Service Catalog to use Secure Socket Layer (SSL).

Follow these steps:

1. Edit the server.xml file to support SSL (see page 164).

   The file is updated to help support SSL for CA Service Catalog.

2. Open the USM_HOME\view\conf\viewService.conf file, using a text editor such as Notepad, and do the following:

   a. Update the following line with the path name and file name of the keystore file:

      ```
      wrapper.java.additional.number=-Djavax.net.ssl.trustStore="USM_HOME/.keystore"
      ```

   b. Update the following line with the password of the keystore file:

      ```
      wrapper.java.additional.number=-Djavax.net.ssl.trustPass=changeit
      ```

   c. Save and close the viewService.conf file.

3. On the CA Service Catalog GUI, select Administration, Configuration, Server Information.

   The cursor moves to the Server Information section.

4. Complete the fields in this section as follows:

   For Host Name, specify the name of the host where CA Service Catalog is installed.

   For Port Number, specify the port where HTTPS is configured.

   For Enable HTTPS, specify Yes.

5. Move to the CA Workflow configuration section and click Configure.

   The USM Workflow actors are updated to use HTTPS communication.

6. Restart CA Service Catalog.

7. Log in to CA Service Catalog using the URL https://hostname:port/usm/wpf rather than URL http://hostname:port/usm/wpf.

   You see a trusted certificate prompt, which indicates that you are using HTTPS.

8. Optionally, disable HTTP access by commenting the section for the HTTP connector. To do so, add the "<!--" and "-->" comment markers to the first and last lines, as shown in the following example:

```
<!--
<Connector port="8080" enableLookups="true" redirectPort="8443"
    acceptCount="100"  maxThreads="150" minSpareThreads="25" maxSpareThreads="75" debug="0"
connectionTimeout="20000" disableUploadTimeout="true"
    useBodyEncodingForURI="false" URIEncoding="UTF-8" />
-->
```

You have configured CA Service Catalog to use SSL.

Configure CA Workflow to Use Secure Socket Layer

As part of configuring CA Service Catalog to use Secure Socket Layer (SSL), you typically configure CA Workflow to use SSL.

Follow these steps:

1. Edit the server.xml file (see page 164).

   The file is updated to help support SSL for CA Workflow.

2. Edit the USM_HOME\fulfillment\conf\FulfillmentService.conf file, using a text editor such as Notepad. Do the following:

   a. Update the following line with the path name and file name of the keystore file:

      wrapper.java.additional.*number*=-Djavax.net.ssl.trustStore="USM_HOME/.keystore"

   b. Update the following line with the password of the keystore file:

      wrapper.java.additional.*number*=-Djavax.net.ssl.trustPass=changeit

   c. Save and close the FulfillmentService.conf file.

3. Restart these Windows services: CA Service Fulfillment and CA Service Catalog.
4. Start the CA Workflow IDE from the CA Service Catalog CA Workflow link.

   You see a trusted certificate prompt, which indicates you are using HTTPS.

You have configured CA Workflow to use SSL.

Edit the Server.xml File to Support SSL

As part of configuring CA Service Catalog (see page 162) or configuring CA Workflow (see page 163) to use Secure Socket Layer (SSL), edit the server.xml file to support SSL.

Follow these steps:

1. Open the server.xml file using a text editor such as Notepad, as follows:
   - For CA Service Catalog, open the USM_HOME\view\conf\server.xml file.
   - For CA Workflow, open the USM_HOME\fulfillment\conf\server.xml file.
2. Search for the following section and enable the commented section by removing "<!--" and "-->" from the first and last lines, as shown in the following example:

```
<!–
  <Connector port="8443" enableLookups="false" tomcatAuthentication="false"
maxHttpHeaderSize="8192"
    maxThreads="400" minSpareThreads="25" maxSpareThreads="100" debug="0"
connectionTimeout="15000"
    disableUploadTimeout="true" compression="on" compressionMinSize="2048"

compressableMimeType="text/html,text/plain,text/xml,text/css,text/javascript,image/png,image/gif,image/jpeg,application/json"
    scheme="https" secure="true" clientAuth="false" sslProtocol="TLS" SSLEnabled="true"
    keystoreFile="__USMHOME__\.keystore" keyAlias="alias_name" keystorePass="changeit"/>
  -->
```

3. Update the default port (8444) to another secure socket layer port, if necessary.

   Note: If you update the port number in this step, also update the port number on the GUI by clicking Administration, Configuration, Options, CA Workflow, Port Number.

4. Verify whether either or both of the following conditions exist:
   - You are using an existing keystore.
   - You have changed either the CA Service Catalog installation path or generated keystore name.

5. Do the following in the lines of the file shown earlier, if either or both of the conditions in the previous step exist:
   - Update the keystoreFile parameter with the correct path and file name, typically USM_HOME\.keystore.
   - Update the keyAlias parameter with the *alias_name* that you specified when you created a keystore file (see page 160) for CA Service Catalog.
6. Save and close the server.xml file.

You have edited the server.xml file. You can continue configuring CA Service Catalog (see page 162) or configuring CA Workflow (see page 163) to use Secure Socket Layer (SSL).

Configure CA Workflow to Communicate with CA Service Catalog Using Secure Socket Layer

As part of configuring CA Service Catalog to use Secure Socket Layer (SSL), you configure CA Workflow to communicate with CA Service Catalog using SSL.

Follow these steps:

1. On the CA Service Catalog GUI, select Administration, Configuration, CA Workflow.

   The cursor moves to the CA Workflow section.
2. Complete the fields in that section as follows:

   For Host Name, specify the name of the host where CA Workflow is installed.

   For Port Number, specify the CA Workflow port where HTTPS is configured.

   For Enable HTTPS, specify Yes.
3. Recycle Catalog Component.
4. Click Test.

   The connection is tested, using the new values you specified.

   If the connection fails, try using a different value.
5. Click Configure.

   The CA Workflow actors are updated with the new values that you specified.
6. Recycle Service Fulfillment.

You have configured CA Workflow to communicate with CA Service Catalog using SSL.

Configure CA Process Automation to Communicate with CA Service Catalog Using Secure Socket Layer

As part of configuring CA Service Catalog to use Secure Socket Layer (SSL), you configure CA Process Automation to communicate with CA Service Catalog using SSL.

Follow these steps:

1. On the CA Service Catalog GUI, select Administration, Configuration, CA Process Automation.
2. Complete the fields in this section as follows:

   For Host Name, specify the name of the host where CA Process Automation is installed.

   For Port Number, specify the CA Process Automation port where HTTPS is configured.

   For Enable HTTPS, specify Yes.
3. Recycle Catalog Component.
4. Click Test.

   The connection is tested, using the new values you specified.

   If the connection fails, try using a different value.
5. Click Configure.

   The CA Process Automation configuration details are updated with the new values that you specified.
6. Perform this step if you are using content packs or plan to use them. Otherwise, you can skip this step.

   Edit the USM_HOME\build.xml file, and verify that the following parameters are correct. Update them, if applicable.

   - The file name and path name of the keystore

     For example, if the keystore is located in USM_HOME and the keystore file name is .mykeystore, update this line as follows:

     ```
     <sysproperty key="javax.net.ssl.trustStore" value="${env.USM_HOME}/.mykeystore" />
     ```

- The keystore password

  For example, if the keystore password is mykeystorepw, update this line as follows:

  <sysproperty key="javax.net.ssl.trustPass" value="mykeystorepw" />

You have configured CA Process Automation to communicate with CA Service Catalog using SSL.

Configure BusinessObjects Enterprise to Communicate with CA Service Catalog Using Secure Socket Layer

As part of configuring CA Service Catalog to use Secure Socket Layer (SSL), you configure BusinessObjects Enterprise to communicate with CA Service Catalog using SSL.

Follow these steps:

1. On the CA Service Catalog GUI, select Administration, Configuration, CA Business Intelligence.

   The cursor moves to the CA Business Intelligence section.

   Note: CA Business Intelligence packages and delivers BusinessObjects Enterprise; therefore, you use these CA Business Intelligence parameters to configure the integration of CA Service Catalog with BusinessObjects Enterprise. For details about these parameters and about the relationship between CA Business Intelligence and BusinessObjects Enterprise, see the *Integration Guide*.

2. Complete the fields in this section as follows:

   For Host Name, specify the computer name on which the InfoView component of BusinessObjects Enterprise is hosted.

   For Port Number, specify the port number on which InfoView is running.

   For Enable HTTPS, specify Yes.

3. Recycle Catalog Component.
4. Click Launch.
5. The connection is tested, using the new values you specified. If the connection fails, try using a different value.

   The BusinessObjects Enterprise configuration details are updated with the new values that you specified.

Add Self-Signed Certificates to the Keystore

When you use self-signed certificates for any computer that connects directly to CA Service Catalog or that CA Service Catalog connects to, add these certificates to the keystore. For example, suppose you are using clustering (see page 267) with load balancing (see page 280) for CA Service Catalog. In that case, if you are using a self-signed certificate for the load balancing computer, add them the keystore.

Note: If you are using trusted certificates, for these computers you do not need to add them the keystore.

Follow these steps:

1. Verify the computer to be trusted, that is, the computer that has direct connection with CA Service Catalog.

   For example, suppose you integrate CA Service Catalog with CA Service Desk Manager through a load balancing computer. In that case, CA Service Catalog connects directly to the load balancer (not CA Service Desk Manager). Therefore, the computer to be trusted is the load balancer (not the CA Service Desk Manager computer).

2. Go to a Catalog Component computer and download the DER encoded binary X.509 file (the certificate) for the computer to be trusted.

   For example, use your web browser to visit the computer and obtain the certificate.

   Note: For assistance to use your web browser for this purpose, see its documentation.

3. Open the CA Service Catalog command prompt and enter the following command:

   keytool -importcert -alias aliasname -file pathname-to-certificate -keystore USM_HOME\.keystore

   pathname-to-certificate-file

   Specifies the complete path name to the certificate file that you downloaded in the previous step.

   You are prompted to enter a password.

4. Do one of the following:

   - Enter changeit as the keystore password.
   - Enter a different keystore password.

   The password you enter is saved.

5. Complete this step if you entered a different password than changeit in the previous step. Otherwise, skip this step.

   a. Open the viewService.conf file for editing.

   b. Find the line that contains the following phrase:

      -Djavax.net.ssl.trustPass=keystore-password

   c. Update the keystore-password to match the new password that you specified in the previous step.

   The viewService.conf file is updated with the new password.

6. Remain at this Catalog Component computer. Repeat the previous steps for every computer to be trusted that has self-signed certificates.

   As you repeat these steps, the keystore file is updated with the new self-signed certificates from each applicable computer to be trusted.

7. Do the following on of every other Catalog Component computer:

   a. Update the viewService.conf file to use a password other than *changeit*, if applicable, as explained in Step 5.

   b. Copy the updated .keystore file from this Catalog Component computer to all the remaining Catalog Component computers.

You have you added self-signed certificates to the keystore.

How to Verify Configuration Settings

After the CA Service Catalog installation is complete, verify the configuration settings. Doing so helps ensure that the product functions according to the needs of your organization.

Verify the settings by group, as follows:

- Administration configuration (see page 171)

  These include integration-specific options (see page 173)

- Accounting configuration (see page 189)
- Set CA Service Catalog Configuration Options (see page 220)
- Web services configuration (see page 238)
- Location of shared files (filestore) (see page 239)

Inheritance of Configuration Settings Through the Business Unit Hierarchy

The following rules govern the relationship between parent and child business units (children), including the inheritance of configuration settings:

- The child business units directly under the top-level business unit (the service provider) are named super business units. Super business units *always* inherit their configuration settings from the service provider business unit.
- A super business unit can have children if its configuration parameter named Contains Sub Units is enabled. Conversely, if this setting is disabled, the business unit cannot have children.

  Note: After you have created the business unit, you *cannot* change its Contains Sub Units setting.
- Similarly, if the Contains Sub Units parameter of the super business unit is enabled, you *can* edit the configuration settings of the super business unit. Conversely, if this parameter is disabled, you *cannot* edit its configuration settings.
- If you edit the configuration settings of a super business unit, your changes do *not* apply to the super business unit itself. Instead, your changes apply to its children. A child "inherits" its configuration settings from its parent.
- You can optionally create unlimited levels of children, grandchildren, and so forth under super business units. For each business unit under the super business unit, the same parent-child relationship illustrated earlier applies, as follows:
  - If the Contains Sub Units setting of the business unit is enabled, you can edit its configuration settings. Your configuration changes do *not* apply to the business unit itself but instead apply to its children.
  - Conversely, if the Contains Sub Units setting of the business unit is disabled, you cannot edit its configuration settings.

Thus, the following summary applies to all business units except for the service provider:

- A business unit always inherits its configuration settings from its parent.
- You can edit the configuration settings of a business unit *only* if its Contains Sub Units setting is enabled. Your changes apply *only* to its children.

Note: For more information about business units, see the *Administration Guide*.

Administration Configuration Options

You can view and set administration configuration options that apply to all installed CA Service Catalog components.

To update administration configuration options, log in with the Service Delivery Administrator role. Updates to these options apply to the *entire* system. You *cannot* specify different administration configuration options for different business units.

Using the administration configuration options, you can do the following:

- Set the values of the options (see page 171)
- Manage fiscal periods (see page 187)
- View product licenses

Important! With one exception, CA Service Catalog sends emails in HTML format *only*. Therefore, to receive legible emails from CA Service Catalog, recipients must configure their email software, such as Microsoft Outlook, to accept emails in HTML format. Otherwise, emails from CA Service Catalog display indecipherable messages ("junk" characters) when opened. To help ensure that their end users can receive intelligible emails from CA Service Catalog, administrators *must* inform their end users of this requirement. If necessary, administrators must help them configure their email settings. The one exception to this HTML-only rule is *invoice history*. You can choose to view and email invoice history in HTML, CSV, or XML format. The HTML-only rule applies to all other invoice-related areas of CA Service Catalog, including invoice generation.

Set Administration Configuration Options

To meet the requirements of your organization, you may need to customize several administration configuration options, including those for integrations, portals, request SLAs, authentication, and others

Follow these steps:

1. Log in as a user with the Service Delivery Administrator role.
2. Click Administration, Configuration.

   The Administration Configuration page appears. On the left, in the Menu under the main menu, Options is selected. On the right, links appear for each category (subset) of the administration configuration options.

3. Click the link for the category of options that you want to update, one of the following:
   - Integration-specific options (see page 173)
   - CA Workflow configuration (see page 173)
   - Event Manager (see page 175)
   - Filestore information, for setting up a filestore (see page 239) (a single location for shared files)
   - Mail server configuration (see page 176)
   - Portal (see page 178)
   - Request SLA Processor (see page 179)
   - Rule Engine (see page 179)
   - Server information (see page 180)
   - Single sign on authentication (see page 181)
   - System information (see page 183)
   - User default (see page 184)

   The options appear for the category that you clicked.
4. View the options for the category, and click the Modify icon (by default, a pencil) for the option that you want to update.

   The Edit Configuration dialog appears.
5. Update the setting as required and click Update Configuration to save your update.
6. Repeat the previous steps for each administration configuration option that you want to update.

You have set the administration configuration options. These settings apply to the children of the business unit that you updated, according to the inheritance of configuration settings through the business unit hierarchy (see page 170).

Integration-Specific Options

If you are integrating CA Service Catalog with any of the following products, set the related configuration parameters. Doing so helps ensure that CA Service Catalog and the integrating product work together correctly. This task is part of setting the administration configuration options (see page 171).

- CA APM
- CA Business Intelligence

  Note: CA Business Intelligence packages and delivers BusinessObjects Enterprise; therefore, you use these CA Business Intelligence parameters to configure the integration of CA Service Catalog with BusinessObjects Enterprise.
- CA CMDB
- CA CMDB Visualizer
- CA Process Automation
- CA Business Service Insight
- CA Service Desk Manager
- Reservation Manager
- **Note:** For information about setting these parameters and for related instructions to configure the integrations between CA Service Catalog and the following products, see the *Integration Guide*.

If you are using CA Workflow, set these configuration parameters to help ensure that CA Workflow and CA Service Catalog work together correctly. This task is part of setting the administration configuration options (see page 171).

To set the CA Workflow configuration parameters

1. Select Administration, Configuration, CA Workflow and specify values for the following parameters:

   Enable HTTPS

   Defines whether CA Service Catalog uses HTTPS when communicating with CA Workflow.

   Default: No

   Host Name

   Displays the host name on which CA Workflow is installed. Update this setting if necessary.

   Default: The host name on which this CA Workflow was installed.

Port Number

Specifies the port number used to communicate with CA Workflow.

Default: The value specified when CA Workflow was installed.

Retry Count

Specifies the number of times to try again to complete a failed CA Workflow action.

Default: 10

Retry Interval

Specifies the number of seconds between attempts to complete a failed CA Workflow action.

Default: 300

2. Recycle the CA Service Catalog service.
3. Recycle the CA Service Fulfillment service.
4. Click Test to verify these parameters.
5. Click the Configure button to update the CA Workflow actors, if required. This action is required if you update any parameters in the Server Information section or the Service Desk section of the Administration Configuration parameters.

6. Verify whether *both* of the following conditions exist:
   - You are integrating CA Service Catalog with CA Service Desk Manager.
   - The related CA Service Catalog process definitions and actors are loaded in the CA Workflow implementation for CA Service Desk Manager.
7. If *both* of the conditions in the previous step exist, perform this step. Otherwise, skip this step.
   a. Do the following, if any Server Information settings for CA Service Catalog have changed: Reimport the USM_RequestService web service actor loaded in the CA Service Desk Manager CA Workflow implementation with the new Server information. To do so, do the following, sequentially:
      - Export the actor in the CA Workflow IDE.
      - Change the wsdl_url to the new Server URL.
      - Reimport the actor into the CA Workflow IDE.
   b. Update the USM_HW_Fulfillment_SD_r12 and USM_SW_Fulfillment_SD_R12 process definitions in the CA Workflow IDE. In each of these process definitions, select the Initialize Values function and set the USM_URL to the new Server URL, and set the USM_LoginBusinessUnit to the value that is being used by the CA Service Catalog Application.
   c. Save the changes to these process definitions.
8. Recycle the CA Service Fulfillment service again.

Note: You can optionally click Launch to start the CA Workflow Process Manager.

Event Manager

As part of setting the administration configuration options (see page 171), you configure the following parameters for the Event Manager. The Event Manager processes events. An event occurs when one or more conditions specified in a rule are met.

Note: For information about events, rules, and actions, see the *Administration Guide*.

Email From

Sends an email *from* this address if the Event Manager has a problem.

Default: spadmin@*serviceprovider*, where "*serviceprovider*" is the root business unit specified during installation.

Email To

Sends an email *to* this address if the Event Manager has a problem.

Default: spadmin@*serviceprovider*, where *serviceprovider* is the root business unit specified during installation.

Audit Trail Level

Indicates the level of detail logged in the audit trail tables. Typically, system performance decreases as the level of log detail increases. Conversely, system performance typically increases as the level of log detail decreases.

Select one of the following options:

No Audit Trail

Stores no information about the event in the database.

Only Object ID

Stores the event information, including the object ID, in the usm_system_change table. This option stores only minimal information.

Include Attributes

Stores the event information, including the object ID, in the usm_system_change table. This option stores detailed old and new values for the object attributes in the usm_system_change_detail table.

Include Multiple Attributes

Stores the event information, including the object ID, in the usm_system_change table. This option stores detailed old and new values for the object attributes in the usm_system_change_detail table. If any attributes have multiple values, the old and new values are stored in the usm_system_change_detail_ext table.

Default: Include Attributes.

Mail Server

Important! Any mail-related settings in custom rule actions override these mail server parameters. For information about events, rules, and actions, see the *Administration Guide*.

As part of setting the administration configuration options (see page 171), you configure the following parameters for the mail server. The mail server sends automated messages from CA Service Catalog.

From Address

Specifies the address that emails are sent from.

Host Name

Specifies the host name of the mail server.

Port Number

Specifies the port number on the mail server that listens for incoming calls from CA Service Catalog.

User ID

Specifies the user ID for accessing the mail server.

User Password

Specifies the password for accessing the mail server.

Note: After you finish specifying these parameters, click the Test button to verify the connection between CA Service Catalog and the mail server. If the test fails, review the view.log file in the USM_HOME\logs folder.

These settings apply to the children of the business unit that you updated, according to the inheritance of configuration settings through the business unit hierarchy (see page 170).

Portal

As part of setting the administration configuration options (see page 171), you configure the following parameters for the Portal. The Portal settings specify how the dashboard library and document entries are made available.

Note: You can specify a value of No for any parameter that you do not need.

Allow New Document Domain Namespaces

Specifies whether business units can have their own document name spaces.

If this parameter is set to Yes, the Add A New Business Unit page contains the "Create Document Namespaces" check box.

The following is true if a business unit has its own document namespace: You can segregate documents in separate business units so that only users in that business unit have access to the document.

Default: Yes

Allow New Library Namespaces

Specifies whether business units can have their own library name spaces.

If this parameter is set to Yes, the Add A New Business Unit page contains the "Create Dashboard Namespaces" check box.

The following is true if a business unit has its own library namespace: You can segregate dashboard library content so that only users in that business unit have access to the library content when they add a dashboard.

Default: Yes

Show Resource Tree

Specifies whether the Resource Explorer appears in the dashboard library tree.

If this parameter is set to Yes, the Resource Explorer appears in the dashboard library tree. This option applies *only* if CA Service Catalog is integrated with CA Business Service Insight.

Default: Yes

Request SLA Processor

As part of setting the administration configuration options (see page 171), you configure the following parameters for the request SLA processor. These settings specify how the Catalog system processes request SLAs.

Note: For information about setting up request SLA processing, see the *Administration Guide*.

Maximum Delay for Request SLA Alerts

Specifies how frequently the request SLA processor checks for SLA warnings or violations. This setting applies to all SLA instances managed by a Catalog Component computer.

To minimize possible delays in SLA processing time when a Catalog Component clustered computer fails, configure the Maximum Delay for Request SLA Alerts setting. The smaller the value you set, the greater the frequency with which the request SLA processor checks the SLA clock for warning and violation times.

Therefore, set a smaller interval, such as one hour, to receive SLA warnings and violations quickly. Otherwise, set a larger interval, for example, one day, to receive them when the failed clustered computer is restored.

Rule Engine

As part of setting the administration configuration options (see page 171), you configure the following parameters for the Rule Engine. Administrators use rules to define actions to take when a specific event occurs. These actions can be running scripts or Java programs, sending emails, and so forth. The rule engine manages the execution of the actions.

Note: For information about events, rules, and actions, see the *Administration Guide*.

Action Default Timeout (in seconds)

Specifies the default timeout value in seconds for rule actions.

Default: 300

Server Information

As part of setting the administration configuration options (see page 171), you configure the following parameters for the Catalog Component server. These settings apply *only* when you configure Catalog Component for use with HTTPS or for use as a load balancer in clustering. Otherwise, Catalog Component is configured automatically and the following parameters do *not* apply.

Important! If you update any parameters in the Server Information section, click Configure in the Workflow Configuration Parameters section. This action updates the CA Workflow actors!

Enable HTTPS

Defines whether CA Service Catalog uses HTTPS when communicating with this Catalog Component computer.

Default: No

Host Name

Displays the host name of this Catalog Component or load balancer computer.

Port Number

Specifies the port number used to communicate with this Catalog Component or load balancer computer.

Important! If you use clustering, replace the host name and port number in the Server Information section with the load balancer host name and port number!

Single Sign On Authentication

As part of setting the administration configuration options (see page 171), you configure the following single sign-on authentication parameters. Give special care to the parameters for configuring CA Service Catalog to use external applications to authenticate CA Service Catalog users.

Allow Login with GET

When this configuration value is set to Yes, users can log in using an HTTP GET request.

When this configuration value is set to No, users *cannot* log in using an HTTP GET request.

Note: This parameter is not related to external authentication. Instead, it is used for backward compatibility of authentication-related features.

External Authentication Parameters

The external authentication parameters follow. To enable external authentication of users (see page 156), configure these parameter values to match the external application that you are using.

Artifact Name

Specifies the name of the cookie, header, or request parameter that contains the authenticated user ID. This name varies according to the external authentication system and your site-specific implementation.

The default value is sm-user.

For example, if you are using CA SiteMinder, select Header as the authentication type and sm-user as the artifact name. With this configuration, CA Service Catalog checks the header named sm-user whose value is the userid.

When the Artifact Type is request, the artifact name is ignored.

Artifact Type

Specifies the mechanism that the external application uses to send the authenticated user ID to CA Service Catalog, as follows:

- Cookie: Cookie in the request
- Header: Header in the request
- Parameter: request parameter
- Request: request user

Bypass Nodes

Specifies the GUI nodes that you want the authentication check to skip. These GUI nodes typically do not require the user to log in.

Examples include the following: icguinode.login, icguinode.logout, iclaunchpad.launch, icguinode.changepwdlockout, and icguinode.lockout.

Login Page

Specifies the page that displays to the user when either the artifact type is set incorrectly or CA Service Catalog does not find an authenticated user.

An example is wpf?Node=icguinode.login.

Single Sign-on Type

Specifies *one* of the following options:

- Disabled: Specifies that CA Service Catalog does *not* use single sign-on.
- Artifact Based Single Sign-on: Configures CA Service Catalog to use single sign-on based on the artifacts specified on this page.
- NTLM (NT LAN Manager): Configures CA Service Catalog to use single sign-on based on Windows NT authentication.

System Information

As part of setting the administration configuration options (see page 171), you configure the following settings related to common multi-tenant administration for CA Service Catalog business units:

Important! These settings apply *only* if you are *both* integrating CA Service Catalog with CA Service Desk Manager r12.5 *and* using common multi-tenant administration of CA Service Catalog business units. For information about setting up common multi-tenant administration, see the *Administration Guide*.

Terms Of Usage Prompt Enabled

After configuring CA Service Catalog to use common multi-tenant administration, optionally specify Yes for this setting. Doing so configures common tenants in CA Service Catalog to implement the terms of use (if any) that are created and maintained in CA Service Desk Manager. The specific effect on users attempting to log in to CA Service Catalog depends on the terms of use settings specified in CA Service Desk Manager.

The following is true when this setting is Yes: If users attempting to log in to CA Service Catalog receive the terms of use prompt but do not accept it, they cannot access CA Service Catalog.

The following is true when this setting is No: Users attempting to log in to CA Service Catalog are not prompted with terms of use, regardless of the terms of use settings specified in CA Service Desk Manager.

Note: For details about configuring terms of use in CA Service Desk Manager, see the CA Service Desk Manager documentation.

Common Multi-Tenant Administration Enabled

Specifies whether you manage CA Service Catalog business units with the common multi-tenant administration framework supplied through CA Service Desk Manager.

When this option is set to No, you manage CA Service Catalog business units directly through CA Service Catalog, and these business units are not synchronized with CA Service Desk Manager.

When this option is set to Yes, you cannot manage CA Service Catalog business units directly through CA Service Catalog, except for CA Service Catalog-specific attributes. Instead, you use the tenant administration tool of CA Service Desk Manager to manage all business units of CA Service Catalog and CA Service Desk Manager) and their common attributes.

You cannot set this option to Yes unless the Common Multi-Tenancy Model option is set to Yes.

Common Tenant Data Synchronized (read-only)

Specifies whether the CA Service Catalog tenant (business unit) structure is synchronized with the tenant structure of CA Service Desk Manager.

CA Service Catalog sets this option to Yes when all of the following conditions are met:

- CA Service Desk Manager is installed.
- The common multi-tenancy merge utility has run successfully.
- Since the utility was last run, no business unit has been created, deleted, or had a change in a common attribute through CA Service Catalog directly.

Conversely, CA Service Catalog sets this option to No when one or more of the following conditions exist:

- The common multi-tenancy merge utility has not run successfully.
- Since the utility was last run, one or more business units have been created, deleted, or had a change in a common attribute through CA Service Catalog directly.

User Default

As part of setting the administration configuration options (see page 171), you configure the following settings related to users, roles, searches, and sessions:

CA EEM Max Search Size

Defines the maximum number of users queried during searches in CA EEM. When you search for users in CA EEM, the number of users queried during the search does not exceed the number specified in this parameter.

Access Control: Allow Request Auto-Delegation via User Management

Defines which user roles are able to view and set auto-delegation for other users. Typically, administrator roles use this ability to set auto-delegation for users who are unable to set it for themselves. Examples of such employees include the following:

- Users who suddenly became unavailable due to emergency
- Users who left for a long absence without setting their own auto-delegation
- Users whose roles have no rights to set their own auto-delegation

Note: The next parameter, Access Control: Allow Auto-Delegation via User Profile, specifies whether employees can set their own auto-delegation.

The default value is the Service Delivery Administrator user role.

Access Control: Allow Request Auto-Delegation via User Profile

Defines which user roles have the Request Auto-Delegation setting appear on their User Profile window. Users with these roles can view and optionally configure this setting for themselves.

The default value is all user roles, so that all users can change at minimum their own auto-delegation settings.

User Default Role

Defines the default business-unit role assigned to a user when an administrator creates or edits the user.

If both of the following are true, the Catalog system assigns the default role to the user logging in:

- The user has an MDB record created by another product.
- That MDB record has never been edited through CA Service Catalog.

A change of this setting requires a restart of the Catalog Component service to take effect.

The default value of this setting depends on the products installed:

- If CA Service Catalog is installed, the default value for this setting is Catalog User.
- If only Accounting Component is installed, the default value for this setting is End User.

User Search Scope

Defines how the scope of the "search user" functionality works for the Catalog User and End User roles. "Search user" functionality for these roles is available in the following areas:

- When emailing a request, users can populate the To, CC, and BCC fields by searching from a list of users or accounts.
- When editing the cart or a request, if the logged in user can create requests for other users or accounts (proxy requests), the following is true: The user can override the Requested For value by choosing from a list of users or accounts.

Note: The scope of "search account" functionality for Catalog End Users and End Users includes *only* accounts in the same business unit as the logged in user. This scope does *not* include child business units.

Select one of the following options:

- Enterprise - All users who have a User ID specified without regard to the role of the user. This setting is suitable for enterprise customers where business units represent departments in one company.

  The scope of the "search user" functionality works as follows:

  - A user who can change the Requested For user for a cart or a request can select from all users.

  When a request is emailed, the list of users includes all users.

- Business Unit - All users who have a user ID and a role in the business unit of the logged in user. This setting is suitable for customers whose business units represent separate companies or departments within those companies.

  The scope of the "search user" functionality works as follows:

  - A user who can change the Requested For user for a cart or a request can select from users who have a role in the same business unit as the logged in user.
  - When a request is emailed, the list of users includes only users who have a role in the same business unit as the logged in user.

  Default: Enterprise

Session Timeout

Defines the number of minutes of inactivity after which users are logged out.

How to Manage Fiscal Periods

By default, you create monthly fiscal periods for the current year, based on your installation date. You also use fiscal periods to view Data Mediation aggregations and to manage budgeting and planning.

Note: You cannot create different fiscal periods for different business units. *Only one* set of fiscal periods applies to all business units.

To manage the fiscal periods for your Accounting Component implementation, do the following.

- View the fiscal periods (see page 187)
- Add a fiscal period (see page 188)
- Edit a fiscal period (see page 188)
- Delete a fiscal period (see page 189)

View Fiscal Periods

View fiscal periods to see which periods exist and to help you decide which periods to add, update, or delete.

Follow these steps:

1. Click Administration, Configuration.

   The Administration Configuration page appears.

2. Click Fiscal Periods Under the Menu options on the middle left portion of the page, under the main menu.

   The Budget and Planning: Fiscal Periods page for your business unit appears.

You have viewed the fiscal period.

Add a Fiscal Period

You add fiscal periods regularly according the fiscal schedule of your organization.

Follow these steps:

1. Click Administration, Configuration.

   The Administration Configuration page appears.

2. Click Fiscal Periods Under the Menu options on the middle left portion of the screen, under the main menu.

   The Budget and Planning: Fiscal Periods page for your business unit appears.

3. Click the Add button.

   The Fiscal Period Definition window opens.

4. Enter the following fields and click OK:

   Name

   Specifies the fiscal period name; for example, January or Q1.

   Year

   Specifies the fiscal period year; for example, 2012.

   Start Date

   Specifies the date the fiscal period starts.

   End Date

   Specifies the date the fiscal period ends.

   Period

   Select from the following list: Monthly, Quarterly, or Yearly.

Note: Fiscal periods of the same type cannot overlap dates.

You have added the fiscal period.

Edit a Fiscal Period

Edit fiscal periods when your organization requires you to do so, for example, to correct an earlier mistake.

Follow these steps:

1. Click Administration, Configuration.

   The Administration Configuration page appears.

2. Click Fiscal Periods Under the Menu options on the middle left portion of the page, under the main menu.

   The Budget and Planning: Fiscal Periods page for your business unit appears.

3. Click the name of the fiscal period that you want to edit.

   The Fiscal Period Definition window opens.

4. Edit the same fields as when you add a fiscal period (see page 187).

5. Click Update Fiscal Period.

   The system saves your changes.

You have edited the fiscal period.

Delete a Fiscal Period

Delete fiscal periods when your organization requires you to do so, for example, when they are being replaced.

Follow these steps:

1. Click Administration, Configuration.

   The Administration Configuration page appears.

2. Click Fiscal Periods Under the Menu options on the middle left portion of the page, under the main menu.

   The Budget and Planning: Fiscal Periods page for your business unit appears.

3. Select the select the name of each fiscal period that you want to delete.

4. Click the Delete button next to the “Select and” marker.

   The fiscal period is deleted.

Accounting Configuration Options

You can view and set the accounting configuration options that apply to all installed CA Service Catalog components. These settings cover accounting profiles, billing cycles, the invoicing, and several other categories.

Using the accounting configuration options, you can do the following:

- Change the business unit (see page 190) (when applicable)
- Set accounting configuration options (see page 190)
- Manage subscriptions (see page 212)
- Manage exchange rates (see page 215)

Important! With one exception, CA Service Catalog sends emails in HTML format *only*. Therefore, to receive legible emails from CA Service Catalog, recipients must configure their email software, such as Microsoft Outlook, to accept emails in HTML format. Otherwise, emails from CA Service Catalog display indecipherable messages ("junk" characters) when opened. To help ensure that their end users can receive intelligible emails from CA Service Catalog, administrators *must* inform their end users of this requirement. If necessary, administrators must help them configure their email settings. The one exception to this HTML-only rule is *invoice history*. You can choose to view and email invoice history in HTML, CSV, or XML format. The HTML-only rule applies to all other invoice-related areas of CA Service Catalog, including invoice generation.

Change the Business Unit

By default, the settings that you view and update on accounting configuration pages apply to the business unit that you are logged in to. However, certain accounting configuration pages (for example, Accounting configuration options (see page 190) and subscription management (see page 212)) include the Change Business Unit button. If a page includes this button, you can optionally use this button to switch to a different business unit.

Follow these steps:

1. Click the Change Business Unit button.

   The Search Business Unit window appears.

2. Use the Expand and Collapse icons to navigate the business unit tree to locate the desired business unit. Alternatively, locate it by using the selection criteria and Search button.

   Note: The results include *only* the business units permitted by your role.

3. Click the business unit name in the tree to select it.

   The window closes and the configuration settings for that business unit appear.

You have changed the business unit.

Set Accounting Configuration Options

You can optionally customize several options for accounting configuration. These options cover invoicing and subscription details, to meet the requirements of your organization.

Follow these steps:

1. Log in as a user with the Service Delivery Administrator role.
2. Click Accounting, Configuration.

   The Accounting Configuration page appears. On the left, in the Menu under the main menu, Options is selected. On the right, links appear for each category (subset) of the accounting configuration options.

3. Check the top (Welcome) line of the page for the name of the current business unit, and do one of the following:

   - To set the accounting configuration options for a different business unit, change the business unit (see page 190) before performing the next step.
   - To set the accounting configuration options for the current business unit, go directly to the next step.

4. Click the link for the category of options that you want to update, one of the following:
   - Accounting profile defaults (see page 192)
   - Billing cycles (see page 197)
   - General (see page 197)
   - Invoice engine configuration (see page 198)
   - Invoice methods (see page 209)
   - Payment methods (see page 210)
   - Subscription configuration (see page 211)

   The options appear for the category that you clicked.
5. View the options for the category, and click the Modify icon (by default, a pencil) for the option that you want to update.

   The Edit Configuration dialog appears.
6. Update the setting as required and click Update Configuration to save your update.
7. Repeat the previous steps for each accounting configuration option that you want to update.

You have set the accounting configuration options. These settings apply to the children of the business unit that you updated, according to the inheritance of configuration settings through the business unit hierarchy (see page 170).

Accounting Profile Defaults

As part of setting accounting configuration options (see page 190), you specify the Accounting Profile Default settings. These settings indicate default values for newly created accounts for the current business unit. The following options require explanation:

Account Type

Specifies the type of account. This setting controls how outstanding balances are handled on invoices, as follows:

Open Item

Specifies that every invoice is unique. Once a charge appears on an invoice, it does not appear on any future invoices.

Balance Forward

Specifies that the remaining balance of a previous invoice is added to the next invoice.

Zero Balance

Specifies that the account is a zero balance account. A zero balance account can have charges appear on its invoice, but the total remaining balance is always zero. You cannot post payments to zero balance accounts.

This option is commonly used when an aggregating account holds the charges for one or more zero balance accounts.

Note: For details, see the *Administration Guide*.

Default: Open Item

Aggregate

Specifies the role of the account in charge aggregation for invoicing, as follows:

No

Specifies that the charges for the account appear *only* in the invoice of the account. The charges do *not* appear on an invoice for a related aggregating account.

Yes

Specifies that the charges for the account appear in the invoices for all of the following:

- The original account
- Each aggregating account in the same business unit or a parent business unit, up through the hierarchy of business units

Aggregating Account

Specifies that the invoice for the account shows charges for all accounts in the same business unit or child business units. These business units must have Aggregate set to Yes or Aggregating Account.

Note: To avoid double invoicing, do *not* specify more than one aggregating account in each business unit.

Default: No

Automatic Invoicing

Specifies whether to create an invoice for the account, as follows:

Yes

Specifies that the account has an invoice generated during a bill run.

No

Specifies that the account does not have an invoice generated during a bill run.

Default: Yes

Billing Cycle

Specifies the account invoicing cycle. Options are daily, weekly, and monthly.

Note: This field works with the Billing Cycle Interval, which is described later in this topic.

Default: Monthly

Period Start Date

Specifies how to set the start date for the invoice period for the account. Select from the following options:

Business Unit Opened Date

Sets the start date as the date the business unit of the account was created (the Opened Date).

Account Opened Date

Sets the start date as the date the account was opened (the Accounting Profile Opened Date).

Current Date

Sets the start date to be the date that the accounting profile (account) was created.

Current Date of Next Period

Sets the start date as the addition of both of the following:

- The date the accounting profile (account) was created
- The interval determined by the Billing Cycle and the Billing Cycle Interval

Day of Week

Sets the start date as the same day of the week on which the accounting profile (account) was created.

Day of Month

Sets the start date as the same day of the month on which the accounting profile (account) was created.

Day of Year

Sets the start date as the same day of the year on which the accounting profile (account) was created.

Day of Week Adjusted from Current Date

Sets the start date as the specified day of the next week after the accounting profile (account) was created.

Day of Month Adjusted from Current Date

Sets the start date as the specified day of the next month after the accounting profile (account) was created.

Day of Year Adjusted from Current Date

Sets the start date as the specified day of the next year after the accounting profile (account) was created.

Last Day of Current Month

Sets the start date as the last day of the month during which the accounting profile (account) was created.

First Day of Next Month

Sets the start date as the first day of the next month after the accounting profile (account) was created.

Specify Date

Sets the start date as the date that you specify manually.

Default: Account Opened Date

Billing Cycle Interval

Specifies the number of billing cycles between invoices.

For example, to bill the account quarterly, select a Billing Cycle of Monthly and a Billing Cycle Interval of 3. The Billing Cycle field is described earlier in this topic.

Default: 1

Default Days Due

Specifies the number of days after the invoice date to use as the payment due date.

Default: 10

Grace Days

Specifies the number of days permitted past the invoice date without a payment. If the invoice is not paid before the grace days expire, the account incurs additional fees and penalties.

Default: 10

Invoice Method

Specifies how to send invoices. Select one of the following options:

Email

Sends the invoice as an email attachment to the email address of the account.

The Catalog system does the following:

- Uses the format specified in Invoice Output Type setting
- Uses the delivery mechanism specified in the Invoice Generation Email Attachment Type setting
- Saves the attachment in the Invoice Email Location server folder

Fax

Saves the invoice using the format specified in Invoice Output Type setting in the Invoice Fax Location server folder.

Postal

Saves the invoice using the format specified in Invoice Output Type setting in the Invoice Postal Location server folder.

Printer

Saves the invoice using the format specified in Invoice Output Type setting in the Invoice Printer Location server folder.

Default: Email

Period End Date

Specifies how to set the end date for the invoice period for the account. Select one of the following options:

Compute from Start Date Using Billing Cycle

Specifies an end date based on the period start date, the billing cycle, and the billing cycle interval. Each of these settings is described earlier in this topic.

other options

Specifies an end date equivalent to the options for period start date. That setting is described earlier in this topic.

Note: The dates settings presume that each new day begins at a time of 00:00:00. Specify a Period End Date that includes the last full day of charges to include. For example, to bill for the entire month of July, make your period 7/1/yyyy - 8/1/yyyy to include the entire last day of the month.

Default: Compute from Start Date Using Billing Cycle

Status

Specifies the status of the account when it is created: Closed, Opened, or Suspended.

Invoicing occurs only when this setting is Opened.

Default: Opened

Status Reason

Specifies the reason for the value of the Status option. You enter this text manually.

Limit: 1024 characters

Default: New account waiting approval

Taxable

Specifies whether the account is taxable.

Specify Yes or No.

Default: No

Billing Cycles

As part of setting accounting configuration options (see page 190), you specify the settings for the billing cycles. You specify which billing cycle choices are available on the Accounting Profile of the account.

Daily

Specifies whether users can generate an invoice daily. If this option is set to Yes, Daily appears in the list of options for specifying the billing cycle. If it is set to No, Daily does not appear in the list.

Default: Yes

Monthly

Specifies whether users can generate an invoice monthly. If this option is set to Yes, Monthly appears in the list of options for specifying the billing cycle of the account. If it is set to No, Monthly does not appear in the list.

Default: Yes

Weekly

Specifies whether users can generate an invoice weekly. If this option is set to Yes, Weekly appears in the list of options for specifying the billing cycle of the account. If this option is set to No, Weekly does not appear in the list.

Default: Yes

General

As part of setting accounting configuration options (see page 190), you specify the General settings. These values apply to all accounts in the current business unit.

Default Post Payment Method

Specifies the default option for posting a payment: cash, check, or credit card.

Default: Check

Invoice Engine Configuration

As part of setting accounting configuration options (see page 190), you specify the Invoice Engine Configuration settings. These settings control the behavior of the invoice engine during bill runs. These values apply to transactions and invoices for all accounts in the current business unit. The following settings require explanation:

Invoice Style for Aggregation

Specifies how totals appear on invoices for aggregating accounts.

Select from the following options:

All Details

Displays all details appear.

Account Totals

Displays only the total of the aggregating account.

Drill Down Account Totals

Displays subtotals by account by service. Users can drill down to view details for each account.

Service by Account Totals

Displays subtotals by account by service, without drill-down functions.

Service Totals

Displays subtotals by service for all accounts.

Type by Account Totals

Displays subtotals by account by service option element type.

Type Totals

Displays subtotals by service option element type.

Default: All Details

Aggregate Advanced Charges

Specifies how advanced charges appear on an invoice. Advanced charges span multiple periods as defined by the period start and end dates in the Accounting Profile of the account.

Yes

Displays the total of the advanced charges on one line.

No

Displays the advanced charges individually on multiple lines.

For example, suppose the cycle for a subscription is monthly and the billing cycle for an account is yearly. In this case, a Yes setting summarizes the charges on one line. Conversely, a No setting displays 12 lines instead.

Default: Yes

Aggregate Current Charges

Specifies how to present current charges on an invoice. Current charges apply only to the current period as defined by the period start and end dates in the Accounting Profile.

Yes

Displays the total of the current charges on one line.

No

Displays the current charges individually on multiple lines.

This setting is similar to Aggregate Advanced Charges, but it applies to current charges instead.

Default: Yes

Allow No Activity Invoices

Specifies whether to generate invoices for accounts with no charges.

Yes

Generates invoices for *all* accounts, including accounts with no charges.

No

Generates invoices *only* for accounts with charges.

Default: No

Bill Run Capacity

Specifies the number of accounts to process for transaction and invoice generation until a commit is performed and all processing is persisted.

The larger the value, the more server memory is required and the faster the invoices are processed. The smaller the value, the less server memory is required, and the slower the invoices are processed.

Default: 100

Exclude Invoice Item

Specifies whether to include a chargeable item on an invoice if the quantity, unit cost, or both is 0.

Select from the following options:

Always Include

Invoices all items, regardless of the value for quantity and unit cost.

Where Quantity is 0

Exclude items when the quantity is 0.

Where Rate is 0

Exclude items when the unit cost is 0.

Where Quantity and Rate are 0

Excludes items when *both* the quantity and unit cost are 0.

Where Quantity or Rate is 00

Excludes items where *either* the quantity or unit cost is 0.

Default: Always Include

Uninvoiced Transactions

Specifies whether to include a transaction on an invoice. The decision is based on a comparison of the transaction date with the period start date and end date on the Accounting Profile of the account.

Select from the following options:

Include All Uninvoiced Transactions

Includes all transactions that have not yet been invoiced, regardless of transaction date.

Exclude Past Uninvoiced Transactions

Does not include transactions whose date is before the period start date, even if the transactions are not yet invoiced.

Exclude Future Uninvoiced Transactions

Does not include transactions whose date is after the period end date, even if the transactions are not yet invoiced.

Exclude Both Past and Future Uninvoiced Transactions

Does not include transactions whose date matches one of the following, even if the transactions are not yet invoiced:

- Before the period start date
- After the period end date

Both of these dates are outside the current period.

Default: Include All Uninvoiced Transactions

Invoice From Address

Specifies the address for the "From" field on the invoice.

Select from the following options: Service Provider Address and Business Unit Address.

Business Unit Address is available for a child business unit only.

Default: Service Provider Address

Invoice Generation Email Attachment Type

Specifies the delivery mechanism for the invoice when emails about invoices are sent.

Select from the following options:

Attachment

Includes the invoice as an attachment in the email. The format is specified in the Invoice Output Type setting.

Inline

Includes the invoice in HTML format in the text of the email.

Link

Includes a link to the invoice in the text of the email.

Default: Attachment

Invoice Generation Email Body Message

Specifies the body text for emails about invoices.

You can specify both literal text and dynamically substituted values.

The syntax for dynamically substituted values follows:

$object_name.variable_name$

Specifies the name of the variable.

You can specify the following values:

- "statements" object:

  statement_label - The label of the account plus an invoice statement ID, such as "acnt1:10012"

  period_from - The Accounting Profile Period Start Date of the account

  period_to - The Accounting Profile Period End Date of the account

  due_date - The due date of the invoice

- "billing_account" object:

  account_label - The label of the account, such as "acnt1"

Limit: 1024 characters

Default: Invoice Generated for $statements.statement_label$ for $statements.period_from$ - $statements.period_to$

Invoice Generation Email CC

Specifies the addresses of carbon copy (CC) recipients of emails about invoices.

You can specify multiple email addresses. Separate each email address with a semi-colon.

Limit: 1024 characters

Default: EMPTY

Invoice Generation Email From

Specifies the email address that sends emails about invoices.

Select from the following options:

User Defined

Specifies a custom email address that you enter manually. If you select this option but enter no email address, this setting changes to the literal value of EMPTY.

Service Provider Email

Specifies the email address of the service provider business unit.

System

Specifies that the Catalog system determines which one of the following email addresses to use: the Services Group or the super business unit.

Default: Service Provider Email

Invoice Generation Email Subject

Specifies the text for the subject line of emails about invoices.

You can specify both literal text and dynamically substituted values.

The syntax for dynamically substituted values is the same as the Invoice Generation Email Body Message setting. That setting is described earlier in this topic.

Limits: 1024 characters

Default: Invoice: $statements.statement_label$ processed for account: $billing_account.account_label$, Due date: $statements.due_date$

Invoice Generation Email To

Specifies the primary recipient of emails about invoices.

Select from the following options:

System

Uses the email address of the Send Invoice To field in the Accounting Profile of the account.

User Defined

Specifies a custom email address that you enter manually. If you select this option but enter no email address, this setting changes to the literal value of EMPTY.

You can specify multiple email addresses. Separate each email address with a semi-colon.

Default: System

Invoice History Email Attachment Type

Specifies the delivery mechanism for the invoice when you send emails from the Invoice History page.

Select from the following options:

Attachment

Includes the invoice as an attachment in the email. The format is specified in the Invoice Output Type setting.

Inline

Includes the invoice in HTML format in the text of the email.

Link

Includes a link to the invoice in the text of the email.

Default: Attachment

Invoice History Email Body Message

Specifies the body text for emails about invoices, when you send these emails from the Invoice History page.

You can specify both literal text and dynamically substituted values.

The syntax for dynamically substituted values follows:

$object_name.variable_name$

Specifies the name of the variable.

You can specify the same variables as for the Invoice Generation Email Subject setting.

In addition, you can specify the following variables:

- "invoice_history" object:

  account_label - The label of the account

Limit: 1024 characters

Default: Invoices Generated During $invoice_history.start_date$ - $invoice_history.end_date$ total number of invoices: $invoice_history.num_invoices$ number of phases processed = $invoice_history.phases$

Invoice History Email CC

Specifies the addresses of carbon copy (CC) recipients of emails from the Invoice History page.

You can specify multiple email addresses. Separate each email address with a semi-colon.

Limit: 1024 characters

Default: EMPTY

Invoice History Email From

Specifies the email address that sends emails about invoice history.

Select from the following options:

User Defined

Specifies a custom email address that you enter manually. If you select this option but enter no email address, this setting changes to the literal value of EMPTY.

Service Provider Email

Specifies the email address of the service provider business unit.

System

Specifies that the Catalog system determines which one of the following email addresses to use: the Services Group or the super business unit.

Default: System

Invoice History Email Subject

Specifies the text for the subject of emails from the Invoice History page.

You can specify both literal text and dynamically substituted values.

The syntax for dynamically substituted values follows:

$object_name.variable_name$

Specifies the name of the variable.

You can specify the same variables as for the Invoice Generation Email Subject setting.

In addition, you can specify the following variables:

- "invoice_history" object:

  account_label - The label of the account

Limit: 1024 characters

Default: Invoices Generated During $invoice_history.start_date$ - $invoice_history.end_date$

Invoice History Email To

Specifies the primary recipient email addresses when emails are sent from the Invoice History page. You can specify multiple email addresses, separated by a semi-colon.

Limit: 1024 characters

Default: EMPTY

Invoice Email Location

Specifies a directory path on the local file system. This path stores invoices for the account when its Accounting Profile Invoice Method is set to Email.

Each invoice file name includes the account label and invoice statement ID.

For example, you could specify the following setting for a Windows environment: USM_HOME\accounting\outbox\email.

Limit: 1024 characters

Default: EMPTY

Invoice Fax Location

Specifies a directory path on the local file system. This path stores invoices for the account when its Accounting Profile Invoice Method is set to Fax.

Limit: 1024 characters

Default: EMPTY

Invoice Postal Location

Specifies a directory path on the local file system. This path stores invoices for the account when its Accounting Profile Invoice Method is set to Postal.

Limit: 1024 characters

Default: EMPTY

Invoice Printer Location

Specifies a directory path on the local file system. This path stores invoices for the account when its Accounting Profile Invoice Method is set to Printer.

Limit: 1024 characters

Default: EMPTY

Invoice Output Type

Specifies the format to use when saving invoices as files.

Select from the following options:

- HTML
- CSV
- XML
- HTML and CSV
- HTML and XML

The file format you select is used for the previous two settings, Invoice Postal Location and Invoice Printer Location.

Default: HTML

Invoice Style

Specifies the style to use for viewing an invoice through the user interface.

Select from the following options:

- Style 1 - One option for invoice format.
- Style 2 - Another option for invoice format.

Default: Style 1

Invoice URL

Specifies an absolute URL path to the location that stores invoices for use by the Accounting, Invoices, Batch Printing menu option.

Limit: 1024 characters

Default: EMPTY

Output Invoices

Specifies whether to store the invoices for the account on the server file system, as follows:

With either setting, you can view invoices through the user interface.

Yes

Stores the invoices on the server file system. Depending on the Invoice Method setting, the invoices are stored in the locations indicated in the various "location" configuration settings.

No

Does not store invoices on the server file system.

Default: No

Payment Response

Specifies the text to print on an invoice when payment is posted.

Limit: 1024 characters

Default: Payment received - Thank you

Pro Rate Batch

Specifies whether to prorate invoice charges if the service start date does not align with the Accounting Profile period of the account, as follows:

No

Charges the invoice *only* after a full charge period has passed.

Yes

Prorates the charges.

For example, suppose that both of the following are true:

- This setting is Yes
- The charge and the Accounting Profile period of the account are both monthly

In this example, if you generate an invoice half way through the billing period, only half the charge appears on the invoice.

Default: Yes

Pro Rate Online

Specifies the same options as the previous setting (Pro Rate Batch), except that this setting applies to invoices that you view through the user interface.

Default: Yes

Use Time (requires restart)

Specifies whether to use the time portion of a transaction date and time stamp when determining the period for which to bill a transaction.

Default: Yes

Invoice Methods

As part of setting accounting configuration options (see page 190), you specify the Invoice Methods settings. These settings specify which methods of sending invoices are available on the Accounting Profile of the account.

Email

Specifies whether users can send invoices through email. If this option is set to Yes, Email appears in the list of options for specifying the delivery mechanism for invoices. If it is set to No, Email does not appear in the list.

Default: Yes

Fax

Specifies whether users can send invoices through fax. If this option is set to Yes, Fax appears in the list of options for specifying the delivery mechanism for invoices. If it is set to No, Fax does not appear in the list.

Default: Yes

Postal

Specifies whether users can send invoice through the postal service. If this option is set to Yes, Postal appears in the list of options for specifying the delivery mechanism for invoices. If it is set to No, Postal does not appear in the list.

Default: Yes

Printer

Specifies whether users can send an invoice by printing. If this option is set to Yes, Printer appears in the list of options for specifying the delivery mechanism for invoices. If it is set to No, Printer does not appear in the list.

Default: Yes

Payment Methods

As part of setting accounting configuration options (see page 190), you specify the Payment Methods settings. These settings specify which payment methods are available for applying a payment to an invoice.

Cash

Specifies whether Cash is a payment option for an invoice.

Default: Yes

Check

Specifies whether Check is a payment option for an invoice.

Default: Yes

Coupon

Specifies whether Coupon is a payment option for an invoice.

Default: No

Credit Card

Specifies whether Credit Card is a payment option for an invoice.

Default: Yes

Direct

Specifies whether Direct is a payment option for an invoice.

Default: No

Tip

Specifies whether Tip is a payment option for an invoice.

Default: No

Subscription Configuration

As part of setting accounting configuration options (see page 190), you specify the Subscription Configuration settings. These settings specify how the Catalog system handles subscriptions.

Default Subscribe State

Specifies the status to which the selected service options are set when an account is subscribed to a service, *one* of the following:

- Completed
- Pending

Default: Completed

Default Cancellation State

Specifies the status to which the selected service options are set when the subscription of an account to a service is cancelled.

Select from the following choices:

- Cancelled – Charges for the current billing period do not appear on the next invoice.
- Pending Cancellation – Charges for the current billing period appear on the next invoice, at which point the status is changed to Cancelled.

Default: Pending Cancellation

Default Subscription Page

Specifies the initial page displayed when the Subscriptions tab is selected.

Select from the following choices:

- Create New Subscriptions – Show catalog of services to which the account can subscribe.
- Existing Subscriptions – Show services to which the account is currently subscribed.

Default: Create New Subscriptions

Allow Instance Names

Specifies whether a name can be associated with a subscription instance.

If this option is set to Yes, when an account is subscribed to a service, you can optionally add some text to the subscription to name the instance.

If it is set to No, you cannot add text.

Default: No

Enable Subscription Notes

Specifies whether a note can be associated with a subscription instance.

If this option is set to Yes, when an account is subscribed to a service, you can optionally add notes to the subscription.

If it is set to No, you cannot add notes.

This setting is available for the service provider business unit only, and it applies to all business units.

Default: No

Manage Subscriptions

You can set subscription options that apply to services, service option groups, and service option elements. By default, these settings apply to all accounts. In addition, however, you can specify custom settings for one or more selected accounts.

Follow these steps:

1. Click Accounting, Configuration.

   The Accounting Configuration page appears. On the left, in the Menu under the main menu, Options is selected by default. On the right, links appear for each category (subset) of the accounting configuration options.

2. Review the top (Welcome) line of the page for the name of the current business unit, and do one of the following:

   - To manage subscription options for a different business unit, change the business unit (see page 190) before performing the next step
   - To manage subscription options for the current business unit, go directly to the next step

3. Click Subscription Management in the Menu on the left under the main menu.

   The Subscription Decision Tree appears on the right, replacing the links for the accounting configuration categories.

4. Decide whether to update subscription options for all accounts in the business unit or only one more selected accounts. In either case, also decide whether to update subscription options for a specific service, service option group, or service option element.

   To help you decide, review the following order of precedence:

   - A setting for a service option element overrides the setting for the service option group to which it belongs.
   - A setting for a service option group overrides the setting for the service to which it belongs.
   - A setting for a specific account overrides the corresponding setting under "All Accounts."

5. Do *one* of the following:

   - Click All Accounts to apply your updates to every account in the business unit.

     The Services and Service Option Groups nodes appear, under all accounts.

   - Click Apply to Individual Account to apply the updates to only one or more selected accounts in the business unit.

     The Select Accounts dialog appears.

     Select the account or accounts you want and click OK.

     The Services and Service Option Groups nodes appear, under the selected accounts.

6. Click the Service or Services node (whichever you want to update), under either All Accounts or a selected account (whichever you specified in the previous step).

7. Drill down the Services and Service Option Group node to reach the subscription management options (see page 214) of interest. You can update the options for services, service option groups, and service option elements.

   Note: You can optionally specify *no* value for Bill In Advance field or the Effective Dates And Bill Dates field when you create an account. In that case, the system applies default settings. Consequently, the account does *not* appear in the Subscription Decision tree. For information about creating accounts, see the *Administration Guide*.

8. Update these options as needed and save your changes.

9. Repeat the previous steps to update all the subscription management options you want. You can update subscriptions for all services, service option groups, and service option elements, or only the subscriptions for specific accounts.

You have managed subscriptions.

Note: These settings apply to any sub business units of the business unit that you are updating. If a business unit has sub business units, it has its own configuration settings.

Subscription Management Options

To manage subscriptions (see page 212), you specify the subscription management options, using the Subscription Decision Tree. You can specify separate settings that apply to all either *all* accounts in the business unit or to selected accounts *only*. In both cases, you use the tree to set the following options for individual services, service option groups, or service option elements:

Effective Dates and Bill Dates

Specifies when billing should begin after an account subscribes to a service option element. Select *one* of the following:

- Bill Date begins on the Effective Date – Begins billing the account on the date the subscription is made.
- Specify a Bill Date separate from the Effective Date – Begins billing the account on a specific date, regardless of the subscription date.
- Specify a Bill Date relative to the Effective Date – Begins billing the account based on the *complex* option you specify, relative to the subscription date. An example is “the first day of the month of the subscription.”
- Specify a Bill Date offset from the Effective Date – Begins billing the account based on the "before and after" option you specify, relative to the subscription date. An example is “two months after the subscription date.”

Bill in Advance

Specifies whether a subscribing account is charged in advance of a service being rendered. Select *one* of the following:

- Do not bill in advance – Bills the account when the service is rendered.
- Specify how far in advance the charge should be billed – Bills the account the specified number of periods in advance.

  Note: The billing period is the billing period of the service option element being subscribe*d t*o, not the account's billing cycle.

  For example, suppose a service option element specifies a Unit Cost of $10 with a Billing Cycle of Periodic, a Periodic Type of Monthly, and a Periodic Type Interval of 1. If this setting is 3, then a subscribing account is billed $30 on the first invoice and each interval invoice, rather than $10 per month.

Exchange Rates

Accounting Component supplies the Accounting, Configuration, Exchange Rates table. By default, this table displays exchange rates for the current time period. You can also view any previously defined exchange rates for earlier or future periods.

Using this table, you manage exchange rates (see page 215) for the currencies used in your implementation, relative to the US dollar. The Catalog system uses these exchange rates to produce invoices for each account in the currency of the business unit to which the account belongs.

All exchange rates are relative to the US dollar. When you convert from one currency type to another, the system first converts the catalog amount to US dollars. Next, the system converts the amount to the currency type of the account.

During installation, the exchange rates for all currency types are set to 1.0. This setting means that the exchange rate for each currency type relative to the US dollar is 1.0.

Updates to exchange rates apply to the *entire* system. You *cannot* specify different exchange rates for different business units.

Manage Exchange Rates

You can update exchange rates (see page 215) in Accounting Component as the official exchange rates change for the countries and currencies with which you do business. Updates to exchange rates apply to the *entire* system. You *cannot* specify different exchange rates for different business units.

To manage exchange rates

1. Click Accounting, Configuration.

   The Accounting Configuration page appears. On the left, in the Menu under the main menu, Options is selected by default. On the right, links appear for each category (subset) of the accounting configuration options.

2. Click Exchange Rates in the Menu on the left under the main menu.

   The Exchange Rates table for the current date range appears on the right, replacing the links for the accounting configuration categories. The table lists the currency name, symbol, date, exchange rate, and so forth. By default, The table for the current time period (the previous month) appears.

3. View the exchange rates for the currency defined in your system.
4. Complete the following actions if applicable. If an action does not apply, skip it.
   - Display exchange rates for a date range (see page 216)
   - Edit exchange rates for the current time period (see page 217)
   - Delete an exchange rate for a date range (see page 218)
   - Delete a currency name from the exchange rate table (see page 219)
   - Add a new exchange rate for a date range (see page 220)

You have managed exchange rates.

Display Exchange Rates for a Date Range

You can view exchange rates for past time periods. Doing so can help you review invoices for previous billing periods.

Follow these steps:

1. Complete the initial steps of managing exchange rates (see page 215), until you display the Exchange Rates table.

   The Exchange rate table appears.

2. Click the Select Date button on that table.
3. Enter the date range for the exchange rates that you want to view, and click OK.

   The exchange rates for that period appear.

You have viewed the exchange rates.

Edit Exchange Rates for the Current Time Period

You can optionally modify the exchange rates for any or all currency types relative to the US dollar, for the current time period. You can do so, for example, to provide a regularly scheduled update or to correct a mistake in the initial setup.

Follow these steps:

1. Complete the initial steps of managing exchange rates (see page 215), until you display the Exchange Rates table.

   The Exchange rate table appears.

2. Select the currency types whose exchange rate you want to update, and click Edit.

   The Exchange Rate field opens for editing for all currency types.

3. Enter the new exchange rate for each currency type that you want to update, relative to the US dollar, in the Exchange Rate field.

4. Click Save.

   The Catalog system saves your changes.

You have edited the exchange rates, and the values that you updated appear on the page.

Delete an Exchange Rate for a Date Range

You can delete an exchange rate for a date range from the Exchange Rates table. You can do so, for example, to correct an initial error or if you are certain that your implementation does not need the exchange rate.

Important! Deleting *all* exchange rate entries for a currency name deletes that currency name from the Exchange Rates table completely! You *cannot* use the GUI to restore a deleted currency name. Therefore, use caution when deleting exchange rates from the table.

You can, however, intentionally delete a currency name from the exchange rate table (see page 219) if you are certain that you want to do so.

Follow these steps:

1. Complete the initial steps of managing exchange rates (see page 215), until you display the Exchange Rates table.

   The Exchange rate table appears.

2. Select each exchange rate that you want to delete. Verify that you do *not* unintentionally delete *all* exchange rates in the table for any currency name, as noted in the introduction to this topic.

3. Click the Delete link.

   You are prompted to confirm the deletion.

4. Click OK.

   The Catalog system saves your changes.

You have deleted the selected exchange rates.

Delete a Currency Name

You can delete currency names from the Exchange Rates table. You can do so, for example, to correct an initial error or if you are certain that your implementation does not need the currency.

Note: Delete currency names with caution, because you *cannot* use the GUI to add a missing or deleted currency name.

Follow these steps:

1. Complete the initial steps of managing exchange rates (see page 215), until you display the Exchange Rates table.

   The Exchange rate table appears.

2. Select each currency name that you want to delete. If a currency name has multiple options, select all of them.

3. Click the Delete link.

   You are prompted to confirm the deletion.

4. Click OK.

   The Catalog system saves your changes.

You have deleted the selected currency names.

Add a New Exchange Rate for a Date Range

You can add a new exchange rate for a new date range. You can do so, for example, to provide a periodic update or to prepare for the start of the next billing period.

Note: You *cannot* add a new exchange rate that overlaps the same date range as any existing exchange rate.

Follow these steps:

1. Complete the initial steps of managing exchange rates (see page 215), until you display the Exchange Rates table.

   The Exchange rate table appears.

2. Select each currency name for which you want to add an additional exchange rate.

   The Catalog system adds new exchange rate rows for each selected currency name.

3. For each new exchange rate row, complete the following fields:
   - Currency Name
   - Currency Symbol
   - Date
   - Exchange Rate

4. Click Save.

   The Catalog system saves your changes.

You have added a new exchange rate for a date range.

Set CA Service Catalog Configuration Options

You configure CA Service Catalog to customize settings for request management, access control, request emails, and so forth. These settings specify how the Catalog system processes requests in your organization.

Follow these steps:

1. Click Catalog, Configuration.

   The Configuration page appears. On the left, in the Menu under the main menu, the Options column lists the links for each category (subset) of options.

2. Do one of the following:
   - To manage configuration options for a different business unit, change the business unit (see page 222) before performing the next step
   - To manage configuration options for the current business unit, go directly to the next step

3. Click the link for the category of options that you want to update, one of the following:
   - Catalog configuration (see page 223)
   - Request management configuration (see page 224)
   - System configuration (see page 237)

   The options appear for the category that you clicked.
4. View the options for the category, and click the Modify icon (by default, a pencil) for the option that you want to update.

   The Edit Configuration dialog appears.
5. Update the setting as required and click Update Configuration to save your update.
6. Repeat the previous steps for each CA Service Catalog configuration option that you want to update.

You have set the CA Service Catalog configuration options. These settings apply to the children of the business unit that you updated, according to the inheritance of configuration settings through the business unit hierarchy (see page 170).

Important! With one exception, CA Service Catalog sends emails in HTML format *only*. Therefore, to receive legible emails from CA Service Catalog, recipients must configure their email software, such as Microsoft Outlook, to accept emails in HTML format. Otherwise, emails from CA Service Catalog display indecipherable messages ("junk" characters) when opened. To help ensure that their end users can receive intelligible emails from CA Service Catalog, administrators *must* inform their end users of this requirement. If necessary, administrators must help them configure their email settings. The one exception to this HTML-only rule is *invoice history*. You can choose to view and email invoice history in HTML, CSV, or XML format. The HTML-only rule applies to all other invoice-related areas of CA Service Catalog, including invoice generation.

Change the Business Unit

By default, the Catalog system displays settings for the business unit that you logged in to. You can optionally change to a different business unit, if your role permits you to do so.

Note: When common multi-tenant administration is enabled, you can add or delete tenants, or edit their common attributes *only* through CA Service Desk Manager *not* CA Service Catalog. When common multi-tenant administration is enabled, you can *view* tenants and all their attributes in CA Service Catalog, but you can edit only the CA Service Catalog-specific attributes. For details about common multi-tenant administration, and about roles, see the *Administration Guide*.

Follow these steps: The following options are NOT AVAILABLE on the Catalog > Configuration

1. Click Catalog, Configuration.

   The Configuration page appears. On the left, in the Menu under the main menu, the Options column lists the links for each category (subset) of options.

2. Click the Change Business Unit button.

   The Search Business Units dialog appears.

3. Use the Expand and Collapse icons to navigate the business unit tree. Alternatively, use the selection criteria and Search button to locate the desired business unit.

   Note: The list includes only the business units that your role permits you to access.

4. To select a business unit, click its name in the tree.

   The window closes, and the configuration settings for that business unit appear.

Catalog Configuration Options

As part of setting the CA Service Catalog configuration options (see page 220), you specify the following Catalog Configuration options. These settings control the behavior of the catalog.

Default Effect of Service Option Element Changes

Specifies when to reflect changes to service option elements for accounts that have subscribed to or requested services that include them.

Select one of the following options to use when the service option element changes:

Specify when the Service Option Element Changes - Allow User to Choose

Enables the administrator to specify the effect of the change on existing subscribers or requestors.

Beginning of Accounts' Current Billing Period - No Audit Trail

Implements the change retroactively to the beginning of the current billing period for existing subscribers or requestors. No audit trail applies.

Beginning of Accounts' Current Billing Period

Implements the change retroactively to the beginning of the current billing period for existing subscribers or requestors.

Beginning of Accounts' Next Billing Period

Implements the change at the beginning of the next billing period for existing subscribers or requestors.

Immediately during Accounts' Billing Period

Implements the change immediately for existing subscribers or requestors.

Specify a Future Effective Date

Enables the Administrator to specify a date on which the change takes effect for existing subscribers or requestors.

Default: Specify when the Service Option Element Changes - Allow User to Choose.

Pass Through Catalog

Specifies whether to include the catalog of the parent business unit.

If you select this option, the parent catalog is passed down to the child business unit. This setting is useful in a multiple-level business unit organization and applies only to the settings for a child business unit.

Default: No

Request Management Configuration Options

As part of setting the CA Service Catalog configuration options (see page 220), you specify the Request Management Configuration options. These settings that control the behavior of requests for the following groups of parameters:

- Access Control parameters (see page 224)
- Other parameters (see page 227)
- Request Email parameters (see page 234)

Access Control Parameters

As part of setting the CA Service Catalog configuration options (see page 220), you specify the following Access Control parameters:

Access Control: Add Request

Specifies which user roles can add a request.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, End User, Catalog User, Request Manager, Catalog Administrator

Access Control: Edit Request

Specifies which user roles can edit a request. All users can edit their own requests, as long as the status of the request is in the not submitted range.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, End User, Catalog User, Request Manager, Catalog Administrator

Access Control: Delete Request

Specifies which user roles can delete a request or a requested service. All users can delete their own requests, as long as the status of the request is in the not submitted range. Once a requested service is in a canceled state, only users with Delete Request permission can delete a canceled service.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Cancel Request

Specifies which user roles can cancel a request.

This parameter works together with the Allow Cancellation Through parameter, which is described later in this list.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Show Amount Column

Specifies which user roles can view the Amount Column when viewing a request.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Show Period Column

Specifies which user roles can view the Period Column when viewing a request or shopping cart.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Show Related Ticket Column

Specifies which user roles can view the Related Ticket Column when viewing a request or shopping cart.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Show General Information

Specifies which user roles can control whether the general information form is visible when you create a request.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator, Service Manager, End User, Catalog User

Access Control: Show Request Information

Specifies which user roles can control whether the request information form is visible when you create a request.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator, Service Manager, End User, Catalog User

Access Control: Save Cart As Request

Specifies which user roles can view the button allowing the user to save the shopping cart as a request, clearing the cart for reuse.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Proxy Request

Specifies which user roles can view the link to change the Requested For field from your own user ID or account to another user ID or account.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Proxy Action

Specifies which user roles can see the link to approve, reject, fulfill, or transfer requests pending action assigned to other users.

Access Control: Show Fulfillment Details

Specifies which user roles can view statistical information regarding the time required to fulfill a service option in the past.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Take/Return Request Pending Action

Specifies which user roles can take or return ownership of requests pending action. They can take ownership of requests pending action from both of the following:

- A group queue
- The queue of another user in the same business unit or child business unit

Similarly, they can return ownership of requests pending action from their own queue to their group queue.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Transfer Request Pending Action

Specifies which user roles can transfer ownership of requests pending action from the assigned user to either of the following:

- Another user in the same group
- Another user in the same business unit or child business unit

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Delegate Request Pending Action

Specifies which user roles can delegate ownership of requests pending action from a group queue to either of the following:

- A specific user in that group
- Another user in the same business unit or child business unit

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Push Through Requests

Specifies which user roles can push through ("force") a stuck request to the next level of approval or fulfillment.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator

Access Control: Display Request Warning

Specifies which user roles can view the warning icon indicating that a request is stuck. Conversely, if a catalog user cannot access to this option, then that user does not see the warning icon, even if the request is stuck.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator, End User, Catalog User

Access Control: Hold/Resume Request

Specifies which user roles can hold a request that is in progress and can resume a request that is in Hold status.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, Request Manager, Catalog Administrator, End User, Catalog User

Other Parameters

As part of setting the CA Service Catalog configuration options (see page 220), you specify the following miscellaneous parameters:

Allow Cancellation Through

Defines the status through which users can cancel requests. After the request moves to the next status, it cannot be canceled.

This parameter works together with the Access Control: Cancel Request parameter described earlier in this list.

Default: Fulfilled

You can customize the list of request statuses (see page 322).

Allow Discrete Handling for Reject

Specifies the effect of the rejection of a single service or service option upon other services and service options in the same request, as follows:

Yes

Specifies that when you reject a service or service option, the remaining services or service options can advance if they are approved. That is, if the following are approved, they can advance in the request lifecycle:

- Other services in the same request
- Other service options in the same service

No

Specifies that when you reject a service or service option, the entire request is rejected. That is, all services in the same request are rejected and can no longer advance in the request lifecycle, even if they were previously approved. Similarly, all service options in the same service are rejected and can no longer advance in the request lifecycle, even if they were previously approved.

The default is No, for backward compatibility. With this setting, the request lifecycle functions the same as it did in past releases of the product before this parameter was implemented.

Note: For more information about using a discrete request lifecycle, including sample settings and their meanings, see the *Administration Guide*.

Allow Discrete Handling of Service Options After

Specifies the status at which request managers (approvers and fulfillers) can handle requests pending action (approval, rejection, or fulfillment) *discretely*. When the request reaches the status you specify, request managers can discretely (individually) approve, reject, or fulfill each service option in every service in the request.

In other words, you can use this parameter to specify that pending actions are assigned at the service option level, rather than the service level.

The setting you specify applies to the request *from* the starting status that you specify *through* the remainder of the request lifecycle.

Valid values are Submitted, Pending Fulfillment, or Completed.

The default is Pending Fulfillment, for backward compatibility. With this setting, the request lifecycle functions the same as it did in past releases before this parameter was implemented.

Note: For more information about using a discrete request lifecycle, including sample settings and their meanings, see the *Administration Guide*.

Allow Discrete Request Life Cycle After

Specifies the status at which individual service options in a service and individual services in a request advance to further statuses in the request lifecycle independently. Here, *independently* means *without* requiring or waiting for any other service option in the same service or any other service in the same request to advance its status.

As soon as the request reaches the status that you specify, the service options that you approve or fulfill can complete the remainder of the request lifecycle. This condition exists even if other service options in the same service do not advance in status.

Similarly, as soon as the request reaches the status that you specify, the services that you approve or fulfill can complete the remainder of the request lifecycle. This condition exists even if other services in the same request are rejected or are not updated.

Valid values are Submitted, Pending Fulfillment, or Completed.

The default is Completed, for backward compatibility. With this setting, the request lifecycle functions the same as it did in past releases of the product before this parameter was implemented.

The setting you specify applies to the request *from* the starting status that you specify *through* the remainder of the request lifecycle.

Note: For more information about using a discrete request lifecycle, including sample settings and their meanings, see the *Administration Guide*.

Allow Notes at Service Option Level

Controls whether a user can add notes at the service and service option levels.

If this option is set to Yes, then the Add Note icon appears in the Action column for requests. Therefore, the user can add a note for a specific service or service option. If this option is set to No, then the user can add notes for the entire request but not for a specific service or service option.

Default: No

Allow Only One Service Per Request

Specifies whether a user can include more than one service in a request or cart.

If this option is set to Yes, then a user can have only one service in a cart or request. Also, the user must submit the cart or request before creating a new one.

If this option is set to No, then a user can select multiple services from the catalog. The user can add them to the cart or request before submitting the request.

Default: No

Browse Catalog Layout

Specifies the look-and-feel for the Requests page. On this page, users can create, customize, submit, and manage requests.

Specify *one* of the following options. Click Home, Requests to verify the resulting look-and-feel on the Requests page.

Note: The Service View and Service View without Browse Section options provide the best performance. These options provide *links to* the requests, while the other options display the requests directly.

Service View

Configures the Requests page to display the catalog, featured services, and a search-for-services field in boxes.

A My Requests link opens a drop-down list. The list includes options to search requests, review open requests, and act on pending requests.

Service View without Browse Section

Configures the Requests page to display the catalog alone. Featured services and the search-for-services field do *not* appear.

A My Requests link appears, as described for the Service View option.

Request View

Configures the Requests page to display the catalog (categories and lists of services) in a column on the left.

Boxes to the right of the column enable users to do the following tasks:

- Search for services.
- View and request featured services.
- Review their own recent requests and, if applicable, act on them.
- Use links to review open, pending, and completed requests.
- Search for requests.

Grid View

Configures the Requests page to display the catalog in a grid.

Boxes surrounding the grid enable users to perform the same tasks as listed for the Request View option.

Default: Service View

Browse Catalog: Show Folder Icon

Specifies whether images associated with catalog folders appear in the Browse section of the Requests page.

If this option is set to Yes, folder images appear in the Browse section. If this option is set to No, they do not appear.

Default: No

Browse Catalog: Show Subfolders

Specifies whether the top level subfolders under each catalog folder appear in the Browse section of the Requests page.

If this option is set to Yes, the first-level of subfolders appear under each catalog folder in the Browse section. If this option is set to No, only the catalog folders appear.

Default: Yes

Note: For any individual catalog folder, you can override this default by changing its folder details on the Catalog, Service Offerings page. For details, see the *Administration Guide*.

Default User for Request Actions

Specifies the user who to be assigned a pending action when no other user is available. This setting is typically used for request approvals when the user needs manager approval and no manager exists in the system for the user.

Note: When this setting is used with the system approval process, verify that this user has the highest authorization level. For details, see the *Administration Guide*.

Default: spadmin

Display Service Health

This parameter applies *only* if you are integrating CA Service Catalog with CA Business Service Insight!

Specifies whether to enable catalog users requesting a service to view actual, current data regarding the quality or "health" of a service. The health is based on the level of compliance of the service to its associated metrics. This data includes the contractual metrics, incentive metrics, and the SLA health period. This information is specified in the contract-specific details for the service option elements in the service being requested.

The metric data includes both the performance criteria and the actual number of violations, including the time increments measured.

If you enable this option, catalog users can view this actual, current metric data for the service they are requesting. Conversely, if you do not enable this option, catalog users requesting a service cannot view this information for the service they are requesting.

Note: For details about integrating CA Service Catalog with CA Business Service Insight, see the *Integration Guide*.

Enable Delegation of Catalog

Specifies whether to enable the delegation of catalogs: Yes or No.

When this option is enabled, no users are *required to* delegate use of their catalogs, but they can *optionally* do so.

Note: The delegation of a catalog does *not* affect the Catalog configuration of the CA Service Catalog, such as the Use Service Provider Catalog Only and Pass Through Catalog configuration parameters. Similarly, the delegation of a catalog is *not* directly related to the configuration options (such as Access Control: Add Request) in this Request Management Configuration section. For details about delegation of catalogs, see the *Administration Guide*.

Notify users when they complete their own pending actions

Specifies whether request managers receive a notification email every time they address a pending action by approving, rejecting, or fulfilling a service option, service, or request.

If you specify Yes, request managers receive such emails confirming their own actions.

If you specify No, request managers receive no such emails.

This setting is especially relevant if you are using discrete approval and the Allow Request Life Cycle to Continue After parameter is set to Submitted. In that case, if the Notify users when they complete their own pending actions parameter is set to Yes, request managers are likely to receive several notification emails.

For example, if a service has five service options and the request manager approves each option, the request manager receives five confirmation emails. To prevent request managers from receiving such emails, set Notify users when they complete their own pending actions to No.

The Requested For users and Requested By users always receive these notification emails, regardless of the setting of these parameters.

Note: For details about using a discrete request lifecycle, see the *Administration Guide*.

Number of Requests per Page

For individual users (not administrators), specifies the maximum number of requests that appear on Request List pages. When a user moves to a new Request List page, the default setting replaces their custom settings. Users can optionally customize the display for each new Request List page they view.

Request List pages appear when you click Home, Requests and click any of the following options:

- Open Requests
- My Recent Requests
- Completed Requests
- Pending My Action

Advanced Search–after you search for requests and view the results

Note: Administrators can set the following options for all users: The individual columns that appear on Request List pages and the default maximum number of requests per page. For details, see the *Administration Guide*.

PDA Support: Enable

Specifies whether to enable PDA support: Yes or No.

When you specify Yes, PDA users can click the links provided in PDA-compliant request approval emails to access the requests and approve or reject them. Support for forms limited when you enable PDA Approval.

When you specify No, the links for accessing the requests and approving or rejecting them do *not* appear in the request approval emails that PDA users receive. The absence of such links implicitly guides PDA users to use an office computer to view, approve, and reject requests as needed.

Note: For details about using PDA support, including the limitations, see the *Administration Guide*.

Request Home Page: Include Request Information

Specifies which roles can view the Request Lookup and My Recent Requests sections on the Home or Requests menu option page.

Default: Service Delivery Administrator, Super Business Unit Administrator, Administrator, End User, Catalog User, Request Manager, Catalog Administrator, Service Manager

Request General Information Column Configuration

Default: Name, ID, Requested For, Date Created, Date Required, Requested By, Priority, Last Modified, Status

Request Email Parameters

As part of setting the CA Service Catalog configuration options (see page 220), you specify the following Request Email parameters:

Request Email: From Address

Specifies the email address from which the Catalog system sends emails about requests, one of the following:

User Defined

Uses the email address specified by the user. Selecting this option with no email address specified sets this setting to EMPTY.

Service Provider Email

Uses the email address for the service provider business unit.

Default: CatalogSystem@serviceprovider.com, where "*serviceprovider*" is the root business unit specified during installation.

Request Email: From Name

Specifies the email address *name* from which emails about requests are sent.

Default: CatalogSystem

Request Email: To

Specifies the primary recipient email address to which emails about requests are sent, one of the following:

User Defined

Uses the email address specified by the user. Multiple email addresses can be specified, separated by a semi-colon. Selecting this option with no email address specified sets this setting to EMPTY.

Requested For User/Account Email

Uses the email address of the user or account to which this request applies.

Requested By User/Account Email

Uses the email address of the user or account that created this request.

Default: EMPTY, meaning this value is set when email options are used.

Request Email: CC

Specifies the "CC" recipient email address to which emails about requests are sent, one of the following:

User Defined

Uses the email address specified by the user. Multiple email addresses can be specified, separated by a semi-colon. Selecting this option with no email address specified sets this setting to EMPTY.

Requested For User/Account Email

Uses the email address of the user or account to which this request applies.

Requested By User/Account Email

Uses the email address of the user or account that created this request.

Default: EMPTY, meaning this value is set when email options are used.

Request Email: BCC

Specifies the "BCC" recipient email address to which emails about requests are sent, one of the following:

User Defined

Uses the email address specified by the user. Multiple email addresses can be specified, separated by a semi-colon. Selecting this option with no email address specified sets this setting to EMPTY.

Requested For User/Account Email

Uses the email address of the user or account to which this request applies.

Requested By User/Account Email

Uses the email address of the user or account that created this request.

Default: EMPTY, meaning this value is set when email options are used.

Request Email: Subject

Specifies the email subject used when emails about requests are sent.

In addition to specific text, you can include dynamically substituted values in the subject text. The syntax for including dynamically substituted values is $Request.*variable_name*$.

variable_name

Specifies the name of the variable value to use.

You can specify the following variables in the subject text:

request_id

Specifies the internal Request ID, such as “10001”.

name

Specifies the request name entered by the user.

status

Specifies the status of the request, such as “Pending Approval.”

created_date

Specifies the date and time the request was created.

modified_date

Specifies the date and time the request was last modified.

completion_date

Specifies the date and time the request was completed.

desired_date

Specifies the date and time in the Date Required field of the request.

comments

Specifies the request Description specified by the user.

priority

Specifies the priority of the request.

req_for_account_id

Specifies the internal account ID for the Requested For user or account.

req_by_account_id

Specifies the internal account ID for the Requested By user or account.

req_for_user_id

Specifies the user ID of the Requested For user, if the request is for a user not an account.

req_by_user_id

Specifies the user ID of the Requested By user.

Default: Email of Request ($Request.request_id$) - $Request.name$

Request Email: Message

Specifies the email message used when emails about requests are sent. You can overridde this text.

In addition to specific text, you can include dynamically substituted values in the subject text. The syntax for including dynamically substituted values is $Request.*variable_name*$.

variable_name

Specifies the name of the variable value to use.

The variables available for use are the same as in the Request Email: Subject setting.

Default: Request ($Request.request_id$) created on $Request.created_date$

System Configuration

As part of setting the CA Service Catalog configuration options (see page 220), you specify the following System Configuration parameters. These settings control the behavior of the system, regardless of business unit. This category is displayed *only* when you are logged in to the service provider (root) business unit.

Use Service Provider Configuration Only

Specifies whether a child business unit can have its own CA Service Catalog configuration settings.

If this setting is Yes, the Catalog system ignores all CA Service Catalog configuration settings for a business unit. Consequently, each business unit uses the configuration settings for the service provider.

If this setting is No, then each business unit can have its own CA Service Catalog configuration settings.

Default: No

Use Service Provider Catalog Only

Specifies whether the service provider business unit catalog is available to all business units in the hierarchy.

If this setting is Yes, the subscribing or requesting user of a child business unit sees only the catalog of the service provider (root) business unit. That is, the child business unit cannot have its own catalog.

If this setting is No, the child business unit can have its own catalog.

Default: No

Configuration of Web Services

CA Service Catalog provides a comprehensive web service API. Each web service provides a set of operations or methods related to a particular object type. By default, all methods for all web services are deployed. However, you can optionally undeploy selected web services. You can also redeploy methods that you previously undeployed.

Note: For instructions to use and configure the web services, see the *Administration Guide*.

Single Location for Shared Files

If you have installed Catalog Component on multiple computers (either clustered or nonclustered), we recommend that you set up (see page 239) a single location for shared files. Shared files can include documents, reports, images of services, data mediation files, customizations, and forms.

By default, the location for shared files is the USM_HOME\filestore folder on *every* Catalog Component computer; this folder contains several subfolders. However, for optimal efficiency, you can specify *one* location on a single computer that all Catalog Component computers share. This single location is named the *central filestore* or *filestore*. The computer on which the filestore resides can have Catalog Component installed. However, Catalog Component is not required on that computer.

If you have installed Catalog Component on multiple computers and you do not set up a filestore, then verify that the individual filestores on all Catalog Component computers are synchronized.

If you have installed Catalog Component on a single computer, this entire process does not apply, so you can skip it.

Set Up a Single Location for Shared Files

If you have installed CA Service Catalog on multiple computers (either clustered or nonclustered), we recommend that you set up a single location for shared files (see page 238). Doing so helps improve the accuracy and efficiency of sharing files between computers.

Follow these steps:

1. Meet the following prerequisites:
   - Verify that all computers on which CA Service Catalog is installed have a trusted domain relationship. This trusted relationship enables user accounts and global groups to be used in a domain other than the domain where the accounts are defined.
   - Start the CA Service Catalog service with the login credentials (user name and password) of the Windows user that has read/write access to the shared location. If necessary, change the login credentials for the CA Service Catalog service to meet these requirements, as follows:
     a. In the Windows Control Panel, right-click the service, click Properties, click the Log On tab, and enter the login credentials.
     b. Save the changes and restart the service.

     Note: For details about updating Windows services, see your Windows documentation.
2. Decide whether to keep the default location, the USM_HOME\filestore folder on the first CA Service Catalog computer, as the filestore for all CA Service Catalog computers. Proceed as follows:
   - To keep the *default* filestore, share the USM_HOME\filestore folder on the first CA Service Catalog computer. Verify that the Windows operating system users who are updating the filestore have read/write access to this folder. For details about creating Windows shares, see your Windows documentation.

     You are now finished setting up the filestore, and the remaining steps in this topic do not apply.
   - To set up a *new* location for the filestore, perform all the remaining steps in this topic.
3. Perform the prerequisite tasks for setting up a custom location for the filestore (see page 240).
4. Select Administration, Configuration, Filestore Information.

   The Administration Configuration page appears, with the Filestore Information settings in view.

5. Do the following:
   a. Click the Edit (pencil) icon for the Filestore Location variable.

      The Edit Configuration dialog appears.

   b. In the Filestore Location field, specify the UNC path name of the shared drive you defined in a previous step, for example: \\big-computer\Shared_USM\filestore or \\big-computer\filestore.

   c. Click Update Configuration.

   d. Click Test to verify the validity of the share.

      This test returns a successful connection test message if the filestore can be used to store files uploaded by users.

      Important! Testing the filestore is required!

6. Perform the action that applies:
   - If the test succeeds, copy the entire contents of the USM_HOME\filestore folder to the new location.
   - If the test fails, reconfigure the share. Also, verify that all the CA Service Catalog services that are accessing the share have the same, valid credentials.

7. Recycle all CA Service Catalog services on all computers.

Note: If you later move the shared folder to another new location, repeat these steps to set up the new location.

Perform the Prerequisite Tasks

If you do not use the default location for the filestore (see page 239), perform the prerequisite tasks to set up a custom location, as explained in this topic. Otherwise, skip this topic.

Perform the prerequisite tasks to set up a custom location for the filestore

1. Decide the computer and the folder on it to use as the filestore.
2. Share this folder.
3. Verify that the Windows operating system users who are updating the filestore have read/write access to this folder.
4. Use the UNC path in the format *computer-name**folder-name* to specify the location of the filestore.
5. Start the Catalog Component service with the logon credentials of the Windows user who requires access to the folder.

6. Verify that these users can log in to all Catalog Component computers and have read/write access to the filestore.

You have performed the prerequisite tasks to set up a custom location for the filestore.

Chapter 9: Maintenance

This section contains the following topics:

Files to Back Up Regularly

Several CA Service Catalog files are updated during use. Back up these files regularly, using the following table as a guide. This table identifies the features that use files on the Catalog Component server and their locations:

Feature	Folder
Request Attachments	USM_HOME\filestore\documents\requests
CA Service Catalog Images for services	USM_HOME\filestore\images\offerings
Documents	USM_HOME\filestore\documents
CA Service Catalog Forms	USM_HOME\filestore\forms
Data Objects and Data Views	USM_HOME\filestore\reporting
Offline Data Objects and Data Views	USM_HOME\filestore\reporting\offline
Custom files for CA Service Catalog, including custom images, data fields for business units, accounts and users. You can optionally store these files in a filestore (see page 239).	USM_HOME\filestore\custom. For example, suppose you customized data fields for business units, accounts and users. A sample folder name is USM_HOME\filestore\custom\locale\icusen (for English). Another example follows: Suppose you customized images for service option groups. In that case, a sample folder name is USM_HOME\filestore\custom\images\rateplans.
Data Mediation	USM_HOME\filestore\DataMediation

CA Service Repository Agent files (also known as Data Mediation Data Repository Agent)	USM_HOME\repagent. This folder contains these sub folders: \conf, \log, and \data.

CA Management Database

CA product suites are integrated through a common enterprise data repository: the CA Management Database (MDB). The MDB provides a unified database schema for the management data stored by all CA products (mainframe and distributed).

CA products include an MDB running on one of several major database management systems. The MDB helps enable integration between CA products for managing your IT infrastructure.

Note: For additional information regarding MDB and maintenance strategies, see the MDB documentation included with your CA Service Catalog installation media.

Update the Password of the Database User

You can run the setup utility to change the password of the database user, to comply with security, governance, or other requirements. CA Service Catalog components use the logon credentials (user name and password) of the database user to access the database. The setup utility updates these password references globally to help CA Service Catalog continue to run efficiently throughout your environment. You run the setup utility on *every* computer in your environment that has a CA Service Catalog component installed.

Important! You set the connection parameters for the database and CA EEM when you install or upgrade CA Service Catalog and set up the CA Service Catalog components. If you are integrating CA Service Catalog and CA Workflow, *do not update* any connection parameters for the database or CA EEM after that time. Otherwise, CA Workflow and the integration may stop working properly.

Follow these steps:

1. Start the setup utility by entering the following URL in your browser for the CA Service Catalog installation that you want to update:
   http://*hostname*:*portnumber*/usm/config.

   The setup utility starts.

2. Enter the password to log in to the setup utility.

   Note: If you lost or forgot your password, see the "Installing CA Service Catalog" chapter for instructions to reset it.

   The setup utility opens on the Database tab.

3. In the Application User Settings section, enter the new password for the database user. Confirm the password and save your changes.
4. Restart the Windows services for CA Service Accounting and CA Service Catalog, as follows:
   - To restart the services immediately, click Restart Now when prompted.
   - To restart the services later, click Restart Later at the prompt. Later, click Click the Component tab, select the CA Service Accounting and CA Service Catalog options, and click Restart.

   Restarting the services is required to make your updates take effect.
5. Exit the utility.
6. Update the password on all remaining CA Service Catalog computers in your environment. Perform the previous steps on each CA Service Catalog computer, one at a time.
7. Verify that CA Service Catalog is running correctly, as follows:
   a. Log in to CA Service Catalog.
   b. Create services, create and process requests, and perform administrative tasks.

You have updated the password of the database user.

Update the Database Host, Port, Instance, or Service Names

To comply with changes in your environment or for other reasons, you can change any or all of the following database settings: host name, port number, instance name, or service name. CA Service Catalog components use these settings to communicate with each other and the database.

Important! You set the connection parameters for the database and CA EEM when you install or upgrade CA Service Catalog and set up the CA Service Catalog components. If you are integrating CA Service Catalog and CA Workflow, *do not update* any connection parameters for the database or CA EEM after that time. Otherwise, CA Workflow and the integration may stop working properly.

Follow these steps:

1. Perform the following prerequisite tasks:
   a. If you must update the database host name, update the operating system computer name of the computer on which the database is installed. For details, see your operating system documentation.
   b. Update these database settings in your DBMS software (Oracle or SQL Server). For details, see your DBMS documentation.
   c. Verify that the updated DBMS is accessible from every DBMS client on every CA Service Catalog computer. Use your DBMS client software (not CA Service Catalog) to perform this step.
2. Start the setup utility by entering the following URL in your browser for the CA Service Catalog installation that you want to update:
   http://*hostname*:*portnumber*/usm/config.

   The setup utility starts.
3. Enter the password to log in to the setup utility.

   Note: If you lost or forgot your password, see the "Installing CA Service Catalog" chapter for instructions to reset it.

   The setup utility opens on the Database tab.
4. Update the password of the database user (see page 244), if *both* of the following conditions exist. Otherwise, skip this step.
   - You are using SQL Server
   - The database was backed up and restored on a new computer

   When you are prompted for your password, optionally specify your existing password if you want to continue using it.

5. On the Database tab of the setup utility, specify new values for the settings that you want to change, as follows:
   - If you are using SQL Server, if applicable, update the instance name for the MDB. For example, myinstance. The default value is MSSQLSERVER.
   - If you are using Oracle, if applicable, update the service name; every Oracle database or service has a service name. The service name of an Oracle database is typically its global database name. Enter the service name of the Oracle database or other service that you want to access.
   - If applicable, update the port number.
6. Save your changes.
7. Restart the Windows services for CA Service Accounting and CA Service Catalog, as follows:
   - To restart the services immediately, click Restart Now when prompted.
   - To restart the services later, click Restart Later at the prompt. Later, click the Component tab, select the CA Service Accounting and CA Service Catalog options, and click Restart.

   Restarting the services is required to make your updates take effect.
8. Exit the utility.
9. Make the same updates on all remaining CA Service Catalog computers in your environment. Perform the previous steps on each CA Service Catalog computer, one at a time.
10. Verify that CA Service Catalog is running correctly, as follows:
    a. Log in to CA Service Catalog.
    b. Create services, create and process requests, and perform administrative tasks.

You have updated the database settings.

Update the CA EEM Host Name and Application Names

To comply with security, governance, or other requirements, you can change the name of the host computer running CA EEM. You can also change the names of the applications whose access control you manage through CA EEM. These applications can be one or more CA products, such as CA Service Desk Manager, CA CMDB, and CA Service Catalog. To change these names, you run the setup utility on *every* computer in your environment that has a CA Service Catalog component installed. This utility updates these names globally. Doing so helps ensure that CA Service Catalog, CA EEM, and their integrated products continue to run efficiently throughout your environment.

Important! You set the connection parameters for the database and CA EEM when you install or upgrade CA Service Catalog and set up the CA Service Catalog components. If you are integrating CA Service Catalog and CA Workflow, *do not update* any connection parameters for the database or CA EEM after that time. Otherwise, CA Workflow and the integration may stop working properly.

Note: In this topic, the term *application names* refers to the CA EEM policies for managing access control for users and other resources to these products. Thus, in CA EEM, the application name *Service Delivery* refers to the policies governing user access control in CA Service Catalog. CA EEM also includes a *Global* application name that you can optionally apply in part or in whole to one or more products. For details about integrating CA Service Catalog and CA EEM, see the *Integration Guide*.

Follow these steps:

1. Start the setup utility by entering the following URL in your browser for the CA Service Catalog installation that you want to update:
   http://*hostname:portnumber*/usm/config.

   The setup utility starts.

2. Enter the password to log in to the setup utility.

   Note: If you lost or forgot your password, see the "Installing CA Service Catalog" chapter for instructions to reset it.

   The setup utility opens on the Database tab.

3. Click the Security tab, and specify new values for the settings that you want to change, as follows:
   - The host name of the CA EEM computer.

     If you change the host name, a “Backup and restore” option appears. Select this option to back up the CA EEM data on the current (old) CA EEM computer and restore it on the new CA EEM computer.

     If you select the Backup and restore option, specify the password of the administrator on the old CA EEM computer in the field provided.
   - The name of the CA EEM application instance.
   - The password of the CA EEM application instance.
4. Save your changes.
5. Restart the Windows services for CA Service Accounting and CA Service Catalog, as follows:
   - To restart the services immediately, click Restart Now when prompted.
   - To restart the services later, click Restart Later at the prompt. Later, click the Component tab, select the CA Service Accounting and CA Service Catalog options, and click Restart.

   Restarting the services is required to make your updates take effect.
6. Exit the utility.
7. Make the same updates on all remaining CA Service Catalog computers in your environment. Perform the previous steps on each CA Service Catalog computer, one at a time.
8. Verify that CA Service Catalog is running correctly, as follows:
   a. Log in to CA Service Catalog.
   b. Create services, create and process requests, and perform administrative tasks.

You have updated the CA EEM host name and application names. The new or updated host name and application names are updated in the Windows registry.

Note: As a best practice, back up the Windows registry after you update the host name and application names. For details, see your Windows documentation.

Update the Host Name and Port Number for CA Service Catalog

You can change the host name, port number, or both for a CA Service Catalog computer. You can do so to adapt to changes in your environment or for other reasons. CA Service Catalog use these settings to communicate with other components, the database, and other CA products. You perform these steps *only* on the computer whose host name or port number has changed. You do not perform these steps on *other* computers.

Note: If applicable, you use the operating system (not the ant update-usm-host command) to change the host name. Afterwards, you use the ant command to propagate that host name change throughout the catalog system. However, you use the ant command to both update the port number directly *and* propagate that change throughout the catalog system.

Follow these steps:

1. Use the operating system to update the computer name (host name) of the computer on which CA Service Catalog is installed, if necessary.

   Note: For details, see your operating system documentation.

   Use the Windows Control Panel to stop these services on the computer being updated: CA Service Accounting and CA Service Catalog.
   Important! Stop these services on *all* CA Service Catalog computers in your environment *before* proceeding to the next step. After you stop the services on all computers, perform the steps that follow.

2. Do the following:

   a. Open the CA Service Catalog command prompt from the CA Service Catalog portion of the Windows Start menu.

   b. Enter the following command at the CA Service Catalog command prompt:

      ```
      ant update-usm-host
      ```

      Note: For a list of ant commands and their descriptions, enter ant -p.

      The utility displays the current settings for the host name and port number.

      You are prompted to accept or change the port numbers.

   c. Follow the prompts to update each setting that you want to change, and confirm the new value.

      If necessary, to correct any errors, cancel and rerun the ant update-usm-host command.

d. Record all updated host name and port number settings for reference.

The command utility performs the following actions:

- Updates the host name and port number settings in your DBMS (Oracle or SQL Server) and in configuration files
- Records the actions it performs in the maintenance.log file

  This log file and the backed up configuration files are stored in the USM_HOME\conf-backup*date-time* folder. The name of the *date-time* subfolder is based on the date and time at which the ant update-usm-host command was run. Thus, this subfolder name is different on each computer in the environment. The utility writes the name of the subfolder to the screen as soon as the backup is completed.

3. Perform the following actions:
   a. View the maintenance.log file in the USM_HOME\conf-backup*date-time* folder for a record of the actions performed.
   b. Record the name of this folder for future reference.
4. Verify that you have finished updating the host name and port number on the current computer. Update the host name and port number on the next computer, if necessary.

   Note: Before you proceed to the next step, verify that you have updated the required settings on *all* CA Service Catalog computers.
5. Log in to CA Service Catalog.
6. Verify that CA Service Catalog is running correctly, as follows:
   a. Log in to CA Service Catalog.
   b. Create services, create and process requests, and perform administrative tasks.

The new or updated host name and application names are updated in the Windows registry.

Note: As a best practice, back up the Windows registry after you update the database settings. For details, see your Windows documentation.

How to Maintain Log Files

CA Service Catalog includes nearly approximately 50 log files, each of which is helpful for researching a specific component, function, or question. To maintain log files, do the following:

1. Review the names and locations of all log files (see page 252).
2. Review the descriptions of the most frequently used log files (see page 254).

3. Become familiar with the process of setting log levels (see page 257).
4. Review the process of configuring rollover settings for selected log files (see page 260).
5. To keep older rolled over log files from consuming excessive disk space, delete them manually at regular intervals.

   Verify that you comply with the file retention policy of your organization. By default, certain log files are automatically rolled over and are automatically deleted periodically. Both processes occur according to your specifications when you configure rollover settings for selected log files (see page 260). However, *no other* rolled over log files are automatically deleted; therefore, delete them manually.

Names and Locations of All Log Files

Most CA Service Catalog log files are located in the folder named USM_HOME\logs, as follows:

- The log file folder for Catalog Component messages is USM_HOME\logs\view.
- The log file folder for installation messages is USM_HOME\logs\install.
- The log file folder for CA Workflow messages is USM_HOME\logs\fulfillment.
- The log file folder for Accounting Component messages is USM_HOME\logs\accounting.

The names and locations of *all* CA Service Catalog log files follow. This list includes the most frequently used log files (see page 254).

USM_HOME\logs

The following log files are located in USM_HOME\logs folder:

- view.log
- view.log.1, view.log.2, view.log.3, and so forth

  You can configure rollover settings for these log files (see page 260).

USM_HOME\logs\accounting

The following log files are located in the USM_HOME\logs\accounting folder:

- accounting.log
- AccountingService.log

USM_HOME\logs\fulfillment

The following log files are located in the USM_HOME\logs\fulfillment folder:

- FulfillmentService.log
- pm.log
- pm.log.1, pm.log.2, pm.log.3, and so forth

  You can configure rollover settings for these log files (see page 260).
- tomcat_fulfillment.log
- wf_admin.log
- wf_process.log
- wf_security.log
- wl.log
- wl.log.1, wl.log.2, wl.log.3, and so forth

  You can configure rollover settings for these log files (see page 260).
- wsactorSoapRequest.xml
- wsactorSoapResponse.xml

USM_HOME\logs\install

The following log files are located in the USM_HOME\logs\install folder:

- acnt_seed_data.log
- createFiscalPeriod.log
- createRootOffering.log
- DeployServices.log
- importCommonReports.log
- importPlanningContent.log
- importPortalContent.log
- imq_cfg1.log
- imq_cfg2.log
- imq_cfg3.log
- InstallProducts.log
- ixerr.log
- ixutil.log

- seeddata.log
- sqlUtil.log
- usm_eiam_check.log
- usm_eiam_viewG.log
- usm_eiam_viewL.log
- usmInstall.log
- view_seed_data.log
- wf_seed_data.log
- workflow_install.log

USM_HOME\logs\view

The following log file is located in the USM_HOME\logs\view folder:

- postEvent.log
- tomcat_view.log
- ViewService.log

USM_HOME\logs\repagent

The following log files are located in the USM_HOME\logs\repagent folder:

- repagent.log
- RepositoryAgentService.log

Most Frequently Used Log Files

This topic lists and describes the log files that you are likely to review most frequently. If a file is marked with an asterisk (*), you can set the logging levels (see page 257) for the file.

accounting.log*

Stores log messages generated by Accounting Component, but not by its Windows service.

This file located in the USM_HOME\logs\accounting folder.

AccountingService.log

Stores log messages generated by the CA Service Accounting Windows service.

This file located in the USM_HOME\logs\accounting folder.

ixutil.log*

Stores log messages generated by the ixutil import/export command line utility.

This file located in the USM_HOME\logs folder.

repagent.log*

Stores log messages generated by the CA repository agent.

This file located in the USM_HOME\logs\repagent folder.

RepositoryAgentService.log

Stores log messages generated by the Windows service of the repository agent.

This file located in the USM_HOME\logs\repagent folder.

seeddata.log*

Stores log messages generated when the database is seeded with the initial data supplied with CA Service Catalog to get it started and running immediately after installation.

This file located in the USM_HOME\logs folder.

view.log*, view.log.1*, view.log.2*, view.log.3* and so forth

Store log messages generated by the Catalog Component component, including rolled over log files (see page 260) from previous days.

These files are located in the USM_HOME\logs folder.

ViewService.log

Stores log messages generated by the Windows service of Catalog Component.

This file located in the USM_HOME\logs\view folder.

pm.log, pm.log.1, pm.log.2, pm.log.3, and so forth

Store log messages generated by the Process Manager component of CA Workflow, including rolled over log files (see page 260) from previous days.

These files are located in the USM_HOME\logs\fulfillment folder.

tomcat_fulfillment.log*

Stores log messages generated by Apache Tomcat hosting the CA Service Fulfillment service.

This file located in the USM_HOME\logs\fulfillment folder.

wl.log, wl.log.1, wl.log.2, wl.log.3, and so forth

Stores log messages generated by the Worklist Manager component of CA Workflow, including rolled over log files (see page 260) from previous days.

These files are located in the USM_HOME\logs\fulfillment folder.

usmInstall.log

Stores log messages generated by the CA Service Catalog uninstallation program.

This file located in the USM_HOME\logs\install folder.

tomcat_view.log*

Stores log messages generated by Apache Tomcat hosting Catalog Component and Accounting Component services.

This file located in the USM_HOME\logs\view folder.

How to Set Log Levels

You can set the logging levels (the level of detail) for some of the most frequently used log files (see page 254) in CA Service Catalog, using the Apache Tomcat log4j file. Configuring the log level helps you better maintain your log files and troubleshoot any problems that occur in your system.

Note: CA Workflow creates the log files named wl.log and pm.log. For instructions on how configure their output, see the *CA Workflow IDE Online Help*. The logging levels for *all other* log files supplied by CA Service Catalog are preset and cannot be modified.

To set logging levels for the files named in the previous list, follow this process:

1. From the following list, determine the log file whose output you want to control. If necessary, review the contents of each file. These files are some of the most frequently used log files in CA Service Catalog.
   - accounting.log
   - ixutil.log
   - repagent.log
   - seeddata.log
   - tomcat_fulfillment.log
   - tomcat_view.log
   - view.log
2. Determine the log4j.xml file (see page 258) that controls the output of the log file whose log level you want to set.
3. Edit that log4j file and set the new logging level (see page 258).
4. After sufficient time has passed (approximately 60 seconds), review the contents of the affected log file. Verify whether the level of detail of its messages is satisfactory. If necessary, reset the log level and review the contents again until you are satisfied with the level of detail.
5. As appropriate, consult other administrators to see if the level of detail logged meets their needs.

Note: For additional information about the logging features that CA Service Catalog uses, see the information about log4j on http://jakarta.apache.org.

Log Files Controlled by Each Log4j.xml File

CA Service Catalog includes several log4j.xml files that control the output of the most frequently used log files (see page 254). Each log4j.xml file controls the log file of one or more CA Service Catalog services, as summarized in the following table:

Service Logged	Location of Log4j File	Log Files Controlled	Log file Location
Catalog Component	USM_HOME\view\conf	seeddata.log view.log tomcat_view.log	USM_HOME\logs\install USM_HOME\logs USM_HOME\logs\view
CA Service Fulfillment	USM_HOME\fulfillment\conf	tomcat_fulfillment.log	USM_HOME\logs\fulfillment
Accounting Component	USM_HOME\accounting\conf	accounting.log	USM_HOME\logs\accounting
Repository Agent	USM_HOME\repagent\config	repagent.log	USM_HOME\repagent\log
ixutil import\export utility	USM_HOME\scripts	ixutil.log	USM_HOME\logs\install

Logging messages generated by CA Service Catalog components, such as the Event Manager and the Rule Engine, are written to the log file of the calling service. For example, if the Catalog Component service calls the Event Manager, the log for the call is written in the view.log file. Similarly, calls from the Accounting Component service to the Event Manager are written to the accounting.log file.

Set the Log Level of a Service

You can change the log level of a CA Service Catalog service for various reasons. For example, you can set the log level to a higher level to investigate a problem or question. After you are finished investigating, you can reduce the log level for efficiency reasons.

Follow these steps:

1. Open the log4j.xml file (see page 258) of the CA Service Catalog service whose logging level you want to set.
2. Find the following section:

```
<root>
<priority value="log-level" />
<appender-ref ref="accounting" />
<!-- appender-ref ref="console" /-->
</root>
```

3. Specify one of the following for the *log-level*:

   Fatal

   Logs only errors that shut down a CA Service Catalog component. This log level typically provides the least detail. It also requires the least amount of disk space for rolled-over log files and therefore the least maintenance.

   Error

   Logs all of the messages from the previous level, plus failed actions. For example, a user submitted a request, but the system did not present the request for approval.

   Warn

   Logs all of the messages from the previous levels, plus warning messages; for example, a user creates a service with a nonunique name.

   Informational

   Logs all of the messages from the previous levels, plus messages that are informational only. An example is the total number of open database connections.

   Debug

   Logs all of the messages from the previous levels, plus more detailed messages intended to help troubleshoot a problem. For example, debug messages can include every step of a multiple-step process.

   Trace

   Logs every action and displays the final XML. This level includes all of the messages from the previous levels, plus many more.

   This log level typically provides the most detail. It also requires the most amount of disk space for rolled-over log files and therefore the most maintenance.

4. Save and close the log4j.xml file.
5. Recycle the CA Service Catalog service whose logging level you updated.

Important! Do *not* make any *other* changes to any log4j file, unless instruction to do so by CA Technical Support!

Configure Rollover Settings for Selected Log Files

To maintain maximum efficiency, CA Service Catalog automatically rolls over selected frequently used log files, according to default settings. For any of these log files, you can configure both the rollover size and the number of rolled over log files retained. Doing so helps you customize the log files to match the needs of your organization more closely.

Follow these steps:

1. Review the selected frequently used log files that you can edit, including the default rollover settings. Decide the file that you want to update.
2. Open the log4j.xml file (see page 258) that controls the output for the log file that you want to update. Use an editor of your choice. (see page 258)
3. Find the following section:

```
<appender name="view" class="org.apache.log4j.RollingFileAppender>
    <param name="File" value="${usm.home}/logs/view.log" />
    <param name="MaxFileSize" value="size" />
    <Param name="MaxBackupIndex" value="backup-index" />
    ...
</appender>
```

4. Specify the following settings:

   size

   Specifies the rollover size; that is, the file size at which you want this log file to roll over, in MB. For example, enter 5 to make the log file roll over when its size reaches 5 MB.

   Default: 10

   backup-index

   Specifies the number of recently rolled over log files that you want to keep on disk, for example, 25 or 50.

   Default: 100

5. Save and close the log4j.xml file.
6. After one or more days have passed, verify that the log file output matches your needs. If necessary, reconfigure the log4j file or files to match your needs more closely.

You have configured the rollover settings for selected log files.

Tracking Log Statements in Memory

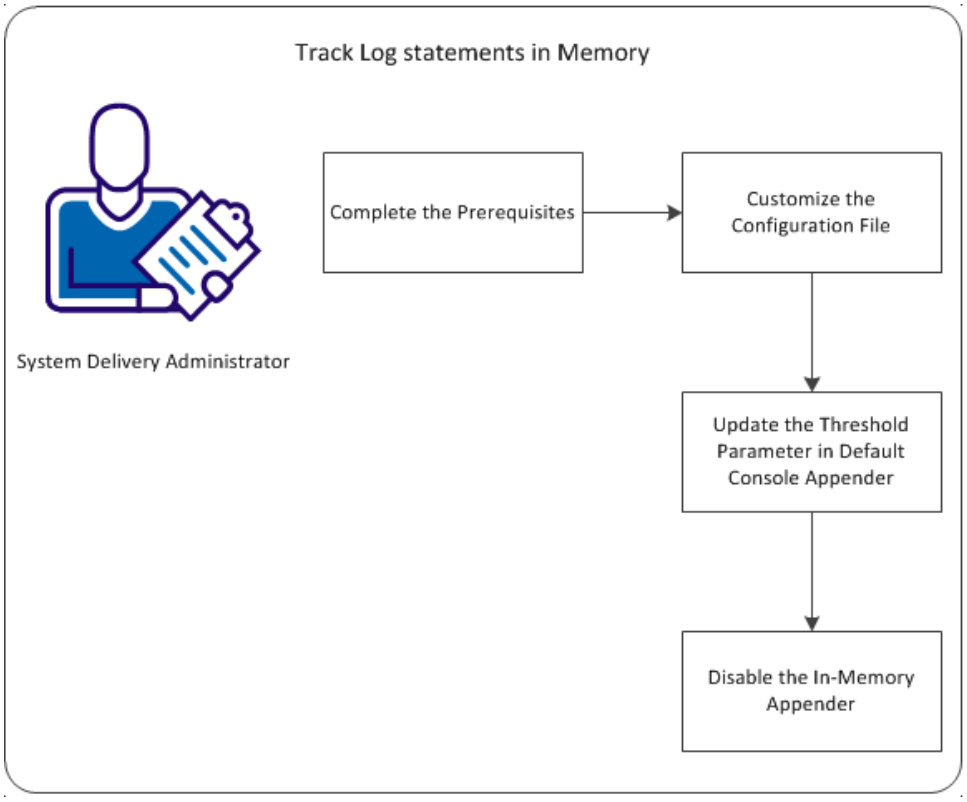
The log appender called as the in-memory appender allows writing messages to the memory till an error message occurs. Once the error message occurs it is logged to the log file. The in-memory appender performs the following functions:

- Keeps track of all the log statements in the memory until an error occurs.
- Dumps the log statements in the error.log file from the memory.
- If no errors occur then the log statements or messages are discarded from the memory.

Note: The error.log is the default file name and you can rename it to a name of your choice.

The in-memory appender is implemented to log events under com.ca.usm package only. Using the in-memory appender improves the performance as the log statements are filtered at the appender level.

The following diagram explains the process of customizing the configuration file and updating the threshold parameter in the log4j.xml file.



- Complete the Prerequisites (see page 262)
- Customize the Configuration File (see page 263)
- Update the Threshold Parameter in Default Console Appender (see page 265)
- Disable the In-Memory Appender (see page 265)

Complete the Prerequisites

You are required to have adequate knowledge on the Apache log4j.

Customize the Configuration File

You must customize the appender section of the log4j.xml file depending on your requirement, based on the parameters in the log4j file.

Follow these steps:

1. Open the log4j.xml file from Installed_Loc/view/conf/ and modify the parameters for in-memory appender. The following code sample shows the in-memory appender parameters:

```
<appender name="memory" class="com.ca.usm.util.log.MemoryAppender">
   <param name="File" value="${usm.home}/logs/error.log" />
   <param name="MaxFileSize" value="10MB" />
   <param name="MaxBackupIndex" value="10" />
   <param name="MaxMemoryLogs" value="50000" />
   <param name="MaxMemoryTime" value="600000" />
   <layout class="org.apache.log4j.PatternLayout">
     <param name="ConversionPattern" value="%d{yyyy/MM/dd HH.mm.ss.SSS} %-5p [%X{UNIQUEID}]
[%t] [%c{1}] %m%n" />
   </layout>
 </appender>
```

   You can customize the following parameters in appender section:

   File

   Defines the path of the file where the in-memory logs are logged in case of an error. The default is error.log

   Default: <param name="File" value="${usm.home}/logs/error.log" />

   MaxFileSize

   Defines the maximum size of the log file. Once the log file reaches the maximum size, the backup of the current log file is taken.

   Default: <param name="MaxFileSize" value="10MB" />

   MaxBackupIndex

   Defines the maximum number of backup files to be restored on the system.

   Default: <param name="MaxBackupIndex" value="10" />

   MaxMemoryLogs

   Defines the maximum count of logs in the memory, after which the appender either recycles the logs in memory, or moves them to temporary files on disk.

   The following actions are performed on the temporary files:

   - If there is no error, the temporary files are discarded
   - If there is an error, the logs in the temporary files are logged to the log file.

     The optimal value is tested to be 50000.

   Default: <param name="MaxMemoryLogs" value="50000" />

MaxMemoryTime

Defines the maximum time in milliseconds for the logs that remain in memory. If the logs remain in memory for MaxMemoryTime, they are discarded. The optimal value is tested to be 600000 milliseconds.

Default: <param name="MaxMemoryTime" value="600000" />

ConversionPattern

Defines the log statements that are logged based on the pattern provided. For more details on the ConversionPattern, please refer to Apache log4j documentation.

The *{UNIQUEID}* helps to identify the complete request from the beginning till the end of the request.

<layout class="org.apache.log4j.PatternLayout">

<param name="ConversionPattern" value="%d{yyyy/MM/dd HH.mm.ss.SSS} %-5p [%X{UNIQUEID}] [%t] [%c{1}] %m%n" />

</layout>

Important! Do not update the logger name parameter of the logger section in the log4j.xml configuration file.

2. Save the file.

You have customized the configuration file.

Update the Threshold Parameter in Default Console Appender

The threshold parameter must be updated to the required log level in order to update the log levels of the default console appender.

Follow these steps:

1. Open the log4j.xml file from Installed_Loc/view/conf/ and modify the threshold parameter of the default console appender. The following code sample shows the in-memory appender parameters:

```
<appender name="view" class="org.apache.log4j.RollingFileAppender">
   <param name="File" value="${usm.home}/logs/view.log" />
   <param name="MaxFileSize" value="20MB" />
   <param name="MaxBackupIndex" value="100" />
   <param name="Threshold" value="INFO" />
   <layout class="org.apache.log4j.PatternLayout">
   <param name="ConversionPattern" value="%d{yyyy/MM/dd HH.mm.ss.SSS} %-5p [%t] [%c{1}] %m%n"
/>
   </layout>
 </appender>
```

2. You may update the threshold value to INFO, where INFO is the required log level.

   Refer to Set the log level of the service document in the Implementation Guide for more information on the threshold values.

3. Save the file.

   You have updated the threshold parameter in the default console appender.

Disable the In-Memory Appender

(Optional) You can disable the In-memory appender by commenting or deleting the following logger section in the log4j.xml configuration file on each computer where CA Service Catalog is installed.

```
<logger name="com.ca.usm">
   <level value="ALL" />
   <appender-ref ref="memory" />
 </logger>
```

Note: To enable the In-Memory appender again, uncomment the logger section.

Chapter 10: Clustering

This section contains the following topics:

How to Implement Clustering

As a CA Service Catalog administrator, you can optionally use *clustering* for CA Service Catalog to improve performance and provide *failover protection*. Here, the term *clustering* means multiple computers in a group that perform the same or similar function, essentially acting as one virtual computer. Specifically, clustering here refers to CA Service Catalog running on two or more computers. *Failover protection* means that if one computer malfunctions, becomes heavily loaded, or loses power, its workload is transferred to the other computers in the cluster. These computers retain and complete the active sessions.

Another advantage of clustering is *load-balancing:* If one of the cluster components is busy processing a request, the load is redirected to another component in the cluster. Users of the system see no interruption of access. CA Service Catalog processing continues. The loss of performance on users and business functions is minimized, even when computer availability is lost or reduced.

Important! These instructions apply *only* to the Apache Tomcat web server version supplied with CA Service Catalog. If you are using any other web server instead, skip these instructions and see your web server documentation for instructions to implement clustering.

To implement clustering for CA Workflow and CA Service Catalog, perform these tasks.

1. Perform the preliminary tasks (see page 268).
2. Meet the prerequisites (see page 269).
3. Set up horizontal clustering for CA Service Catalog (see page 271)
4. Set up NTLM authentication for each cluster (see page 274), if applicable.
5. Configure NTLM with Apache Load Balancer (see page 275), if applicable.
6. Optionally set up horizontal clustering for CA Workflow (see page 277).

7. Set up load balancing (see page 280).

   If you are implementing horizontal clustering on multiple computers, use the computers that have the same default gateway. To obtain the default gateway, enter the ipconfig command at the DOS prompt.

8. To record cluster-related logging information in tomcat_view.log, do the following:

   a. Add the following section to the log4j.xml file (see page 258) for each CA Service Catalog computer:

   ```
   <logger name="org.apache.catalina.cluster" additivity="false">
    <level value="TRACE" />
    <appender-ref ref="tomcat_view" />
   </logger>
   ```

   b. Set the log level (see page 258) for each log4j.xml file to meet your needs.

      For example, use a high log level while you are troubleshooting. Conversely, use a low log level, or comment out the previous lines, at other times.

      Note: When you use the previous lines, each communication between CA Service Catalog computers is logged in the log4j.xml file.

9. Also, consider setting up a single location for shared files (see page 239). While this task is not directly related to clustering, it does help improve overall system performance and helps reinforce best practices.

Perform the Preliminary Tasks

Perform the following preliminary tasks before you implement clustering (see page 267):

1. Verify that you have installed CA Service Catalog and CA Workflow.

   The original installations of CA Service Catalog and CA Workflow are used as building blocks for the additional cluster nodes.

2. Understand the key terms and concepts (see page 14) of clustering.

3. Decide whether to implement clustering for CA Service Catalog, CA Workflow, or both. You can optionally implement clustering for only one, both, or neither.

4. For CA Service Catalog, CA Workflow, or both, decide how many cluster nodes to create, depending on your design concerns and availability of resources.

5. Verify that the time and time zone on all clustered computers are the same.

6. Verify that the IPV6 protocol is disabled on all clustered computers.

You have completed the preliminary tasks. Now you can meet the prerequisites (see page 269).

Meet the Prerequisites

To implement clustering successfully, meet its prerequisites.

Follow these steps:

1. Verify that no other application uses the following ports.

   By default, CA Service Catalog uses these ports for clustering, using the AJP protocol:

   - 8009 – for CA Service Catalog communicating with Apache HTTP Server
   - 8019 – for Service Fulfillment communicating with Apache HTTP server

2. Perform this step if applicable; otherwise, skip it.

   a. If another application uses one of these port numbers, eliminate the duplication by using a different port number for either CA Service Catalog or the other application.

   b. If you use a different port number for CA Service Catalog, then also replace the old port number with the new port number in the applicable clustering topics in this documentation. For example, if you change 8009 to a different port number, use the new port number instead of 8009 when you set up horizontal clustering for CA Service Catalog (see page 271).

3. Verify the multicast address for Tomcat, as follows:

   a. In the USM_HOME\view\conf folder, open the server.xml file for editing.

   b. Locate and record the multicast address for Tomcat.

      This address is the value of the mcastAddr attribute within the Membership tag. The default is 228.0.0.4, as shown in the following sample specification:

      ```
      <Membership className="org.apache.catalina.tribes.membership.McastService"
              address="228.0.0.4"
              port="45564"
              frequency="500"
              dropTime="3000"/>
      ```

4. Verify the multicast address for Java Messaging Service (JMS), as follows:

   a. In the USM_HOME folder, open the config.properties file for editing.

   b. Locate and record the multicast address for JMS.

      The default is 239.255.2.3:6155, as shown in the section that begins with the heading #JMS related configuration.

5. Run the following command at the DOS prompt of each clustered computer:

   ```
   netsh interface ip show joins
   ```

   The command lists all multicast addresses applicable to this computer.

6. Verify that this list includes the multicast addresses that you recorded from the server.xml and config.properties files:
   - If Yes, then skip the remaining steps in this topic.
   - If No, then use the list to determine a common multicast address applicable to all clustered computers, and complete the remaining steps.
7. Follow these steps:
   a. Update the multicast addresses in the server.xml files on all clustered computers to use this common address.
   b. In the config.properties files on all clustered computers, edit the JMS-related configuration section mentioned earlier. Edit that section to specify this common address, as shown in the following example.

      Important! The port number *must* be the same on each computer in the cluster.

      #multicast://default = multicast://239.255.2.3:6155
      #static:(tcp://<host1>:<port>,tcp://<host2>:<port>,...)
      jms.networkConnectorUri = multicast://*custom-ip-address:custom-port*
      jms.discoveryUri = static: multicast://*custom-ip-address:custom-port*
      #jms.port = 7777
      jms.port = *custom-port*

   c. (Alternative) If you want to specify your nodes statically instead of using a multicast address, perform this step instead of step b.

      In the config.properties files on all clustered computers, edit the JMS-related configuration section mentioned earlier. Edit that section to specify the host and port for all other computers in the cluster, as shown in the following example.

      The port number can be the same value on each computer in the cluster, or it can be different.

      #multicast://default = multicast://239.255.2.3:6155
      #static:(tcp://<host1>:<port>,tcp://<host2>:<port>,...)
      jms.networkConnectorUri = static:(tcp://host:*custom-port)*
      jms.discoveryUri = static:(tcp://host:*custom-port*)
      #jms.port = 7777
      jms.port = *custom-port*

      Note: Update the server.xml and config.properties files on all clustered computers before proceeding to the next step.
8. Restart the CA Service Catalog Windows service on all clustered computers.

You have met the prerequisites.

Set Up Horizontal Clustering for CA Service Catalog

This process is required to set up horizontal clustering for CA Service Catalog.

Important! Perform this process on *every* computer on which you want to set up a horizontal cluster node for CA Service Catalog, including the first CA Service Catalog computer.

Note: Before you perform this procedure, verify that CA Service Catalog is installed locally.

Follow these steps:

1. As a prerequisite, if this computer is not the first-installed CA Service Catalog computer, do the following:
   a. Verify that its host name is unique.
   b. Verify that its database is pointing to the database of the CA Service Catalog computer installed first.
2. Open the USM_HOME\view\conf\server.xml file for editing and uncomment the Cluster tags shown in the following lines, if they are commented:

```
<Cluster className="org.apache.catalina.ha.tcp.SimpleTcpCluster"
         channelSendOptions="8">
    <Manager className="org.apache.catalina.ha.session.DeltaManager"
          expireSessionsOnShutdown="false"
          notifyListenersOnReplication="true"/>
    <Channel className="org.apache.catalina.tribes.group.GroupChannel">
     <Membership className="org.apache.catalina.tribes.membership.McastService"
            address="228.0.0.4"
            port="45564"
            frequency="500"
            dropTime="3000"/>
     <Receiver className="org.apache.catalina.tribes.transport.nio.NioReceiver"
            address="auto"
            port="4000"
            autoBind="100"
            selectorTimeout="5000"
            maxThreads="6"/>
     <Sender className="org.apache.catalina.tribes.transport.ReplicationTransmitter">
```

```
        <Transport className="org.apache.catalina.tribes.transport.nio.PooledParallelSender"/>
      </Sender>
      <Interceptor className="org.apache.catalina.tribes.group.interceptors.TcpFailureDetector"/>
      <Interceptor
className="org.apache.catalina.tribes.group.interceptors.MessageDispatch15Interceptor"/>
    </Channel>
    <Valve className="org.apache.catalina.ha.tcp.ReplicationValve"
        filter=""/>
    <Valve className="org.apache.catalina.ha.session.JvmRouteBinderValve"/>
    <Deployer className="org.apache.catalina.ha.deploy.FarmWarDeployer"
        tempDir="/tmp/war-temp/"
        deployDir="/tmp/war-deploy/"
        watchDir="/tmp/war-listen/"
        watchEnabled="false"/>
    <ClusterListener className="org.apache.catalina.ha.session.JvmRouteSessionIDBinderListener"/>
    <ClusterListener className="org.apache.catalina.ha.session.ClusterSessionListener"/>
  </Cluster>
```

3. Specify a unique port in the <Cluster> section. You can find the port in the cluster tag of the following line:

```
<Receiver className="org.apache.catalina.tribes.transport.nio.NioReceiver"
    address="auto"
    port="4000"
    autoBind="100"
    selectorTimeout="5000"
    maxThreads="6"/>
```

   For example, suppose the port on the first CA Service Catalog computer is 4001, as shown in the previous line. In that case, the port could be 4002 on the second CA Service Catalog computer, 4003 on the third CA Service Catalog computer, and so forth. In this way, the port is unique on each computer.

4. Uncomment the Apache JServ Protocol (AJP) tags shown in the following lines, if they are commented:

```
<Connector port="8009" enableLookups="false" redirectPort="8443" tomcatAuthentication="false"
maxThreads="400" minSpareThreads="25" maxSpareThreads="100" protocol="AJP/1.3" />
```

5. Comment the HTTP ports Connector tags. These tags appear similar to the following:

```
<Connector port="8080" enableLookups="false" redirectPort="8443" tomcatAuthentication="false"
maxThreads="400" minSpareThreads="25" maxSpareThreads="100" debug="0"
connectionTimeout="15000"
disableUploadTimeout="true" compression="on" compressionMinSize="2048"

compressableMimeType="text/html,text/plain,text/xml,text/css,text/javascript,image/png,image/gif,image/jpeg,application/json"
useBodyEncodingForURI="false" URIEncoding="UTF-8" />
```

   This step is a best practice and helps improve increased security.

6. Save the file.

7. Review the tomcat_view.log file of each CA Service Catalog computer and verify that the replication cluster was added. For example:

```
INFO Cluster-MembershipReceiver org.apache.catalina.cluster.tcp.SimpleTcpCluster - Replication member added:
org.apache.catalina.cluster.mcast.McastMember[tcp://141.202.143.77:4013,catalina,141.202.143.77,4013, alive=0]
```

8. Restart the Windows services: CA Service Accounting and CA Service Catalog.

9. If you are using NTLM authentication to enable single sign-on to CA Service Catalog, set up NTLM authentication for each cluster (see page 274); otherwise, skip this step.

You have set up horizontal clustering for CA Service Catalog. After performing this procedure for all CA Service Catalog clusters, set up load balancing (see page 280).

Remove a Cluster

When necessary, you can remove a horizontal CA Service Catalog cluster. Sample reasons for doing so include the following conditions:

- This computer becomes obsolete.
- You want to install clustering on a different computer instead of this one.
- This cluster is no longer needed.

Follow these steps:

1. Open the server.xml file of the horizontal cluster node that you want to remove.
2. Comment the cluster tag.
3. Restart the CA Service Catalog Windows service.

You have removed the cluster node. Next, verify that the load balancer setup (see page 280) no longer references this cluster.

Also, you can optionally uninstall (see page 375) CA Service Catalog from the computer whose cluster you removed.

Set Up NTLM Authentication for Each Cluster

If you are using NTLM authentication to enable single sign-on to CA Service Catalog, then setting up each CA Service Catalog cluster for single sign-on is a required task. This task is required to set up clustering (see page 271) for CA Service Catalog.

Important! This topic applies and is required *only* if you are using NTLM authentication to enable single sign-on in a clustered environment. Otherwise, skip this topic.

Follow these steps:

1. Do *one* of the following:
   - If you are using Apache Load Balancer, configure NTLM authentication with Apache Load Balancer (see page 275).
   - If you *are* using a load balancer *other than* Apache Load Balancer, configure NTLM authentication with your load balancer (see page 276).

You have set up NTLM authentication for the clusters.

Configure NTLM Authentication with Apache Load Balancer

Perform the following process to set up NTLM authentication for each cluster, using Apache Load Balancer. If you *are* using Apache Load Balancer, configuring NTLM with Apache Load Balancer is a required task.

Important! This topic applies only if you *are* using Apache Load Balancer!

Follow these steps:

1. Download the mod_auth_sspi module from the sourceforge web site, sourceforge.net.
2. Copy the mod_auth_sspi.so module to the <APACHE_Home>\modules directory of the Apache web server that you use for CA Service Catalog.
3. Append the following configuration section to the <APACHE_Home>\conf\httpd.conf file:

   LoadModule sspi_auth_module modules/mod_auth_sspi.so
   <Location ~ "/usm/(wpf|documents|FileStore)">
   AuthName "*domain_name*"
   AuthType SSPI
   SSPIAuth On
   SSPIOfferBasic On
   SSPIAuthoritative On
   SSPIDomain "*domain_name*"
   SSPIofferSSPI off
   require valid-user
   </Location>

4. Update this section: Replace *domain_name* with the name of your network domain or Windows domain.
5. Verify that the tomcatAuthentication="false" attribute is set for the Tomcat connectors that this Apache load balancer uses.

   This setting is the default in all server.xml connectors.
6. Log in to CA Service Catalog.
7. Click Administration, Configuration, Single Sign On Authentication.

   The Single Sign On Authentication page appears.

8. Do the following:
   a. Locate the property named Single Sign On Type and click its Modify icon (by default, a pencil).

      The Edit Configuration dialog for this property appears.

   b. Select the option named Artifact Based Single Sign On and click Update Configuration.

      Note: In this dialog, you select Artifact Based Single Sign On (not the NTLM option), because you are setting up a cluster.

      The dialog closes, and you return to the Sign On Authentication page.

   c. Locate the property named Artifact Type and click its Modify icon (by default, a pencil).

      The Edit Configuration dialog for this property appears.

   d. Select the option named Request and click Update Configuration.

      The dialog closes, and you return to the Sign On Authentication page.

You have configured NTLM authentication to work with Apache Load Balancer.

Configure NTLM Authentication with Another Type of Load Balancer

Perform this procedure to set up NTLM authentication for each cluster, using a load balancer *other than* Apache Load Balancer.

Important! This topic applies only if you are *not* using Apache Load Balancer!

Follow these steps:

1. Set up NTLM authentication, if you want to use NTLM authentication for your load balancer.

   Note: For details, see your load balancer documentation.

2. Configure Tomcat to use NTLM authentication for CA Service Catalog for each catalog cluster node, if *both* of the following conditions exist:
   - Your load balancer is not configured to perform NTLM authentication.
   - Your load balancer uses the HTTP Port (default 8080) to connect to Tomcat instances of CA Service Catalog.

3. Log in to CA Service Catalog.

4. Click Administration, Configuration, Single Sign On Authentication.

   The Single Sign On Authentication page appears.

5. Do the following:
   a. Locate the property named Single Sign On Type and click its Modify icon (by default, a pencil).

      The Edit Configuration dialog for this property appears.

   b. Select the option named Artifact Based Single Sign On and click Update Configuration.

      Note: In this dialog, you select Artifact Based Single Sign On (not the NTLM option), because you are setting up a cluster.

      The dialog closes, and you return to the Sign On Authentication page.

   c. Locate the property named Artifact Type and click its Modify icon (by default, a pencil).

      The Edit Configuration dialog for this property appears.

   d. Set Artifact Type to the appropriate for your load balancer, for example, Request. Click Update Configuration.

      The dialog closes, and you return to the Sign On Authentication page.

You have configured NTLM authentication for a load balancer other than Apache Load Balancer.

Set Up Horizontal Clustering for CA Workflow

This procedure is required to set up horizontal clustering for CA Workflow. Perform this procedure on *every* computer on which you want to set up a horizontal cluster node for CA Workflow, including the first CA Workflow computer.

Note: Before you perform this procedure, verify that CA Workflow is installed locally.

Follow these steps:

1. As a prerequisite, if this computer is not the first-installed CA Workflow computer, do the following:
   a. Verify that its host name is unique.
   b. Verify that its database is pointing to the database of the CA Workflow component installed first.

2. Open the fulfillment\conf\server.xml file on the computer with the original CA Workflow installation. Update the file as follows, and save the file after each update:

   a. Uncomment the Cluster tags shown in the following lines, if they are commented:

```
<Cluster className="org.apache.catalina.cluster.tcp.SimpleTcpCluster"
managerClassName="org.apache.catalina.cluster.session.DeltaManager"

expireSessionsOnShutdown="false"

    useDirtyFlag="true" notifyListenersOnReplication="true">

    <Membership className="org.apache.catalina.cluster.mcast.McastService"

mcastAddr="228.0.0.4" mcastPort="45564"

    mcastFrequency="500" mcastDropTime="3000" />

    <Receiver className="org.apache.catalina.cluster.tcp.ReplicationListener"
tcpListenAddress="auto"

    tcpListenPort="4001" tcpSelectorTimeout="100" tcpThreadCount="6" />

    <Sender className="org.apache.catalina.cluster.tcp.ReplicationTransmitter"

replicationMode="pooled"

    ackTimeout="15000" />

    <Valve className="org.apache.catalina.cluster.tcp.ReplicationValve"

    filter=".*\.gif;.*\.js;.*\.jpg;.*\.png;.*\.css;.*\.txt;" />

    <Deployer className="org.apache.catalina.cluster.deploy.FarmWarDeployer"
tempDir="/tmp/war-temp/"

    deployDir="/tmp/war-deploy/" watchDir="/tmp/war-listen/" watchEnabled="false" />

    <ClusterListener className="org.apache.catalina.cluster.session.ClusterSessionListener" />

    </Cluster >
```

   b. Specify a unique tcplistenport in the <Cluster> section for each horizontal cluster node that you create on additional CA Workflow computers. You can find the tcplistenport in the cluster tag of the following line:

```
<Receiver className="org.apache.catalina.cluster.tcp.ReplicationListener" tcpListenAddress="auto"

    tcpListenPort="4001" tcpSelectorTimeout="100" tcpThreadCount="6" />
```

   For example, suppose the tcpListenPort on the first CA Workflow computer is 4001, as shown in the previous line. In that case, the tcpListenPort could be 4002 on the second CA Workflow computer, 4003 on the third CA Workflow computer, and so forth. In this way, the tcpListenPort is unique on each computer.

c. Uncomment the Apache JServ Protocol (AJP) tags shown in the following lines, if they are commented:

```
<Connector port="8019" enableLookups="false" redirectPort="8443" protocol="AJP/1.3"
emptySessionPath="true" />
```

d. Comment the HTTP ports Connector tags, as follows:

```
<!--<Connector port="8090" minProcessors="5" maxProcessors="200"
        enableLookups="true" redirectPort="8443"/>-->
```

This action is a best practice and helps increase security.

3. Save and close each file.
4. Restart the CA Workflow service. It is named CA Service Fulfillment.

You have set up horizontal clustering for CA Workflow. You are now ready to set up load balancing (see page 280).

Remove a Cluster

When necessary, you can remove a horizontal cluster for CA Workflow (see page 277). Sample reasons for doing so include the following conditions:

- This computer becomes obsolete.
- You want to install clustering on a different computer instead of this one.
- This cluster is no longer needed.

Follow these steps:

1. Open the server.xml file of the horizontal cluster node to be removed.
2. Comment the cluster tag
3. Restart the CA Service Fulfillment service.

You have removed the cluster node. Next, verify that the load balancer setup (see page 280) no longer references this cluster.

Also, you can optionally uninstall (see page 375) CA Workflow from the computer whose cluster you removed.

How to Set Up Load Balancing

To load balance the existing nodes using Apache HTTP Server, follow these instructions. This process applies to all types of CA Service Catalog and CA Workflow clusters. Perform this process *after* you have set up all cluster nodes.

1. Install Apache Web Server load balancer for Windows version 2.2.22. You can download it from the Apache web site, apache.org.

   Note: For instructions, see the Apache Web Server documentation.

   The default installation folder is C:\Program Files\Apache Software Foundation\Apache2.2.

2. Configure Apache HTTP Server (see page 280).
3. (Optional) Disable web server features (see page 281).
4. Create and configure the workers.properties file (see page 282).
5. Create the uriworkermap.properties file (see page 288).
6. Update the httpd.conf file (see page 289).
7. Disable the HTTP Ports of the cluster computers (see page 290).
8. Verify load balancing (see page 292).

Configure Apache HTTP Server

Configuring Apache HTTP Server is a required task when you set up load balancing (see page 280).

Follow these steps:

1. Access the Apache website, www.apache.org.
2. Find and download the file named mod_jk-1.2.30-httpd-2.2.3.so. At publication time, this file is available in Apache Tomcat Connector section of the website.

   CA Service Catalog supports mod_jk 1.2.30.

3. Rename the mod_jk-1.2.30-httpd-2.2.3.so file to *mod_jk.so*.
4. Copy the mod_jk.so file to the modules folder in the Apache Server installation.

You have configured Apache HTTP Server.

Disable Web Server Features

Disabling the web server features of Apache HTTP Server is an *optional* task when you set up load balancing (see page 280). Because Apache HTTP Server is used as a load balancer, you can *optionally* perform these cleaning steps to disable the Apache *web server* features. Doing so improves performance and reduces potential security risks. If you use this version of Apache HTTP Server for other services or if you have other reasons, you can skip this procedure.

Follow these steps:

1. Delete the following folders under C:\Program Files\Apache Software Foundation\Apache2.2:

   Note: In this step and other steps in this process, the "C:\Program Files\" portion of the path names reflect the typical location specified at installation time. This portion of your path names can vary, depending, for example, on the installation directory specified for the \Apache Software Foundation folder at installation time.

   - \cgi-bin
   - \error
   - \htdocs
   - \icons
   - \manual

2. Rename httpd.conf to _httpd.conf.bak in the C:\Program Files\Apache Software Foundation\Apache2.2\confdirectory.
3. Find the httpd.minimal.conf file.

   This minimal configuration file is included in the Utilities/Apache Webserver directory of the CA Service Catalog installation media.

4. Copy the httpd.minimal.conf file to C:\Program Files\Apache Software Foundation\Apache2.2\conf.
5. Rename the httpd.minimal.conf file to httpd.conf in that directory.
6. Delete all files in that directory *except* the following:

   - httpd.conf
   - _httpd.conf.bak

7. Change to the C:\Program Files\Apache Software Foundation\Apache2.2\modules directory.
8. Delete all files in that directory *except* the following:
   - mod_jk.so
   - mod_log_config.so
   - mod_setenvif.so

You have disabled web server features.

How to Create and Configure the workers.properties File

Creating and configuring the worker.properties file is a required task when you set up load balancing (see page 280). To create and configure the worker.properties file, follow this process:

1. Create the workers.properties file manually in the \conf directory of the Apache installation folder.
2. Verify that the file lists all the Tomcat instances to include in the clustered environment.
3. Obtain the following information for each cluster node:
   - The host name of the clustered node
   - The ajp port of the clustered node. Obtain it from the connector port in the following line in the server.xml file of each cluster node:

     <Connector port="8009" maxThreads="150" tomcatAuthentication="false" minSpareThreads="25" maxSpareThreads="75" enableLookups="false" redirectPort="8443" protocol="AJP/1.3" />
   - The jvmRoute name of the node; obtain it from the following line in the server.xml file of each cluster node:

     <Engine name="Standalone" defaultHost="localhost" debug="0" jvmRoute="*hostname*_usmview">

   For example, for the CA Service Catalog cluster node on the computer named XYZ, the jvmRoute name is XYZ_usmview.

   Important! Verify that the jvmRoute name is unique for each CA Service Catalog and CA Workflow cluster. This name must be unique, because the load balancer uses it to identify each cluster. This name is case-sensitive!

4. Review the following sample worker.properties file sections for the types of clustering that you can perform with CA Service Catalog and CA Workflow.

   In all cases, the worker.properties file defines a load balancer node named loadbalancerview. This node balances CA Service Catalog requests among the CA Service Catalog cluster nodes. For example, this node load balances the /usm context between the workers defined. The context path /usm is defined in the USM_HOME\view\conf\server.xml file pointing to the CA Service Catalog web application.

   The examples illustrate each type of clustering:

   - Example for CA Service Catalog (see page 284)
   - Example for CA Workflow (see page 285)
   - Example for both CA Service Catalog and CA Workflow (see page 287)

5. Add a new worker to the cluster, as follows:

   a. Create a worker section at the end of the worker.properties file, using the following lines as a model:

      ```
      worker.jvmRouteName.port=ajpport
      worker.vmRouteName.host=HOSTNAME
      worker.jvmRouteName.type=ajp13
      worker.jvmRouteName.lbfactor=1
      ```

   b. Verify that its jvmRouteName is unique.

   c. Add the new cluster at the end of the list of balance workers for a loadbalancer node.

      For example, suppose the jvmRoute name of the new worker is COMPUTER3_cawf and its ajpport is 8019. In that case, enter the following new worker section to add the new cluster to the selected loadbalancer node:

      ```
      worker.COMPUTER3_cawf.port=8019
      worker.COMPUTER3_cawf.host= COMPUTER3
      worker.COMPUTER3_cawf.type=ajp13
      worker.COMPUTER3_cawf.lbfactor=1
      ```

6. Remove an existing cluster from the loadbalancer setup in the worker.properties file, as follows:

   a. Delete the section for the worker.

   b. Remove any references to the deleted worker from the list of balance workers.

      The list of balance workers begins with the following line:

      ```
      worker.<loadbalancernode>.balance_workers
      ```

7. Update the URL for horizontal clustering of CA Workflow (see page 287).

You have created and configured the worker.properties file.

Horizontal Clustering Example for CA Service Catalog

This example illustrates how to use horizontal clustering to load balance the /usm context of CA Service Catalog between two workers (clusters) whose specifications are as follos:

Worker1:

- Hostname: Computer1
- JVMroutename: Computer1_usmview
- AJP port: 8009

Worker 2:

- Hostname: Computer2
- JVMroutename: Computer2_usmview
- AJP port: 8009

In these examples, Computer1 and Computer2 are the host names (computer names) of the workers.

You can use the loadbalancerview node to load balance between the workers Computer1 and Computer2 as horizontal clusters for CA Service Catalog. To do so, define the loadbalancerview node sections of the worker.properties as follows. Use these sections as a model to configure your workers.properties file.

```
worker.list=loadbalancerview
worker.status.type=status

worker.loadbalancerview.method=Busyness
worker.loadbalancerview.type=lb
worker.loadbalancerview.balance_workers=COMPUTER1_usmview,COMPUTER2_usmview
worker.loadbalancerview.sticky_session=1

worker.COMPUTER1_usmview.port=8009
worker.COMPUTER1_usmview.host=COMPUTER1
worker.COMPUTER1_usmview.type=ajp13
worker.COMPUTER1_usmview.lbfactor=10
worker.COMPUTER2_usmview.port=8009
worker.COMPUTER2_usmview.host=COMPUTER2
worker.COMPUTER2_usmview.type=ajp13
worker.COMPUTER2_usmview.lbfactor=10
```

Horizontal Clustering Example for CA Workflow

The worker.properties file uses the loadbalancerwf node to load balance CA Workflow requests between the CA workflow cluster nodes. For CA Workflow, the loadbalancerwf node load balances the /wl, /pm, and /usm_idews contexts between the defined workers. A description of each context follows:

- /wl is specified in the USM_HOME\fulfillment\conf\Catalina\localhost\wl.xml file; it points to the wl(worklist) web application of CA Workflow
- /pm is specified in the USM_HOME\fulfillment\conf\Catalina\localhost\pm.xml; it points to the process manager (pm) web application of CA Workflow
- /usm_idews is the IDE application of CA Workflow

These contexts are already defined in the files mentioned. However, to cluster these contexts, update the httpd.conf file (see page 289) with them.

This example illustrates how to use horizontal clustering to load balance CA Workflow requests between two workers (clusters) whose specifications are as follows:

Worker1:

- Hostname:COMPUTER1
- JVMroutename:COMPUTER1_cawf
- AJP port :8019

Worker 2:

- Hostname:COMPUTER2
- JVMroutename:COMPUTER2_cawf
- AJP port :8019

Sample sections of the workers.properties file that use these settings appear as follows. Use these sections as models to configure your workers.properties file.

```
worker.list=loadbalancerwf
worker.status.type=status

worker.loadbalancerwf.method=Busyness
worker.loadbalancerwf.type=lb
worker.loadbalancerwf.balance_workers=COMPUTER1_cawf,COMPUTER2_cawf
worker.loadbalancerwf.sticky_session=1

worker.COMPUTER1_cawf.port=8019
worker.COMPUTER1_cawf.host=COMPUTER1
worker.COMPUTER1_cawf.type=ajp13
worker.COMPUTER1_cawf.lbfactor=10
worker.COMPUTER2_cawf.port=8019
worker.COMPUTER2_cawf.host=COMPUTER2
worker.COMPUTER2_cawf.type=ajp13
worker.COMPUTER2_cawf.lbfactor=10
```

Horizontal Clustering Example for Both CA Service Catalog and CA Workflow

An example of a horizontal cluster for both CA Service Catalog and CA Workflow follows. You can optionally use it and the other examples to edit the worker.properties file to set up your own horizontal cluster for *both* CA Service Catalog and CA Workflow.

```
worker.list=loadbalancerwf, loadbalancerview
worker.status.type=status

worker.loadbalancerwf.method=Busyness
worker.loadbalancerwf.type=lb
worker.loadbalancerwf.balance_workers=COMPUTER1_cawf,COMPUTER2_cawf
worker.loadbalancerwf.sticky_session=1
worker.loadbalancerview.method=Busyness
worker.loadbalancerview.type=lb
worker.loadbalancerview.balance_workers=COMPUTER1_usmview,COMPUTER2_usmview
worker.loadbalancerview.sticky_session=1
worker.COMPUTER1_cawf.port=8019
worker.COMPUTER1_cawf.host=COMPUTER1
worker.COMPUTER1_cawf.type=ajp13
worker.COMPUTER1_cawf.lbfactor=10
worker.COMPUTER2_cawf.port=8019
worker.COMPUTER2_cawf.host=COMPUTER2
worker.COMPUTER2_cawf.type=ajp13
worker.COMPUTER2_cawf.lbfactor=10
worker.COMPUTER1_usmview.port=8009
worker.COMPUTER1_usmview.host=COMPUTER1
worker.COMPUTER1_usmview.type=ajp13
worker.COMPUTER1_usmview.lbfactor=10
worker.COMPUTER2_usmview.port=8009
worker.COMPUTER2_usmview.host=COMPUTER2
worker.COMPUTER2_usmview.type=ajp13
worker.COMPUTER2_usmview.lbfactor=10
```

Update the URL for Horizontal Clustering of CA Workflow

If you are implementing horizontal clustering for CA Workflow, update the URL in the pm.xml and wl.xml files to point to the load balancer port. This task is required to set up the cluster successfully.

Follow these steps:

1. Shut down the CA Service Fulfillment Windows service for CA Workflow.
2. Open the pm.xml file for editing. This file is located in the USM_HOME\fulfillment\conf\Catalina\localhost folder.

3. Locate the following line and update it to be as follows; this line is named the defaultpmurl:

   http://*<load balancer>*:*<port-number>*/pm/

   load balancer

   Specifies the name of the load balancer computer for CA Workflow.

   port-number

   Specifies the port number on that computer used to listen for incoming requests for CA Workflow.

4. Save the pm.xml file.
5. Repeat steps 2-4 for the wl.xml file.
6. Delete the USM_HOME\fulfillment\work\Catalina directory.
7. Restart the CA Service Fulfillment Windows service.
8. Repeat these steps for each cluster.

You have updated the URL for horizontal clustering of CA Workflow.

Create the uriworkermap.properties File

Creating and configuring the uriworkermap.properties file is a required task when you set up load balancing (see page 280). This file specifies which context the load balancer node selects and forwards to its cluster nodes.

Note: If the file exists already, update it to match the text in the following steps.

Follow these steps:

1. Manually create the uriworkermap.properties file in the \conf directory of the Apache installation folder.
2. Enter the following lines in the file:

   ```
   /usm|/*=loadbalancerview
   /pm|/*=loadbalancerwf
   /wl|/*=loadbalancerwf
   /usm_idews|/*=loadbalancerwf
   ```

   Note: The first line is for CA Service Catalog clustering. The remaining lines are for CA Workflow clustering.

3. Save the file.

You have created the uriworkermap.properties file.

Update the httpd.conf File

Updating the httpd.conf file is a required task when you set up load balancing (see page 280).

Follow these steps:

1. Open the conf/httpd.conf file in the Apache HTTP Server installation directory and update it to include the following specifications:

   ```
   Listen 89
   LoadModule jk_module modules/mod_jk.so
   JkWorkersFile conf/workers.properties

   <VirtualHost *:89>
    ServerName load balancer host name

    JkMountFile conf/uriworkermap.properties
    JkLogFile logs/mod_jk.log
    JkLogLevel debug
   </VirtualHost>
   ```

2. Find the following lines:

   ```
   JkLogFile logs/mod_jk.log
   JkLogLevel debug
   ```

3. (Optional) Replace the lines in the previous step with the following lines:

   ```
   JkLogFile "|bin/rotatelogs.exe logs/mod_jk.log.%Y-%m-%d-%H_%M_%S 10M"
   JkLogLevel emerg
   ```

   This action modifies the mod_jk.log file on your production server to record only critical errors and to enable log automatic rollover when its file size reaches 10 MB.

4. Add a Listen directive with the port number for every VirtualHost port in the file.

   For example, suppose you have defined a virtual host at port 89, as follows:

   ```
   <VirtualHost *:89>
   ```

   In that case, add the Listen directive for this port in the httpd.conf file, for example:

   ```
   Listen 89
   ```

   Note: The commonly used port is 89.

   This specification enables the Apache HTTP Server to listen on this port and accept incoming requests.

5. Change the Default Type from text/plain to text/html.
   Note: This setting works well on most browsers. If you experience any difficulty with system performance or display quality after changing this option, return it to its original value.

6. Save and close the conf/httpd.conf file.

7. Adjust related settings (see page 290) in other locations.

8. Disable the HTTP ports of the cluster computers (see page 290).
9. Configure the server information for the cluster computers (see page 291).

You have updated the httpd.conf file.

Adjust Related Settings

Adjusting related settings is a required task when you update the httpd.conf file (see page 289).

To adjust related settings

1. Open your web browser and set the proper values for the ServerAdmin and ServerName options, if you have not done so.
2. Restart the Apache service, as follows:
   a. Open the Apache Service Monitor.
   b. Highlight the service to restart.
   c. Click Restart.
3. Test by accessing the link http://loadbalancerhostname:89/wl or any other context for CA Workflow and http://*hostname*:89/usm for CA Service Catalog.

   Here, *hostname* specifies the load balancer computer, that is, the computer on which the Apache HTTP Server is configured for load balancing. For example, if the host name of the load balancer computer is ABC, then the link is http://ABC:89/wl.
4. Review the mod_jk.log file under the logs folder in the Apache directory to determine which jvmRoute node was called. An example follows:

   found worker HOST1__USMView (HOST1__USMView) for route COMPUTER1__USMView and partial sessionid

You have adjusted settings related to the httpd.conf file.

Disable HTTP Ports

To enhance security, we recommended that you disable the HTTP ports of the cluster computers when you update the httpd.conf file (see page 289). Doing so routes users directly to the load balancer computer rather than directly to a cluster. This task is optional.

Follow these steps:

1. Do the following in the server.xml files of each cluster computer: Comment the connector tag that includes HTTP port information. This port is the startup node provided during installation, typically 8080 for CA Service Catalog and 8090 for CA Workflow.

2. (CA Workflow Only) Do the following on the CA Service Catalog GUI:
   a. Click Administration, Configuration, Workflow.

      The CA Workflow configuration options appear.

   b. Replace the CA Workflow host name and port number with the load balancer host name and port number.

      These options are updated.
3. (CA Workflow Only) Click the Configure button.

   The CA Workflow actors are updated with the new URLs.
4. Recycle the Windows services of the clusters whose server.xml files were changed.

You have disabled the HTTP ports of the cluster computers.

Configure Server Information

Configuring the server information of the cluster computers is a required task when you update the httpd.conf file (see page 289).

Follow these steps:

1. Do the following on the CA Service Catalog GUI:
   a. Click Administration, Configuration, Server Information.

      The server configuration options appear.

   b. Replace the server host name and port number with the load balancer host name and port number.

      These options are updated.
2. Recycle the CA Service Catalog Windows services of the clusters whose Server Information options were changed.

You have configured the server information of the cluster computers.

Note: If you do not perform this task, the following error occurs for users who request CA Service Catalog services using Internet Explorer 8.0: Forms that include a lookup field that calls a report object do not populate correctly when the user clicks the Search icon.

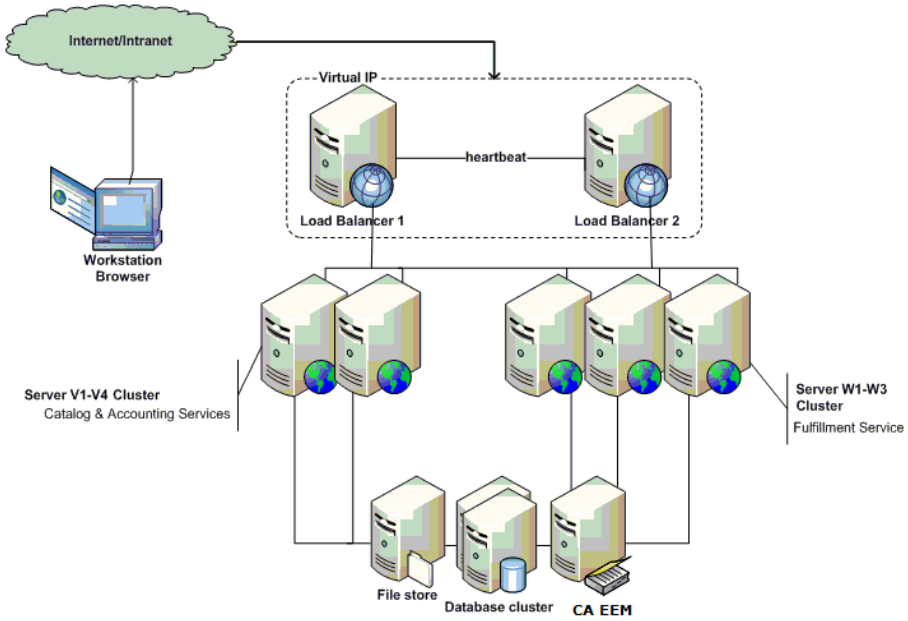
How to Verify Load Balancing

Verify your load balancing setup to help ensure that it runs efficiently. To verify your load balancing setup, follow this process:

1. Sanity test the implementation, as follows:
   - To test failover functionality, verify that the load is distributed to other nodes when one of the nodes in the same cluster shuts down.
   - To test load balancing, verify that the load is distributed to other nodes when one of the nodes in the same cluster becomes busy.
2. If you add or delete clusters after your initial setup, use the previous steps as a model to do the following: Update the workers.properties files to add the new cluster or remove the deleted cluster.
3. We recommend that you cluster your load balancer computers to help avoid single-point-of-failure problems with an individual load balancer computer. For instructions, see the Apache website, www.apache.org, and other resources with expertise in clustering load balancer computers.
4. Verify that *all* clustered nodes for CA Service Catalog and CA Workflow communicate efficiently with *all* load balancer computers using the telnet utility.
5. If clusters do not run efficiently, verify that this communication exists and check for any network configuration problems. For example, in the following diagram, all the computers V1-V4 and W1-W3 clusters must be able to run the “telnet loadbalancer portno” command.

   For example, suppose your load balancer host name is abc and the port is 89. In that case, verify that you can successfully connect from all your clustered nodes. To do so, enter the following command from each node:

   ```
   telnet abc 89
   ```


Internet/Intranet
Virtual IP
heartbeat
Load Balancer 1
Load Balancer 2
Workstation
Browser
Server V1-V4 Cluster
Catalog & Accounting Services
Server W1-W3
Cluster
Fulfillment Service
File store
Database cluster
CA EEM

Chapter 11: Best Practices

This section contains the following topics:

Overview

Historically, IT organizations have focused on technology without clear accountability for adding business value, while their customers have focused on costs. Increased competition in the marketplace and increased dependence on high technology demand that IT organizations do the following:

- Build a stronger understanding of the customers they serve
- Work in a close partnership with them to deliver true value

These business alignment initiatives require the following:

- A clear definition of the services that the IT organization provides
- An understanding of the components and resources that constitute the services
- An identification of the costs of the associated services

With centralization of IT services and movement toward a utility model, implementing a service catalog becomes an increasingly important necessity. Using a service catalog leads to better IT service alignment with business goals and improved internal customer satisfaction. It also leads to standardized processes to achieve greater operational efficiency.

The ITIL™ (IT Infrastructure Library) framework stipulates that IT organizations start their process enhancement initiatives by developing a service catalog to do the following:

List all the services being provided

Summarize the details of the services, customers, service designers, and service administrators

Many IT groups produce a service catalog as part of their ITIL Service Level Management deployment. Others view the opportunity to leverage the service catalog as the focal point for communication between IT and the business.

Benefits

CA Service Catalog Best practices offer examples and a starting point for building your own catalog.

CA Service Catalog enables you to load catalog content and to enable related business process automation through using CA Workflow or CA Process Automation. The goal of this initiative is not to create a complete and comprehensive list of services. Instead, the goal is to help you get started in building your own catalog.

As the foundation for aligning IT with the business, the service catalog represents a crucial element of success in ITIL initiatives. By using a service catalog, IT organizations can do the following:

- Create clear service definitions
- Define service levels and costs
- Deliver usage and performance data in business terms
- Track user subscriptions and service requests
- Provide a fast, consistent, and more effective access to IT services
- Publish or review service reports

Developing a service catalog can also provide the following improvements to drive down costs while still achieving high levels of service:

- Improved efficiencies in handling incoming requests
- Eliminate service redundancies
- Increased IT staff productivity
- Better allocation of resources
- Reduced calls to the help desk

Guidelines for Collecting Data

The following guidelines are for using staff interviews to collect data regarding the services and service levels currently existing in your organization. These guidelines are developed based on ITIL Methodology and CobiT™ Principles. These guidelines consist of the following activities for collecting and analyzing data, in sequential order:

- Review of the purpose of the staff interviews (see page 297)
- Use of the suggested questions (see page 298) and any related questions of your own to conduct the staff interviews (see page 298)
- Analysis of service-related documents (see page 299)
- Review and benchmark activities (see page 299) for existing services
- Collation the results of staff interviews (see page 300)
- Organization of the newly determined information into service specifications (see page 311) that include detailed descriptions of each service

Purpose of the Staff Interviews

The purpose of the interviewing the staff is to obtain and understand organization-wide policies and procedures relating to provider-to-user relationships. Examples follow:

- IT policies and procedures relating to the following:
  - Service level agreements
  - Operational reporting content, timing and distribution
  - Performance tracking methods
  - Corrective action activities
- IT documentation relating to the following:
  - Service level performance reports
  - Service budget and costing procedures
  - Charge-back algorithms and methodology for calculating charges
  - Service improvement programs
  - Recourse resulting from nonperformance
  - Service level agreements with internal and external users and providers of services

Questions for Staff Interviews

The staff interviews can include the following questions:

- Who delivers which services where, to which organization or organizational groups, and at what cost?
- Who requests which services from which IT group and at what volume?
- What level of service is currently in place within the organization?
- Who are the stakeholders?
- How can we use the template catalog?

Staff Interviews

The staff whom you Interview include the following:

- Chief Information Officer
- IT senior management
- IT Contract Administrator
- Service Level Administrator
- IT Operations management
- User management

Documents to Analyze

You review and analyze the following documents:

- Service level agreement process
- Definitions of responsibilities of users and providers
- Management reports on the achievement of the specified service performance criteria and all problems encountered

The purpose of analyzing the documents is to verify whether the following conditions exist:

- Users understand service level agreement processes and procedures.
- The level of user satisfaction with the service level process and service level agreements is sufficient.
- Service fulfillment data is available to track performance.
- A performance improvement program exists.
- The accuracy of actual charges matches agreement content.
- A comparison of historical performance and prior service improvement commitments is tracked.
- Managers appropriately use reports on service performance

Review and Benchmark Activities

The review and benchmark activities are as follows:

- Benchmarking of service level agreements against similar organizations or appropriate international standards and recognized industry best practices
- Review of service level agreements to determine qualitative and quantitative provisions confirming obligations are defined and being met
- Review of selected service level agreements to confirm compliance and resolution procedures for problems, specifically nonperformance

Results of Staff Interviews

The results of the staff interviews help the organization identify the following:

- Adequacy of the provisions describing, coordinating, and communicating the relationship between the providers and the users of information services
- Incorrect calculations for selected categories of information
- Ongoing review and corrective action by management of service level reporting
- Adequacy of proposed service improvements in comparison with cost-benefit analysis
- Adequacy of the ability of providers to meet commitments for improvements

Best Practices Foundation

The best practices foundation includes the following:

- Request and fulfillment automation with CA Workflow and CA Process Automation (see page 300)
- Service Catalog logical structure (see page 302)
- Customer-focused documentation (see page 304)

Request and Fulfillment Automation with CA Workflow and CA Process Automation

A key characteristic of the predefined foundation content is the automation of approvals and notifications for actions that complete the service fulfillment process. This automation makes the services "actionable." Service designers accomplish this goal through the workflow capabilities included with CA Workflow and CA Process Automation.

All services in the predefined foundation content invoke the workflow-driven approval process. This process sends an email to the manager of the requestor, indicating the requiring approval for the request. The email includes a link to the approval page in CA Service Catalog to streamline the approval process. To use a different approval process for individual services, select a different approval mechanism for those services through the Service Builder.

After a service request has been approved, the requested items in the service option group then follow a fulfillment workflow. The category specified for the requested component determines the workflow. The predefined service option groups contain components that belong to one of these categories: Hardware, Software, or Service.

The event rules for each category control the notifications generated as the components of the request move through the stages of fulfillment. The foundation content, as delivered, follows the predefined rules for each category. You can customize these rules to address your specific requirements.

The predefined foundation content provides a category-class-subclass structure (see page 301) for your use.

Category-Class-Subclass Structure

The predefined foundation content provides a category-class-subclass structure. You can use the class and subclass designations within each category to customize the workflow process. The default structure contains the following top-level categories:

- None
- Hardware
- Reservation Manager
- Service
- Service Offering Management
- Software
- Other

Multiple classes exist within each category, and in most cases multiple subclasses within each class.

To view and optionally update the complete detailed structure of category classes and subclasses, edit the category.xml file (see page 337).

Note: You can add categories to meet your specific requirements. However, you cannot change the internal numeric values of the default categories because this field is used for logic in other portions of the product.

Service Catalog Logical Structure

You can use a table or spreadsheet to design the full logical structure of the catalog before its actual implementation. This approach facilitates communication between stakeholders and end users regarding the service catalog structure and content required.

We recommend that you agree on the general service catalog content and structure first and the details next. As the catalog and its use mature within an organization, some restructuring and fine-tuning are likely to occur.

An example of the logical structure of the catalog, including both the Folder/Service structure and the category-class-subclass specification is illustrated in the following table:

IT Support Services						
Folder	**Service**	**Service Option**	**Category**	**Class**	**Subclass**	**Description**
Data Security						

	Virus Protection / Remediation Plan SLA					
		Bronze	Service	IT	SLA	Bronze SLA for Virus Protection/Remediation
		Silver	Service	IT	SLA	Silver SLA for Virus Protection/Remediation
		Gold	Service	IT	SLA	Gold SLA for Virus Protection/Remediation
	VPN Access					
		Request VPN Access	Service	IT	Security	Request VPN access for remote user
	Proxy Access					
		Subscribe to Proxy	Service	IT	Security	Request proxy access (security request)
	Pre-Production Security Scans					
		Security Scan	Service	IT	Security	Request Security Scan before production status
Data Management						
	Backup Data					
		Backup Production Server Data	Service	IT	Data	Backup Services for Production Server Data
		Backup Local PC / Laptop Data	Service	IT	Data	Backup Services for Local PC / Laptop Data

	Restore Data					Services to restore production or local data
		Restore Production Server Data	Service	IT	Data	Restore data on a production server from backup files
		Restore Local PC / Laptop Data	Service	IT	Data	Restore data on a local PC from backup files

We recommend limiting the number of levels that users navigate to reach specific services in your catalog. As an example, consider an IT Support Services category such as Hardware and Software Procurement. For ease of use, divide it into two separate categories. Examples include Hardware Procurement and Software Procurement. This approach is more efficient than using subfolders, for example, under Hardware and Software Procurement.

You can customize the structure of the provided content to meet the needs of your organization. For example, you can divide a single Server service into the following services: Blade Server, Standard Server, and Mainframe Server. In this case, create a folder named Server to contain the other thee services. Each service contains descriptions and service option group items to assist users in their selection.

Customer-Focused Documentation

Prepare customer-focused documentation for the service catalog and make it available to all potential users. Sample contents follow:

- Forward from the IT Director
- Table of Contents
- IT Service Provider profile
- Version number, date created, date amended
- Changes from last published Catalog
- Service times and accessibility of the IT Service Provider
- Overview of Services and Products
- Customer-focused Service and Product descriptions
- Specifications of Services
- Deliverables

- Service Times
- Maintenance Times
- Support Times
- Delivery Times
- Quality Target (availability, reliability, usability, priority)
- Requirements
- Request and Change procedures
- Contingency policy
- Pricing and Charging
- Index and definitions

Guidelines for Customizing Catalog Content

The Best Practice Foundation content on the installation media is a starting point of best practices for setting up your own catalog. When you modify the catalog content, follow these guidelines, mostly in sequential order, but with iteration as needed:

- Install all content onto a test system, and then browse and understand the default catalog content
- Review the frequently asked questions (see page 306)
- Understand the basic structure of catalog entries (see page 307)
- Understand the main parts of a service specification (see page 311), and view the sample service specification (see page 313) for further details
- Illustrate the fulfillment of the service as steps in a business process that you can follow logically
- Create a detailed logical design in a spreadsheet or flowchart, to help you design the service in the CA Service Catalog
- Determine what parts of the default catalog you want to customize in your production catalog
- On subsequent installations, load only those sections of the content that fir into your test catalog
- Configure all customizations in a test catalog; test and refine them until you approve them
- Copy only the approved modifications into your production catalog
- Consider maintaining a separate development catalog in addition to a test catalog, so that testing and development can occur in parallel

Frequently Asked Questions

The following information provides answers to frequently asked questions and includes instructions for managing your catalog content.

Note: Several questions and answers mention the ixutil utility for importing and exporting catalog entries. For instructions to use the ixutil utility, see the *Reference Guide*.

How do I modify the catalog content?

You modify catalog content by using the standard CA Service Catalog component of the web browser user interface.

Note: For instructions, see the *Administration Guide*.

How do I back up, import, and export catalog content?

Back up any customized content you have created, both before and after customizing. Use the ixutil utility to back up the content, to export it from one system, and to import it into another system.

How do I make bulk changes to the catalog content?

You can make bulk changes to the catalog, as follows:

1. Export the catalog folder or service to be changed, using the IXUTIL utility.
2. Edit the exported XML file using a text editor.
3. Delete and reimport the folder into the catalog.

This process works well for simple changes in descriptions and naming conventions. For example, suppose your IT organization is named General Information Services (GIS). In that case, consider a bulk change to replace the word "IT" with "GIS" within the catalog.

If you are not familiar with using a text editor for editing XML files, obtain assistance from an experienced user. Be especially careful to use a text editor like Notepad, not a word processor like Microsoft Word.

Also follow these guidelines:

- Be careful and back up frequently. If referential integrity issues occur, the import process does not always import all content.
- Review the ixutil.log in the USM_HOME\logs\install folder after each import. Review it for duplicate name errors and other errors caused by incorrect syntax in the imported data.

How do I copy catalog entries from test catalogs to production catalogs?

Do the following:

1. Use a test catalog to customize the default catalog content.
2. Back up the test catalog.
3. Export the updated catalog content from the test catalog.
4. Import the updated catalog content into your production catalog.

The two entities included in your catalog are the catalog entries themselves and the images and URL links associated with them.

Use the ixutil utility to export the catalog entries from the test catalog and to import them into the production catalog.

The catalog entries include folders, services, service option groups, and service option elements.

Copy the following to the production environment separately: category, class, and subclass definitions (category.xml), images, and status definitions.

Catalog Entries

As an administrator, you use the CA Service Catalog to create and maintain catalog entries. The following types of catalog entries exist:

- Folders (see page 308)
- Services (see page 308)
- Service option groups (see page 309)
- Service options (see page 309)
- Images (see page 311)
- Category, class, and subclass (see page 311)

Understand these types before you create or modify catalog entries.

Large numbers of entries in a single container can be difficult for catalog users to navigate. Therefore, as a general guideline, we recommend that you limit the number of entries in a container to ten. For example, verify that no folder contains more than ten subfolders or services. Similarly, verify that no service contains more than ten service options, and so on.

Note: The Best Practice Content: Foundation does *not* add new statuses to the predefined statuses in CA Service Catalog.

Folders

The installation process creates the folders that you select. If you select all folders, then the installation process creates the following top-level folders:

- IT Services
- Telecom Services
- Network Services
- Application Services
- Project Services
- Corporate Services
- Personnel Services
- Facilities Services
- Reservation Services

The names of the folders and services in your catalog must be unique.

If you create your own folders, you can name them any unique name. You can create additional content or delete content from the predefined folders. We recommend short descriptive names for folders.

Services

The catalog supports services that contain multiple service option groups. In this starter implementation, however, most services contain one associated service option group. As the catalog designer, you decide to use either one or multiple service option groups per service. In both cases, we recommend that you organize related service option groups in services logically and intuitively.

Focus on the user when designing services and service option groups. A common flaw in catalog design is placing service option groups in a nonintuitive service or folder. When service option groups in a service or folder are unrelated, users have difficulty finding the services they want. For example, consider a service option group for a network design program. You could place it in a service or folder named Development Tools. However, such a service option group fits better in a service or folder named Miscellaneous Software. A network administrator is more likely to view the latter folder first for this program.

The catalog provides a search tool that can be helpful. This tool supplements thoughtful design, but does not replace it.

Service Option Groups

Most service option groups in the predefined catalog are named the same as the corresponding service, for simplicity. They have multiple service options contained within them.

As your catalog becomes more mature, this one-to-one relationship between services and service option groups is likely to decrease. Some examples of having multiple service option groups in a service exist in the "Procure Laptop" and "Procure Desktop" services. The hardware configuration of laptops and desktops have differences. However, the standard and optional software bundled with them is typically identical. Therefore, the catalog does not duplicate the service options related to software choices in the two services. Instead, both services include service option groups for standard and optional software bundles.

Naming conventions become more important as the number of services and service option groups increases. The naming standards are as follows:

- All folders and services have unique names
- If a service contains only one service option group, their names are the same
- If a service contains multiple service option groups, one service option group has the same name as the service, and the others have unique names

Service Options and Service Option Elements

A service option is the most basic element that users can request or subscribe to in the catalog. A service option consists of one or more service option elements. The service options in the Best Practice content have the following service option elements. Your modified catalog can have more or fewer service option elements, depending on its design.

Note: If you are using CA Workflow, verify that the first service option element in a service option is a Text type service option element using plain text. Do not use rich text. Otherwise, no restrictions exist on the number, types, or order of the remaining service option elements.

Short Description

Specifies a plain text field (not rich text) that describes the service being requested or subscribed to.

Use this option to describe the service in cases where rich text or HTML is not processed properly. For example, the workflows use this column to title the email.

Long Description

Specifies a rich text field.

This text describes the service in greater detail and can include a hyperlink to an internal web page containing additional information about the service.

Rate

Specifies the cost of the service option.

Best Practices dictate that consumers understand the cost of the service to the corporation, regardless of whether the request is charged back.

Because the cost structure at your location is unique, all service option elements have been set to a one-time charge. Best practices suggest that determining cost and rate structures depends on a number of factors. In some cases, the rate posted in the catalog is only advisory: The rate reminds users that although they are not charged, the service is not free. In other cases, however, the posted rate is linked to a chargeback policy. In these cases, it is designed to recover the cost of the service. Accounting Component is designed for automating the process of tracking service costs.

Service Level

Describes the level of service the user can expect. The user can click the "More Information" link to get a description of the basic levels of service that they can subscribe to. The sample information displayed when you click the "More Info" hyperlink is contained in "sladescription.html" located in the USM_HOME\filestore\images\offerings directory. You can change this location, as follows: Use the CA Service Catalog, Service Offerings, Options Group to modify each service option element in your catalog to reference a file in another location.

Note: In this implementation of catalog content, the service level agreement service option element is text only. It includes no service level reporting or enforcement using the text service option element.

Special Instructions

Specifies additional instructions for the user.

Many services require users to specify additional detail information. An example is a "backup production server" service on which you must back up files and specify the backup interval. The instructions tell users to place this information in the notes associated with a request.

Note: You can use the Form service option element type to present custom forms to gather additional information from the requester.

Images

You can optionally associate images with every folder, service and service option. All images reside in USM_HOME\filestore\images\offerings.

Images whose size is 32x32 pixels fit best in the catalog.

Images can be in any format suitable for a web browser (.jpg, .bmp, and so on).

Many predefined images exist in this directory. The Best Practice content does not use all of them. You can optionally use these predefined images and add others to meet the needs of your organization. Use images that help users searching for a service to find the service they need.

Category, Class, and Subclass

The first service option element in a service option determines the Category, Class and Subclass for the other items in that row. The Best Practice: Foundation catalog uses several Category/Class/Subclasses which are defined in category.xml. If you are building your catalog "from scratch," you can use any Class/Subclass structure. Because the Category drives associated Workflow processing and other downstream activities, the predefined Category corresponding numeric values must not be changed.

The predefined service option elements reference the predefined category, class and subclass values in the category.xml file. Therefore, if you build your catalog on top of the best practices content, do not *change* the predefined settings in the file. Instead, *add* new categories, classes, or subclasses in the file, if necessary.

Service Specification

When you design your catalog, consider the following service specification factors. These attributes help your customers understand the service.

Attribute Name	Definition
Service Description	Brief description of the service which explains what the service includes
Service Exclusions	Brief clarification regarding what is not included in the service
Service Core Dependencies	Listing of the underlying services and processes that are necessary for this service
Service Options	The various components and options available to users when ordering the service from the catalog

Attribute Name	Definition
Service Hours	The time period during which the service is typically available
Service Maintenance and Planned Down Time	The time period during which the service is typically not available due to scheduled maintenance
Service Availability	The targeted percentage (of the defined Service Hours) during which service is available for requests
Service Owner (Performance Measure Owner)	The person responsible for the service
Service Users	The intended group of requesters for this service
Performance Measures/Descriptions	One or more defined performance measurements for the service fulfillment with a base line target
Key Performance Indicators	The performance measurement which is the primary indicator of the performance of the fulfillment of this service
Key Goal Indicators	The overall company benefit from this service
Data Collection Method/Frequency	An overview of the intended data collection method and frequency. If tools and methods are known, specify them here
Cost Categorization (to Business Unit)	Definition of the cost categorization of the service regarding the following aspects of costs: direct and indirect, capital and operational, fixed and variable, cost type, cost elements, cost units
Charging Policies	The charging policy for this service. The template gives examples both for internal and external providers

Sample Service Specification

This sample server specification illustrates the following costs associated with the "Personal Computer (PC)" service:

- Direct (associated costs allocated directly to the IT organization) for the request of the other vendor software
- Capital for the acquisition of the new PC
- Variable depending on the number of new PC requests

Charges are based on the following elements:

- Internal Service Provider
- Initial setup of the service at the time of SLA signature plus Hardware
- Fixed subscription per year
- Cost of usage per request
- External Service Provider
- Market Standard

Element	Description
Service Name	Personal Computer (PC)
Service Description	New Desktop or Laptop
Service Exclusions	No support, no equipment returns
Service Core Dependencies	Architectural standards, including approved server hardware lists Procurement process for IT infrastructure equipment, including appropriate vendor agreements
Service Options	Options, such as Standard Laptop, Deluxe Laptop, Standard Desktop, Deluxe Laptop
Service Hours	24 hours per day, 7 days per week, 365 days per year Can vary, depending on Service Level selected by customer
Service Maintenance and Planned Down Time	Last Sunday of every month from 2AM - 3AM EST Can vary, depending on Service Level selected by customer
Service Availability	Availability Target: 99% of Service Hours Can vary, depending on Service Level selected by customer

Service Owner (Performance Measure Owner)	John Doe - Director, IT Organization
Service Users	Finance, Marketing, Operations, and Customer Service Organizations
Performance Measures and Descriptions	Acknowledgment of order Number of hours elapsed between the time the user submitted the request and the time the user received acknowledgment of the order Target: Average less than 8 hours Order Fulfillment: Normal Number of days elapsed between the time the user submitted the request and the time the user received acknowledgment that the requested items are available Target: Average less than 7 days
Key Performance Indicators	Number of days elapsed between the time the user submitted the request and the time the vendor notified the user that order was shipped
Key Goal Indicators	Better capacity planning and inventory management through standardized procurement processes Compliance to SLAs by third-party vendors and providers Standardization of computers throughout the organization
Data Collection Method/Frequency	Data is collected for “time of request”, “time of acknowledgment” and “PC available” by feeds from tools used at each event. If feeds are not available, collect the data daily (24h).
Cost Categorization	Direct and Indirect - Direct cost of service Capital and Operational Capital Fixed and Variable - Fixed based for subscription - variable per request Cost Type - Service + Hardware Cost Elements - Hardware + Services Defined in Service Dependencies Cost Units - Per Request + Hardware

Charging Policies	Internal Service Provider - Fixed Setup Price + Hardware External Service Provider - Market Price

Chapter 12: Customizing

This section contains the following topics:

Introduction to Customization

You can customize certain features of CA Service Catalog.

Important! As a CA Service Catalog administrator and user, you create, test, and maintain your own individual customizations. Therefore, make careful notes of the customizations you perform, so that you can reference them and repeat them as needed. Doing so is especially when you troubleshoot them and when you upgrade to a new version of CA Service Catalog.

How to Add Custom Fields to the User Interface

On the CA Service Catalog user interface, you can optionally add custom field related to business units, accounts, or users. You can add a new field to meet a custom requirement for your organization or one of your customers. To do so, follow this process:

1. Review the additional data fields (see page 318) for business units, accounts, or users. By default, these fields exist in the CA Service Catalog database but are not exposed to users.
2. Review the sample custom.xml file (see page 319) to become familiar with it. This file lists the same additional data fields that exist in the database. You edit this file to expose those fields on the user interface.
3. Expose the additional data field (see page 320) you want on the user interface by adding a label for the field in the custom.xml file.

Additional Data Fields

The Business Unit, Account, and User schemas in the CA Service Catalog database tables provide additional data fields. By default, these fields do not have labels, meaning that they do not appear on the CA Service Catalog user interface. You can optionally expose an additional data field (see page 320) on the user interface by adding a label for the field in the custom.xml file (see page 319).

The additional data fields and their data types follow.

- The additional data fields (and their types) for business units in the usm_tenant table follow:

  data1: nvarchar(32)
  data2: nvarchar(32)
  data3: nvarchar(32)
  data4: nvarchar(64)
  data5: nvarchar(64)
  data6: nvarchar(128)
  data7: nvarchar(128)

- The additional data fields (and their types) for accounts in the usm_account table follow:

  data1: nvarchar(32)
  data2: nvarchar(32)
  data3: nvarchar(32)
  data4: nvarchar(64)
  data5: nvarchar(64)
  data6: nvarchar(64)
  data7: nvarchar(128)

- The additional data fields (and their types) for users in the usm_contact_extension table follow:

  data1: nvarchar(512)
  data2: nvarchar(512)
  data3: nvarchar(512)
  data4: nvarchar(512)
  data5: nvarchar(512)
  data6: nvarchar(512)
  data7: nvarchar(512)

Sample Custom.xml File

The custom.xml file lists all additional data fields (see page 318) for CA Service Catalog. You can optionally expose an additional data field (see page 320) on the CA Service Catalog user interface by adding a label to the field.

The custom.xml file can be different based on the language chosen for the system and is located in a different folder for each language. For example, for English (icusen), the custom.xml file is located in the USM_HOME\view\webapps\usm\locale\icusen folder.

A sample custom.xml file follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<shared>
        <account>
                <data1></data1>
                <data2></data2>
                <data3></data3>
                <data4></data4>
                <data5></data5>
                <data6></data6>
                <data7></data7>
        </account>
```

```
        <tenant>
                <data1></data1>
                <data2></data2>
                <data3></data3>
                <data4></data4>
                <data5></data5>
                <data6></data6>
                <data7></data7>
        </tenant>
        <user>
                <data1></data1>
                <data2></data2>
                <data3></data3>
                <data4></data4>
                <data5></data5>
                <data6></data6>
                <data7></data7>
        </user>
</shared>
```

Expose Additional Data Fields

By default, the additional data fields (see page 318) for business units, accounts, and users exist in the database but are *not* exposed on the CA Service Catalog user interface. You can optionally expose these fields to add custom fields to the user interface (see page 318). You can do so to meet a custom requirement for your organization or one of your customers.

Follow these steps:

1. Use an editor, such as Notepad, to edit the custom.xml file (see page 319) for the language of your system. For example, for English, edit the USM_HOME\view\webapps\usm\locale\icusen\custom.xml file.
2. Type the label for the field between the start and end tags for the appropriate field (data1-data7) for the appropriate object: account, business unit (tenant), or user.

   This label appears on the user interface to help users identify the purpose of the field.
3. Save the custom.xml file.
4. Verify that the label appears as specified when you view the related object on the GUI. Examples include the associated add, edit and profile pages.

Example: Expose Additional Fields in the User Interface

This example configures the account data1 and account data 5 fields in the custom.xml file to expose Cost Center and Department data on the GUI:

```
<account>
        <data1>Cost Center</data1>
        <data2></data2>
        <data3></data3>
        <data4></data4>
        <data5>Department</data5>
        <data6></data6>
        <data7></data7>
</account>
```

Note: To expose a field without specifying a new label on the user interface, specify a space as the value of the label.

Request Status Values

Each service and service option in a request has a status. In addition, the request has an overall status. CA Service Catalog supplies an extensive list of status values by default. You can customize (see page 322) (add, change, or hide) status values for the approval and fulfillment phases of the request life cycle, by editing the requestshared.xml file. You can also change the spelling of existing status values. Be careful not to change the meaning of the status values, because business logic in the product is based on these status values.

You maintain the request status values in the requestshared.xml file. This file can be different based on the language chosen for the system and is located in a different folder for each language. For example, for English (icusen), the requestshared.xml file is located in the USM_HOME\view\webapps\usm\locale\icusen\request folder.

The request status of the *entire* request is visible on the Pending Actions page. The request statuses of individual items in the request are visible in the Item Status drop-down list on the request-related user interface pages: Request Details, Approve Request, Fulfill Request, and Push Through Request. Updates that you make to the request status values in the requestshared.xml file are reflected in the options that users see on those pages.

How to Customize the Request Status List

You customize (add, delete, edit, or hide) request status values (see page 321) by editing the requestshared.xml file. To do so, perform these tasks:

1. Become familiar with the requestshared.xml file (see page 322).
2. Back up the original requestshared.xml file and save it for reference.
3. (Optional) Modify existing status values or add additional request statuses (see page 328).
4. (Optional) Hide request statuses (see page 331).
5. (Optional) Restrict the status changes available for a request item based on its status (see page 333).

   You can optionally restrict the status changes available for a request item based on its status. The available status changes appear in the menu options of the Item Status drop-down list on the following request-related user interface pages: Request Details, Approve Request, and Fulfill Request.

   By default, all options (all statuses) are available for an item at all times, until the entire request is completed. In other words, you can change the status of request items to any value at any time. However, your organization can optionally restrict the menu options available for a request item based on its status.
6. Test your changes by verifying that they are correctly reflected on the request-related user interface screens.

   Note: In the Item Status drop-down list on the request-related user interface pages, the status is designated with an asterisk (*).

Important! After you have added and used additional status numeric values to the default list, do *not* remove them.

Become Familiar with requestshared.xml

Become familiar with the requestshared.xml file, as follows:

- Understand the purpose of the major sections (see page 323) of the file: request_header, request_item, request_item_approval_action, and request_item_fulfillment_action.
- Understand that the status values in these sections must remain synchronized.
- Understand that the order of the statuses in the status drop-down lists on the GUI matches the order of the statuses in the requestshared.xml file. For example, suppose that the status 800 (Reject) is defined above the status 600 (Approved) in this file. In this case, the Reject status appears above the Approved status in the status drop-down lists on the GUI.
- Review the inline comments and note the *reserved* status values.

- Review the ranges for custom status values (see page 324) to see which ranges are reserved for specific types of status values.
- Review the sample sections (see page 324) that illustrate how the settings in the file determine the values of request statuses.

Important! When you edit the requestshared.xml file, do *not* modify or delete the opening and closing lines that define the default statuses! Even when you customize statuses, these lines must remain as shown. This requirement applies to both the <request_item_approval> and <request_item_fulfillment> sections. These lines help ensure proper status behavior when the customizations are not used or are defined incorrectly.

```
- <custom_menu current_status_value="default">
status lines
</custom_menu>
```

Major Sections

The major sections of the requestshared.xml (see page 322) file are as follows:

request_header

Maintains all possible status values for the entire request.

request_item

Maintains all possible status values for a specific item (such as a service option element or service option group) in a request.

request_item_approval_action

Maintains all possible status values for a specific item in a request, when the request has been submitted but has not been approved or rejected.

request_item_fulfillment_action

Maintains all possible status values for a specific item in a request, when the request has been approved but has not yet been fulfilled.

The list of possible status values must be synchronized in the request_header and request_item sections: They must have the same values with same meaning.

Similarly, every value in the request_item_approval_action and request_item_fulfillment_action sections must have a matching value in both the request_header and request_item sections. Thus, the value in the request_item_approval_action and request_item_fulfillment_action sections must be a complete set or a subset of the values in the request_header and request_item sections.

Ranges for Custom Status Values

When adding a new request status in the requestshared.xml file (see page 322), define it within the range specified for the custom statuses, as follows:

- 300 to 399 - custom *submit* statuses
- 500 to 599 - custom *pending approval* status
- 900 to 990 - custom *approved* status

Sample Sections

The following sample sections of the requestshared.xml file (see page 322) illustrate important settings that control the request status values. In these sections, the ellipses represent omitted lines.

```
<?xml version="1.0" encoding="UTF-8" ?>
...

- <request_header>
  <!-- status values must be synchronized with the status list in request_item, request_item_approval_action and/or request_item_fulfillment_action -->
...
  <st_1>Pending</st_1>
  <st_2>Completed</st_2>
...
  <st_100>Not Submitted</st_100>
  <st_101>Not Submitted - Cart</st_101>
...
  <!-- 400 to 499 are reserved -->
  <st_400>Pending Approval</st_400>
...
  <!-- 800 to 899 are reserved -->
  <st_800>Approved</st_800>
  <st_801>Approval Not Needed</st_801>
...
  <st_1000>Pending Fulfillment</st_1000>
  <st_1001>Check Availability</st_1001>
...
  <st_1999>Fulfillment Cancelled</st_1999>
  <st_2000>Fulfilled</st_2000>
...
  </request_header>
```

```
- <request_item>
  <!--  status values must be synchronized with the status list in request_header, request_item_approval_action
and/or request_item_fulfillment_action  -->
...
  <st_1>Pending</st_1>
  <st_2>Completed</st_2>
...
  <st_100>Not Submitted</st_100>
  <st_101>Not Submitted - Cart</st_101>
...
  <!--  400 to 499 are reserved  -->
  <st_400>Pending Approval</st_400>
...
  <!--  800 to 899 are reserved  -->
  <st_800>Approved</st_800>
  <st_801>Approval Not Needed</st_801>
...
  <st_1000>Pending Fulfillment</st_1000>
  <st_1001>Check Availability</st_1001>
...
  <st_1999>Fulfillment Cancelled</st_1999>
  <st_2000>Fulfilled</st_2000>
...
  </request_item>

- <request_item_approval_action>
  <!--  status values must be synchronized with the status list in request_header and request_item  -->
  <!--  A "default" value for the attribute "current_status_value" indicates these statuses are listed by default in the
"item status" menu if no other custom statuses are defined  -->


<custom_menu current_status_value="default">
                                                <!-- 400 to 499 are reserved -->
                                                <st_400 statval="400"/>

                                                <!-- 500 to 599 can be used for custom pending approval status -->
                                                <!-- 600 to 699 are reserved -->
                                                <!-- 700 to 799 can be used for custom rejected status -->
                                                <!-- 800 to 899 are reserved -->
                                                <st_800 statval="800"/>
                                                <!-- 900 to 999 can be used for custom approved status -->
                                                <st_600 statval="600"/>
                                        </custom_menu>
```

```
                    <custom_menu current_status_value="800">
                        <!-- 400 to 499 are reserved -->
                        <st_800 statval="800"/>
                        <st_999 statval="999"/>
                        <!-- 900 to 999 can be used for custom approved status -->
                        <st_600 statval="600"/>
                    </custom_menu>
...
                </request_item_approval_action>
                <request_item_stuck_approval_action>
                <custom_menu current_status_value="default">
                        <!-- 400 to 499 are reserved -->
                        <st_400 statval="400"/>
                        <!-- 500 to 599 can be used for custom pending approval status -->
                        <!-- 600 to 699 are reserved -->
                        <!-- 700 to 799 can be used for custom rejected status -->
                        <!-- 800 to 899 are reserved -->
                        <st_800 statval="800"/>
                        <!-- 900 to 999 can be used for custom approved status -->
                        <st_600 statval="600"/>
                    </custom_menu>
...
                    <custom_menu current_status_value="200">
                        <!-- 400 to 499 are reserved -->
                        <st_200 statval="200"/>
                        <st_999 statval="999"/>
                        <!-- 900 to 999 can be used for custom approved status -->
                        <st_600 statval="600"/>
                    </custom_menu>
                </request_item_stuck_approval_action>
...
                <request_item_stuck_fulfillment_action>
                    <!-- status values must be synchronized with the status list in request_header
and request_item -->
                    <!-- A "default" value for the attribute "current_status_value" indicates these
statuses are listed by default in the "item status" menu if no other custom statuses are defined -->
                    <!-- The order of the statuses that appear in the status drop-down lists on the UI
are based on the sequence of the status codes added here
                        For ex: because status 1999 is defined above 2000 in this file, then
status 1999 appears above status 2000 in the status drop-down lists on the UI
                     -->
                    <custom_menu current_status_value="default">

                        <st_1999 statval="1999"/>
                        <st_2000 statval="2000"/>
                    </custom_menu>
```

```
                                    <custom_menu current_status_value="1000">

                                            <st_1000 statval="1000"/>
                                            <st_1999 statval="1999"/>
                                            <st_2000 statval="2000"/>
                                    </custom_menu>

                                    <custom_menu current_status_value="1001">
                                            <st_1001 statval="1001"/>
                                            <st_1999 statval="1999"/>
                                            <st_2000 statval="2000"/>
                                    </custom_menu>

                                    <custom_menu current_status_value="1002">
                                            <st_1002 statval="1002"/> <!-- if this value changes, synchronize
with items located in section uapm_url below -->
                                            <st_1999 statval="1999"/>
                                            <st_2000 statval="2000"/>
                                    </custom_menu>

                                    <custom_menu current_status_value="1003">
                                            <st_1003 statval="1003"/>
                                            <st_1999 statval="1999"/>
                                            <st_2000 statval="2000"/>
                                    </custom_menu>
...
                                    <custom_menu current_status_value="1007">
                                            <st_1007 statval="1007"/>
                                            <st_1999 statval="1999"/>
                                            <st_2000 statval="2000"/>
                                    </custom_menu>

                                    <custom_menu current_status_value="1008">
                                            <st_1008 statval="1008"/>
                                            <st_1999 statval="1999"/>
                                            <st_2000 statval="2000"/>
                                    </custom_menu>
...
                            </request_item_stuck_fulfillment_action>
...
 </shared>
```

Add an Additional Request Status

You can customize the request status list (see page 322) by adding additional request statuses for one of several purposes not covered by the default statuses. One common purpose is for approval or rejection of a request by a specific department, for example, the Finance department.

Follow these steps:

1. Use an editor, such as Notepad, to edit the appropriate requestshared.xml file for the language of your system. For example, for English, edit the file in the USM_HOME\view\webapps\usm\locale\icusen\request folder.
2. Add an additional line, including the number and text for the new status to the following sections: <request_header> and <request_item>.
3. Select an unused numeric status value in the appropriate range for custom status values (see page 324) for the status you are adding. An example follows:

   ```
   <st_500>Pending Financial Approval</st_500>
   ...
   <st_700>Rejected by Financial Approver</st_700>
   ...
   <st_900>Approved by Financial Approver</st_900>
   ...
   ```

   Note: If possible, limit the text of the status value to 40 characters. Text longer than 40 characters can be truncated in the drop-down status menu lists and request status fields. In such cases, the entire text string is displayed to catalog users *only* in the tooltip text that appears when users mouseover request status fields.
4. Copy that line to the custom section or sections where you want them to appear. Examples include <request_item_approval>, <request_item_fulfillment>,

   <request_item_stuck_approval_action>, and <request_item_stuck_fulfillment_action>.
5. Delete the text from the line you copied and modify the line to include the statval="*value*" expression.

   An example for the previous step follows:

   ```
   <st_500 statval="500"/>
   ...
   <st_700 statval="700"/>
   ...
   <st_900 statval="900"/>
   ...
   ```

   Note: This technique is illustrated in greater detail in the Example section that follows this section.

6. Save the requestshared.xml file.
7. Test your changes by verifying that they are correctly reflected on the request-related user interface screens (the Request Details, Approve Request, and Fulfill Request screens).

Example: Add New Approval Statuses

To add approval statuses 500, 700, and 900, all related to financial approval, add the new lines for these statuses to the request_header, request_item, and request_item_approval_action sections of the requestshared.xml file. Examples follow, in **bold**.

Specify the numeric value and text in the request_header and request_item sections, and specify only the numeric value (without the text) in the request_item_approval_action section.

```
<?xml version="1.0" encoding="UTF-8" ?>
...
- <request_header>
  <!-- status values must be synchronized with the status list in request_item, request_item_approval_action and/or request_item_fulfillment_action -->
  <st_1>Pending</st_1>
  <st_2>Completed</st_2>
...
  <!-- 400 to 499 are reserved -->
  <st_400>Pending Approval</st_400>
  <!-- 500 to 599 can be used for custom pending approval status -->
  <st_500>Pending Financial Approval</st_500>
  <!-- 600 to 699 are reserved -->
  <st_600>Rejected</st_600>
  <!-- 700 to 799 can be used for custom rejected status -->
  <st_700>Rejected by Financial Approver</st_700>
  <!-- 800 to 899 are reserved -->
  <st_800>Approved</st_800>
  <st_801>Approval Not Needed</st_801>
  <!-- 900 to 990 can be used for custom approved status -->
  <st_900>Approved by Financial Approver</st_900>
  !-- 991 to 999 are reserved -->
  <st_999>Approval Done</st_999>
...
 </request_header>
- <request_item>
  <!-- status values must be synchronized with the status list in request_header, request_item_approval_action and/or request_item_fulfillment_action -->
  <st_1>Pending</st_1>
  <st_2>Completed</st_2>
```

```
...
  <!-- 400 to 499 are reserved -->
  <st_400>Pending Approval</st_400>
  <!-- 500 to 599 can be used for custom pending approval status -->
  <st_500>Pending Financial Approval</st_500>
  <!-- 600 to 699 are reserved -->
  <st_600>Rejected</st_600>
  <!-- 700 to 799 can be used for custom rejected status -->
  <st_700>Rejected by Financial Approver</st_700>
  <!-- 800 to 899 are reserved -->
  <st_800>Approved</st_800>
  <st_801>Approval Not Needed</st_801>
  <!-- 900 to 990 can be used for custom approved status -->
  <st_900>Approved by Financial Approver</st_900>
  <!-- 991 to 999 are reserved -->
  <st_999>Approval Done</st_999>
...
  </request_item>
- <request_item_approval_action>
  <!-- status values must be synchronized with the status list in request_header and request_item -->
  <!-- A "default" value for the attribute "current_status_value" indicates these statuses will be listed by default in the
"item status" menu if no other custom statuses are defined -->
  <custom_menu current_status_value="default">
  <!-- 400 to 499 are reserved -->
  <!-- 500 to 599 can be used for custom pending approval status -->
    <st_500 statval="500"/>
  <!-- 600 to 699 are reserved -->
  <!-- 700 to 799 can be used for custom rejected status -->
  <st_700 statval="700"/>
  <!-- 800 to 899 are reserved -->
  <st_800 statval="800">Approve</st_800>
  <!-- 900 to 999 can be used for custom approved status -->
    <st_900 statval="900"/>
...
```

Hide Request Statuses

The default list of request statuses can include more options than you need for certain categories. In such cases, you can decide to customize the request status list (see page 322) by hiding some of the values in that category. Consequently, users do not see these options on the GUI when they handle requests pending action. Thus, they do not need to sort through status values that do not apply in your organization.

Follow these steps:

1. Use an editor, such as Notepad, to edit the appropriate requestshared.xml file for the language of your system. For example, for English, edit the file in the USM_HOME\view\webapps\usm\locale\icusen\request folder.
2. Decide which status lines you want to hide; that is, decide which statuses do not apply in your organization.
3. Edit the line in the <request_header> and <request_item> sections for each status that you want to hide. Enter the comment characters before and after the original expression.

   For example to *hide* the Ordered status on the request-related pages, enter the comment characters before and after the original expression. These comment characters appear in **bold** in the following line:

   <!--<st_1004>Ordered</st_1004>**-->**

   In contrast, the following line makes the Ordered status *visible* on the request-related user interface screens:

   <st_1004>Ordered</st_1004>
4. Hide the corresponding lines in all other sections that use it, such as the <request_item_approval> or <request_item_fulfillment> section.

   For example, to *hide* the Ordered status on the request-related pages, enter the comment characters before and after the original expression. These comment characters appear in **bold** in the following line:

   <!--<st_1004 statval="1004"/>**-->**

   In contrast, the following line makes the Ordered status *visible* on the request-related user interface screens:

   <st_1004 statval="1004"/>

   Note: Hide the exact same lines in all relevant sections of the file. Doing so is required for the status to appear correctly in the user interface.
5. Save the requestshared.xml file.
6. Test your changes by verifying that they are correctly reflected on the following request-related pages: Request Details, Approve Request, and Fulfill Request.

Example: Hide Request Statuses

To hide certain default fulfillment-related statuses, enter the comment characters before and after the original expression, as shown in **bold** in this example. Enter the comment characters in the request_header, request_item, and request_item_fulfillment_action sections of the requestshared.xml file.

In this example, *before* the comment markers are added, the following statuses are visible on the following request-related pages: Ordered, Shipped, Received, Order Cancelled, Staged, and Configured. *After* the comment markers are added, the following statuses are visible on those pages: Ordered, Shipped, and Configured.

```
- <request_header>
...
 <st_1004>Ordered</st_1004>
 <st_1006>Shipped</st_1006>
  <!--<st_1007>Received</st_1007>-->
  <!--<st_1008>Order Cancelled</st_1008>-->
  <!--<st_1017>Staged</st_1017>-->
 <st_1019>Configured</st_1019>
...
 </request_header>

- <request_item>
...
 <st_1004>Ordered</st_1004>
 <st_1006>Shipped</st_1006>
  <!--<st_1007>Received</st_1007>-->
  <!--<st_1008>Order Cancelled</st_1008>-->
  <!--<st_1017>Staged</st_1017>-->
 <st_1019>Configured</st_1019>
...
 </request_item>

- <request_item_fulfillment_action>
...
 <custom_menu current_status_value="default">
...
 <st_1004 statval="1004"/>
 <st_1006 statval="1006"/>
  <!--<st_1007 statval="1007"/>-->
  <!--<st_1008 statval="1008"/>-->
  <!--<st_1017 statval="1017"/>-->
 <st_1019 statval="1019"/>
...
</shared>
```

Restrict the Status Changes Available for a Request Item Based on its Current Status

You can optionally customize the request status list (see page 322) by restricting the status changes available for a request item based on its current status. For example, suppose that when an item is approved (Approved status), you no longer want users to be able to change the status *except* to a fulfillment-related status. In this case, you can configure the Item Status drop-down list to display *only* fulfillment-related options for items whose status is approved.

Follow these steps:

1. Use an editor, such as Notepad, to edit the appropriate requestshared.xml file for the language of your system. For example, for English, edit the file in the USM_HOME\view\webapps\usm\locale\icusen\request\requestshared.xml folder.
2. Locate the section of the file in which you want to restrict the available changes for one or more status values.

   You can restrict status changes in any section *except* the <request_item> and <request_header sections.
3. Decide which status you want to restrict and the statuses to which you permit it to be changed.

   The list of all existing status values appears under the following line:

   ```
   - <custom_menu current_status_value="default">
   ```
4. Add an additional request status (see page 328) to permit in your list, if necessary. The statuses that you want to permit must exist already.
5. Locate the custom menu section and complete the following. By default, this section is indented and commented out, as follows:

   ```
   - <!--
                   <custom_menu current_status_value="400">
                   <st_400 statval="400"/>
                   <st_600 statval="600"/>
                   </custom_menu>
    -->
   ```

a. Delete the opening and closing comment lines of this section. The new section appears as follows:

```
<custom_menu current_status_value="400">
        <st_400 statval="400">/>
        <st_600 statval="600"/>
</custom_menu>
```

The lines are now activated rather than being commented out.

b. Verify that the value in the current_status_value="*nnn*" expression in the first line of this section matches the status value that you want to restrict.

For example, in the previous step, 400 corresponds to the Pending Approval status. Therefore, the status values shown appear on request-related pages when the status value is Pending Approval. If you want to restrict a different status, replace the current value with your new value.

c. Verify that the value in the current_status_value="*nnn*" expression is defined in one of the "<st_*nnn* statval=..." lines, as shown for Pending Approval in the previous example.

d. Copy and paste the additional status or statuses to which you want to allow the status to be changed. You can copy and paste it from the list of status values earlier in the section.

For example, in the <request_item_approval> section, copy and paste the new "<st_801..." line to the custom_menu section for Pending Approval, as follows:

```
<custom_menu current_status_value="400">
        <st_400 statval="400"/>
        <st_600 statval="600"/>
<st_801 statval="801"/>
</custom_menu>
```

This action adds the Approval Not Needed status to the statuses to which items in Pending Approval status can be changed.

6. Use the previous steps as a model to restrict status changes for another status in the same section of requestshared.xml file, if necessary. Use these guidelines:
   a. Copy the entire custom_menu element and its children.
   b. Paste it after the element that you updated.
   c. Modify the newly copied element.
   d. Modify existing custom_menu element and children, if necessary. For example, in the <request_item_fulfillment> section, suppose you want to restrict items in Pending Fulfillment status to be changed to either Fulfillment Cancelled or Fulfilled. In that case, modify the existing custom_menu element as follows:

```
<custom_menu current_status_value="1000">
        <st_1000 statval="1000"/>
        <st_1999 statval="1999"/>
        <st_2000 statval="2000"/>
</custom_menu>
```

7. Save the requestshared.xml file.
8. Test your changes by verifying that they are correctly reflected on the request-related user interface pages (the Request Details, Approve Request, and Fulfill Request pages).

You have restricted the status changes available for a request item based on its current status.

Category, Class and Subclass Lists

Each service option in the catalog has a category, class and subclass assigned to it. CA Service Catalog assigns a value to each category, class and subclass in the category.xml file.

Each <option> section in the category.xml file represents a separate category and contains one or more <class> sections. Moreover, each of these sections contains one or more <subclass> sections.

You can optionally customize the category, class and subclass lists (see page 337) by changing the values or by adding new values to meet the needs of your organization or customer.

The category.xml file can be different based on the language chosen for the system and is located in a different folder for each language. For example, for English (icusen), the category.xml file is located in the USM_HOME\view\webapps\usm\locale\icusen\billing folder.

The following are sample sections of the category.xml file, with ellipses shown to represent omitted lines:

```
<?xml version="1.0" encoding="UTF-8" ?>
<!--WARNING: THE VALUE ATTRIBUTE CAN BE CHANGED BUT THEY MUST BE UNIQUE WITHIN IT'S
OWN NODE LEVEL, FOR EXAMPLE, OPTION "NONE" HAS A VALUE OF "-1",
THEREFORE ANY OTHER OPTIONS LIKE "SOFTWARE" CANNOT HAVE A VALUE OF "-1".-->
 <categories>
        <category>
                <option value="-1" name="None">
                        <class value="-1" name="None">
                                <subclass value="-1" name="None" />
                        </class>
                </option>
                <option value="0" name="Software">
                        <class value="10" name="Office">
                                <subclass value="10" name="Microsoft" />
                                <subclass value="99" name="Other" />
                        </class>
                        …
                </option>
                <option value="1" name="Hardware">
                        <class value="10" name="IT">
                                <subclass value="10" name="Desktop" />
                                <subclass value="20" name="Laptop" />
                                <subclass value="30" name="Monitor" />
                                <subclass value="40" name="Memory" />
                                <subclass value="50" name="Printer" />
                                <subclass value="60" name="Server" />
                                <subclass value="70" name="Storage" />
                                <subclass value="999" name="Other" />
```

```
                    </class>
                    …
                </option>
                <option value="2" name="Service">
                    <class value="10" name="IT">
                        <subclass value="10" name="Application" />
                        <subclass value="20" name="Audit" />
                        <subclass value="30" name="Data" />
                        <subclass value="40" name="Education" />
                        <subclass value="50" name="Email" />
                        <subclass value="60" name="Incident" />
                        <subclass value="70" name="Knowledge" />
                        <subclass value="80" name="Security" />
                        <subclass value="90" name="SLA" />
                        <subclass value="100" name="Labor" />
                        <subclass value="999" name="Other" />
                    </class>
                    …
                </option>
                <option value="3" name="Other">
                    <class value="10" name="IT">
                        <subclass value="99" name="Other" />
                    </class>
                    …
                </option>
        </category>
</categories>
```

Customize the Category, Class and Subclass Lists

Each service option in the catalog has a predefined category, class and subclass (see page 336) assigned to it. You can optionally customize the category, class, and subclass values: You can update the existing values or add new values to meet the needs of your organization or customer.

Note: After you add a category, class or subclass value in the category.xml file, do *not* remove it. Also, be careful not to change the meaning of the category values, because business logic in the product is based on the category values.

Follow these steps:

1. Review the inline comments in the file. Verify that synchronized sections of the file remain synchronized. Verify that you do not use, certain status values.
2. Use an editor, such as Notepad, to edit the appropriate category.xml file for the language of your system. For example, for English, edit the USM_HOME\view\webapps\usm\locale\icusen\billing\category.xml file.

3. Add an additional line or section for the category, class, or subclass you want to add. Select an unused numeric value for the category, class, or subclass you are adding.

   Note: To add a new category, add a new “option” section containing at least one class and subclass. To add a new class, add a new “class” section containing at least one subclass.

   Use a unique numeric value within the list of related objects. For example, suppose you add a new class to the Other category. In that case, you cannot use a value of 10, because the IT class already uses that value.

4. Update any existing values as needed; do *not* to use the same value twice.

5. Save the category.xml file and test by using the CA Service Catalog user interface screens.

Example: Add a New Subclass

To add a new subclass named “Mouse” to the IT class of the Hardware category, modify the category.xml file with the following lines in **bold**:

```
<option value="1" name="Hardware">
        <class value="10" name="IT">
                <subclass value="10" name="Desktop" />
                <subclass value="20" name="Laptop" />
                <subclass value="30" name="Monitor" />
                <subclass value="40" name="Memory" />
                <subclass value="50" name="Printer" />
                <subclass value="60" name="Server" />
                <subclass value="70" name="Storage" />
                <subclass value="71" name="Mouse" />
                <subclass value="999" name="Other" />
        </class>
        …
</option>
```

User and Service Approval List

Each user is assigned an approval level, in its user profile. Each service that requires approval is also assigned an approval level, in its service definition.

When a service uses the “System approval process,” the approver requires an approval level equal to or greater than the approval level of the service. Otherwise, the approver cannot approve or reject the service.

The approval level values are maintained in a file named approval_shared.xml. This file can be different based on the language chosen for the system and is located in a different folder for each language. For example, for English (icusen), the approval_shared.xml file is located in the USM_HOME\view\webapps\usm\locale\icusen folder.

You can add and update the list of approval levels in the approval_shared.xml file. After you add an approval level to the file, do not remove it.

The following is the contents of the approval_shared.xml file:

```
<?xml version="1.0" encoding="UTF-8"?>
<shared>
        <approval_level>
                <option value='0'>Level 0</option>
                <option value='10'>Level 10</option>
                <option value='20'>Level 20</option>
                <option value='30'>Level 30</option>
                <option value='40'>Level 40</option>
                <option value='50'>Level 50</option>
        </approval_level>
</shared>
```

Note: For more details on approval processes, see the *Administration Guide*.

Maintain the User and Service Approval Level List

You maintain the approval levels for users and services (see page 339) in a file named approval_shared.xml. You can optionally add or change the values in this file to customize it to meet the needs of your organization.

Note: After you add an approval level to the file, do not remove it.

Follow these steps:

1. Edit the appropriate approval_shared.xml file for the language of your system, using an editor, such as Notepad. For example, for English, edit the approval_shared.xml file in the USM_HOME%\view\webapps\usm\locale\icusen folder.
2. Add an additional line for the approval level that you want to add. Select an unused numeric value for the approval level you are adding.
3. (Optional) Update an existing name or value in the file.
4. Save the approval_shared.xml file.
5. Verify that the new approval level appears as an option when you edit user profiles and service definitions on the product interface.

You have maintained the approval levels for users and services.

Example: Add a New Approval Level

This example uses the bold line in the following approval_shared.xml file to add a new approval level whose name is Director and whose value is 60:

```
<?xml version="1.0" encoding="UTF-8"?>
<shared>
        <approval_level>
                <option value='0'>Level 0</option>
                <option value='10'>Level 10</option>
                <option value='20'>Level 20</option>
                <option value='30'>Level 30</option>
                <option value='40'>Level 40</option>
                <option value='50'>Level 50</option>
                <option value='60'>Director</option>
        </approval_level>
</shared>
```

Request and Priority List

Every request has a priority assigned to it. CA Service Catalog supplies predefined priority values in the requestinfoshared.xml file. You can add or change the values in this file. You can also use this file to specify which user roles can assign specific priority values to requests. For example, you can add a new priority value named Immediate that only the Service Delivery role can assign to a request.

Note: After you add a new priority value to the requestinfoshared.xml file, do *not* remove it.

The requestinfoshared.xml file can be different for each language and is located in a different folder for each language. For example, for English (icusen), the requestinfoshared.xml file is located in the USM_HOME\view\webapps\usm\locale\icusen\request folder.

The following are sample lines from the requestinfoshared.xml file; the ellipses represent omitted lines:

```
<?xml version="1.0" encoding="UTF-8"?>
<shared>

        …
<priority_levels>
<priority_1 propval="1">High</priority_1>
<priority_2 propval="2">Medium-High</priority_2>
<priority_3 propval="3">Medium</priority_3>
<priority_4 propval="4">Medium-Low</priority_4>
<priority_5 propval="5">Low</priority_5>
</priority_levels>
<priority_level_roles>
        <levels role="default">
                <level propval="1" />
<level propval="2" />
                <level propval="3" defaultSel="true"/>
                <level propval="4" />
                <level propval="5" />
        </levels>
</priority_level_roles>
        …
</shared>
```

The priority levels (see page 342) section of the request and priority list in the requestinfoshared.xml file defines the numeric and text values for each priority

Priority Levels

The <priority_levels> section of the request and priority list (see page 341) in the requestinfoshared.xml file defines the numeric and text values for each priority. Each <levels> section defines those priority values that are available to the role code specified in the role attribute. The “default” role specification is used when no section exists for the role of the user.

The priority list appears in the order specified in the <priority_levels> section, regardless of role. You can use the defaultSel attribute to specify the default value for a new request according to role. The following table lists the roles and codes:

Role	Code
Catalog User	catalogenduser
Request Manager	requestmanager
Catalog Administrator	catadministrator
End User	enduser
SMA End User	smaenduser
Administrator	administrator
Service Manager	servicemanager
Super Business Unit Administrator	stadministrator
Service Delivery Administrator	spadministrator

You can edit this file to add values or change the spelling of existing values.

Suppose a request uses a priority value that is *not* available to the role of the user editing the request. In that case, the user sees that priority in the list of priority values. Conversely, suppose the request is set to another priority that *is* available the role of the user editing the request. In that case, the user can see *only* the priorities available to its role.

Example: Customizations for the requestinfoshared.xml File

If the Catalog End User role does not include priority 1 (High), a user who has that role does not see High listed in the priority list. Moreover, that user cannot set the priority of a request to High.

Suppose the following occur:

- A Request Manager who can use all the status values later sets the priority of the request to High
- A user with the Catalog End User role later edits the request

In this case, the status of High does appear in the priority list.

Thus, administrators *can* configure the product to prevent a certain role from using a particular priority value. However, administrators cannot prevent users in that role from viewing and editing their requests when another user has set the priority.

How to Maintain the Request Priority List

The priority levels (see page 342) section of the request and priority list (see page 341) in the requestinfoshared.xml file defines the numeric and text values for each priority. If your organization has a custom need that the predefined priority levels do not meet, do one or both of the following:

- Add a new priority level for a specific role (see page 346)
- Add a new priority level for multiple roles (see page 344)

Add a New Priority Level for Multiple Roles

If necessary for your organization, you can add a new priority level (see page 342) to the predefined priority levels. You can add a new priority level for multiple roles (as explained in this topic) or for a specific role only (see page 346).

Follow these steps:

1. Edit the requestinfoshared.xml file for the language of your system, using an editor, such as Notepad. For example, for English, edit the USM_HOME\view\webapps\usm\locale\icusen\request\ requestinfoshared.xml file.
2. Add a new line in the priority_levels section for the priority you want to add. Specify a unique numeric value for the new priority level.

   The priority values are listed in the user interface in the order that they appear in this section of the file.
3. Do *one* of the following:
   - Add a line in the levels section for each role that you permit to use the new priority.
   - Add a line in the levels section for the role. The line makes the new priority available to all users who do not have a role-specific priority list.
4. Save the file.
5. Log in to CA Service Catalog as a user with the role that you modified and verify your updates on the request-related pages.

Example: Add a New Priority for All Roles

This example adds the following **bold** line to the requestinfoshared.xml file. This example adds a new priority named “Urgent” and makes it available to all users who do not have a role-specific priority list.

```
<priority_levels>
        <priority_6 propval="6">Urgent</priority_6>
        <priority_1 propval="1">High</priority_1>
        <priority_2 propval="2">Medium-High</priority_2>
        <priority_3 propval="3">Medium</priority_3>
        <priority_4 propval="4">Medium-Low</priority_4>
        <priority_5 propval="5">Low</priority_5>
        </priority_levels>
        <priority_level_roles>
<levels role="default">
        <level propval="1" />
        <level propval="2" />
        <level propval="3" defaultSel="true"/>
        <level propval="4" />
        <level propval="5" />
        <level propval="6" />
</levels>

</priority_level_roles>
```

Add a New Priority Level for a Specific Role

If necessary for your organization, you can add a new priority level (see page 342) to the predefined priority levels. You can add a new priority level for a specific role only (as explained in this topic) or for multiple roles (see page 344).

Follow these steps:

1. Edit the requestinfoshared.xml file for the language of your system, using an editor such as Notepad. For example, for English, edit the USM_HOME\view\webapps\usm\locale\icusen\request\ requestinfoshared.xml file.
2. Add a new level section for the affected role.
3. Do *all* of the following in that section:
   - Specify the role code in the role attribute
   - Include only the lines from the priority_levels section that you want users in the role to see
   - Specify the default priority for new requests by using the defaultSel attribute
4. Save the file.
5. Log in to CA Service Catalog as a user with the role that you modified and verify your updates on the request-related pages.

Example: Add a New Priority Level for a Specific Role

This example adds a new priority list for users with the Catalog User role. This example sets the default priority to Medium-Low and does *not* allow users to set the priority to High. This example achieves these goals by adding the new section shown in **bold** in the following sample requestinfoshared.xml file:

```
<priority_levels>
                <priority_1 propval="1">High</priority_1>
                <priority_2 propval="2">Medium-High</priority_2>
                <priority_3 propval="3">Medium</priority_3>
                <priority_4 propval="4">Medium-Low</priority_4>
                <priority_5 propval="5">Low</priority_5>
        </priority_levels>
        <priority_level_roles>
                <levels role="default">
                        <level propval="1" />
                        <level propval="2" />
                        <level propval="3" defaultSel="true"/>
                        <level propval="4" />
                        <level propval="5" />
        </levels>
                <levels role="catalogenduser">
                        <level propval="2" />
                        <level propval="3" />
                        <level propval="4" defaultSel=”true”/>
                        <level propval="5" />
        </levels>
</priority_level_roles>
```

Typefaces Available for Notes in Requests

Users can add notes to requests by accessing the Request Details page and clicking Add in the Notes section. The Add Notes dialog appears and presents several type faces and type sizes as options. For these notes, the default typeface is Arial, and the default type size is 8-point. In addition, users can apply several formatting and highlighting options to these notes.

By default, all supported type faces are enabled, meaning that the Add Notes dialog displays all type faces listed in the <fonts> section of requestshared.xml. Administrators can optionally customize (see page 348) (limit or expand) the typefaces that appear to users in the drop-down list of the dialog.

Users can select a typeface in the drop-down list that the local computer being used to display or print the request does not support. In that case, the typeface changes to the default typeface, Arial.

How to Customize the Typefaces Available for Notes in Requests

You can optionally limit or increase the typefaces available to users when they add notes in requests (see page 347). You can do both activities to help standardize the appearance of these notes or to meet other requirements.

Follow these steps:

1. Open the requestshared.xml file and move to the <fonts> section of the file.
2. Leave the type faces that you want to be available to users for notes in request. Comment out the type faces that you do not want to appear in the dialog.

   Use the comment prefix expression (<!--) and suffix expression (-->) to enclose any line whose font you want to exclude from the Add Notes dialog.

   For example, to comment out the Courier New and Bookman Old Style type faces, modify their lines as follows:

   <!--<courier_new>Courier New</courier_new>**-->**

   <!--<bookman_old_style>Bookman Old Style</bookman_old_style>**-->**

   The fonts you left remain available to users for notes in requests. Similarly, any fonts that you commented become unavailable.
3. Do the following to add a new typeface to the list that appears in the drop-down list in the dialog: Enter a new line and specify the new typeface. Use the following convention: If the font name is X Y, use the format <x_y>X Y</x_y>.

   For example, to add a typeface named my company font, add the following line to the <fonts> section:

   <my_company_font>my company font</my_company_font>

   The fonts you added become available to users for notes in requests.
4. Save and close the requestshared.xml file.

   The Catalog system saves the file.
5. Do the following to help ensure that any font you added or did not comment out is available for display or printing purposes: Verify that the local computer being used to display or print the request supports the font.
6. Verify your changes by adding a note to a request and reviewing the available typefaces.

You have customized the typefaces available to users for notes in requests.

How to Customize XSL, XML, JavaScript, and Image Files

CA Service Catalog includes several hundred XSL, XML, JavaScript, and image files. Together, they are used to form every page and every page element in the product. Each file represents one page or a part of a page, such as a dialog, menu option, form field control, message, or picture.

Every file is named intuitively to illustrate its function. You can optionally customize any of these files to meet your requirements. To customize XSL, XML, JavaScript, and image files, follow this process:

1. Determine the specific page or part of a page that you want to customize.
2. Locate the file whose name matches the element you want to change. For example:
   - To modify the configuration information of any of the integrated products, locate the toolsconfig.xsl file.
   - To modify states of request lifecycle, locate the requestshared.xml file.
   - To modify the messages that appear when a user tests the connection for a new administration configuration setting, locate the toolsconfig.js and toolsconfig.xsl files.
   - To modify the edit button of the Administration, Configuration page, locate the modify.gif and toolsconfig.xsl files.
   - Modify the request status list (see page 322) by editing the requeststatus.xml file.

   Note: For information about customizing forms using Javascript and other methods, see the *Administrator Guide*.
3. Open the file, review its contents, and verify that it controls the element or behavior that you want to change.
4. Using the table at the end of these steps as a reference, copy the file from its original location to the custom location.
5. Modify the file to meet your requirements.
6. If you customized a JavaScript or image file, perform this step; otherwise, skip it.
   a. Copy the customized JavaScript file to the \FileStore\custom\explorer\scripts folder.
   b. Copy the customized images to the \FileStore\custom\images folder.

c. Locate the XSL file in the custom location in which the JavaScript or image file is used.

d. Update this XSL file to specify the new custom path name of the JavaScript or image file. To do so, prepend "FileStore/" to the relative path of the JavaScript or image file. Use the following example as a model:

```
<script src="FileStore/custom/explorer/scripts/custom_form_example.js"></script>
```

This action is required because the XSL file references the filestore (see page 239) location for the customized script files.

Important! If you are using multiple Catalog Component computers, verify that the filestore is shared among *all* of them.

7. Clear the USM_HOME\view\translets folder on all Catalog Component computers: Delete all files in this folder, but do *not* delete the folder itself.
8. Restart all Catalog Component computers.
9. Verify that the changes are working in CA Service Catalog as you intended.

In the following table, the parent folder is USM_HOME/view/webapps/usm. The filestore folder is %USM_HOME/filestore. The folder entries, such as /explorer and /custom/explorer, are subfolders under the parent and filestore folders.

File Type	Original Location in Parent Folder	Custom Location in Filestore Folder
XSL	/explorer	/custom/explorer
XSL	/explorer/request	/custom/explorer/request
XML	/locale/icusen*	/custom/locale/icusen*
XML	/locale/icusen*/request	/custom/locale/icusen*/request
image	/images	/custom/images
image	/images/billing	/custom/images/billing
JS	/explorer/scripts	/custom/explorer/scripts

*The folder name *icusen* applies to English-language implementations only. If you are using a non-English implementation, your locale-specific folder name is different. In such cases, use your locale-specific folder name instead of *icusen*.

Increase the Number of Values for a Drop-Down Variable

When an administrator adds a query runtime variable that appears as a drop-down list to users, the limit for the number of values in the list is 1000. If the report query returns more than 1000 values, the system truncates these additional values. Consequently, the user cannot view them in the drop-down list. If necessary, use this procedure to increase the number of values that appear in the drop-down list to be greater than 1000.

Note: For details about adding query runtime variables, see the *Administration Guide.*

Increase the number of values for a drop-down variable

1. Verify that your implementation has set up a filestore, a single location for shared files (see page 239). If necessary, set up a filestore.
2. Copy the reportsgenericgetvariables.xsl file from its *parent* folder (USM_HOME\View\webapps\usm\explorer\reports) to the *filestore* folder. Follow the same steps as for customizing XSL, XML, JavaScript, and image files (see page 349).
3. Open the reportsgenericgetvariables.xsl file in the filestore and locate the following line:

   ```
   <input type="hidden" name="Args" value="1000"/> <!---1-->
   ```

4. Increase 1000 to the value you want.
5. Save the file.
6. Complete the remaining steps for customizing XSL, XML, JavaScript, and image files (see page 349) that apply to the reportsgenericgetvariables.xsl file.
7. Run a report to test the increased limit and verify the results.

You have increased the number of values for a drop-down variable.

Custom Branding

As an administrator, you can customize the look-and-feel of the CA Service Catalog UI. The main categories of look-and-feel elements that you can customize are the following:

- Logos are image files that uniquely identify a company, business unit, or super business unit.

  These logos include the login logo (see page 354), global logo (see page 355), and business unit logo (see page 356).

  For each business unit, you can optionally specify a *business unit* logo. If you specify this logo, it replaces the *global* logo in the heading on product pages and request emails for users of the business unit. You can use a business unit logo to support the brand or other messaging uniquely for a business unit. You can update the logos for every business unit or only for specific business units. For example, you can decide to customize logos only for super tenants directly under the root business unit.

  If the business unit has child business units, the following applies:

  - If the child business unit has its own logo specified, users who log in to it see the child logo, not the parent logo.
  - If the child business unit does *not* have its own logo specified, users who log in to it see the global logo.

  Thus, users with access to multiple business units can see different header logos when they log in to each business unit.

- The login page (see page 358) enables a user to access the product.

  The same login page (including the login logo) applies to all users in all business units. You can customize the settings for several look-and-feel elements, including images and icons (*except for* logos), menus, tabs, and so forth. When applicable, these elements include colors, font name and point size, highlighting, and related specifications. You customize these look-and-feel elements by editing the Cascading Style Sheet (CSS) files for the login page.

- Global page elements appear on several or all product pages. They include the product name, shopping icon, and footer. Global page elements are always the same, on every product page where they appear.

  Like the elements of the login page, global page elements apply to all users, regardless of their business unit. You *cannot* override them with business unit-specific settings. The global page elements also apply regardless of whether you have customized the themes of one or more business units.

  You customize global page elements (see page 370) by editing the file named includes_shared.xml.

- *A theme* specifies the settings for several look-and-feel elements, including images and icons (*except for* logos), menus, tabs, and so forth. When applicable, these elements include colors, font name and point size, highlighting, and related specifications. You customize these look-and-feel elements by editing the Cascading Style Sheet (CSS) files for the theme.

  The look-and-feel of the UI matches the theme of the business unit that you are logged in to. If theme is not set for a business unit, CA Service Catalog checks the business unit hierarchy until it finds a theme. Thus, if a business unit does not have its own theme, it uses the theme of its closest parent business unit. You can use the same theme for all business units. Alternatively, you can optionally create and use different themes for different business units.

You can customize any, all, or none of the items in this list. Customizing each item in the previous list is a separate, independent operation. You can customize any one of them *without* customizing the others. This separation provides flexibility and efficiently.

You can customize logos or global page elements quickly and easily. Customizing themes is a longer process and requires advanced prerequisites (see page 365). Verify that the customizations you plan to make to each one are compatible with each other, to help provide a consistent look-and-feel to users.

Upgrade Considerations

The updates in this chapter *replace* any *overlapping* information about custom branding in previous releases, especially concerning the following elements:

- Logos
- Login page elements
- Global page elements, including icons, footer elements, and header elements

If you customized any of these elements in previous releases, do *one* of the following, whichever applies to your implementation:

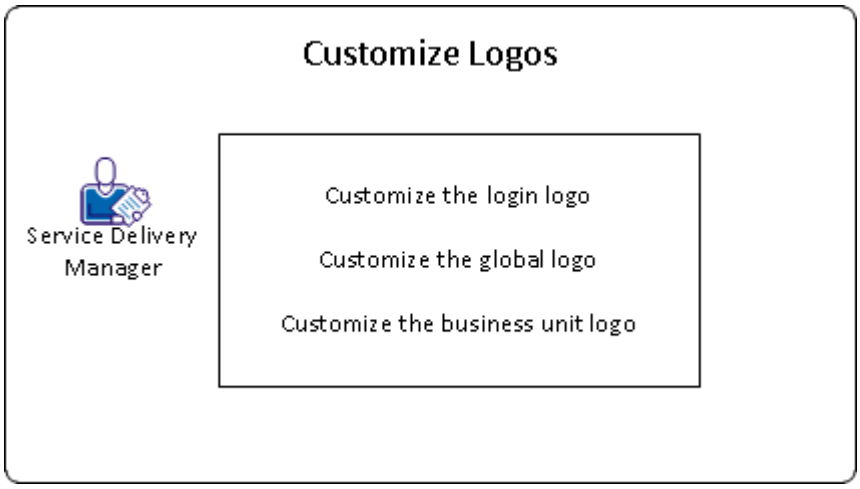
- Verify that the customized files reside in a *custom* subfolder of the USM_HOME\FileStore folder.

  USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

- Otherwise, recreate your customizations by following the instructions in this chapter.

How to Customize Logos

Logos are image files that uniquely identify a company, business unit, or super business unit. As a service delivery manager, you can customize the logos used on the CA Service Catalog UI. Using custom logos helps reinforce branding or other messaging in your organization.



To customize logos on the CA Service Catalog UI, do the following. Each customization is optional.

- Customize the login logo (see page 354).
- Customize the global logo (see page 355).
- Customize the business unit logo (see page 356).

Customize the Login Logo

CA Service Catalog includes a predefined login logo that you can optionally replace with a custom login logo. The login logo *always* applies to the login page, regardless of whether you have specified different logos for different business units. You can use a custom login logo to support the brand or other messaging of your organization.

Follow these steps:

1. Determine the custom login logo that you want to use.

   Note: We recommend that you size your custom logo to be approximately the same size as the predefined logo.

2. Access the USM_HOME/FileStore/themes/common/images/logo folder on your filestore computer.

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

3. Copy and rename the predefined login logo (login_logo.png).
4. Copy the custom logo to the same folder. Rename it to the name of the original logo.
5. Access the login page for CA Service Catalog.
6. Verify that the predefined login logo no longer appears and that the custom login logo appears correctly.

You have customized the login logo.

Customize the Global Logo

CA Service Catalog includes a *predefined* global logo that applies to all users. You can optionally replace it with a *custom* global logo to support the brand or other messaging of your organization. The global logo appears in the heading of all product pages (except the login page) and request emails.

Note: If a business unit has its own logo specified, users who log in to it see the business unit logo instead of the global logo.

Follow these steps:

1. Determine the custom global logo that you want to use.

   Note: We recommend that you size your custom logo to be approximately the same size as the predefined logo.

2. Access the USM_HOME/FileStore/themes/common/images/logo folder on your filestore computer.

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

3. Copy and rename the predefined global logo (header_logo.png).
4. Copy your custom logo to the same folder. Rename it to the name of the original logo.
5. Log in to CA Service Catalog.

6. Verify that the predefined global logo no longer appears.
7. Verify that your custom global logo is legible on the UI and in request emails, unless a business unit logo overrides it.

You have customized the global logo.

Customize the Business Unit Logo

For each business unit, you can optionally specify a *business unit* logo. If you specify this logo, it replaces the *global* logo in the heading on product pages and request emails for users of the business unit. You can use a business unit logo to support the brand or other messaging uniquely for a business unit. You can update the logos for every business unit or only for specific business units. For example, you can decide to customize logos only for super tenants directly under the root business unit.

Important! If you have enabled multi-tenancy with CA Service Desk Manager, CA Service Catalog ignores any of its own settings for business logos. Instead, CA Service Catalog uses the logo or logos that the CA Service Desk Manager setup specifies, if applicable. If no CA Service Desk Manager logo applies, then each business unit uses the CA Service Catalog global logo.

Follow these steps:

1. Determine the business unit logo that you want to use.

   Note: We recommend that you size your logo to be approximately the same size as the predefined global logo.

2. (Optional) Do the following:

   - Rename the custom logo file intuitively to match its business unit. For example, for a business unit named Vienna_123, name the logo Vienna_123_header_logo.png.
   - Create a subfolder named "custom logos" or something similar under USM_HOME/FileStore/themes/common/images/logo.

USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

3. Copy your custom logo to the USM_HOME/FileStore/themes/common/images/logo folder on your filestore computer.
4. In CA Service Catalog, do *one* of the following, whichever applies to your level of administrative access:
   - Log in to the business unit whose logo you want to change.
   - Log in to the root business unit and do the following:
     a. Select Administration, Business Units.
     b. Drill down the tree to the business unit whose logo you want to change.
5. Edit the business unit.
6. In the Logo field, enter the URL of the logo that you copied and save your changes.
7. Refresh your browser.
8. Verify that your business unit logo is legible on the UI and in request emails.
9. If the business unit has child business units, verify the following:
   - If the child business unit has its own logo specified, users who log in to it see the child logo, not the parent logo.
   - If the child business unit does *not* have its own logo specified, users who log in to it see the global logo.

   Thus, users with access to multiple business units can see different header logos when they log in to each business unit.

You have specified a business unit logo.

Customization of the Login Page

CA Service Catalog includes a predefined login page that you can optionally customize, to reinforce branding or other messaging. The same login page applies to all users, regardless of the business unit that they are logging in to.

You can customize the login page, as follows:

- Customize the login logo (see page 354).
- Customize the *look-and-feel* of several elements of the login page by editing the logon.css file (see page 359).

  Before you edit the logon.css file, verify that you meet the prerequisites for editing CSS files (see page 365).
- Customize the *content* or *text* of the elements on the login page (see page 361).

Keep in mind the following important points:

- You can customize the login page *without* customizing the theme (see page 363) for one or more business units. The same login page applies to all users, regardless of whether you have customized any theme.

  Customizing the login page includes some of the same steps as customizing a theme. However, the two customizations are separate and independent of each other. This separation provides greater flexibility to your organization. This separation also enables you to update the login page alone more quickly and more efficiently.
- Review the overview of custom branding (see page 352) for important information about logos, the login page, themes, and global page elements. Verify that the customizations you plan to make to each one are compatible with each other, to help provide a consistent look-and-feel to users. For example, using similar colors and elements on both the login page and the product pages helps provide a consistent user experience.

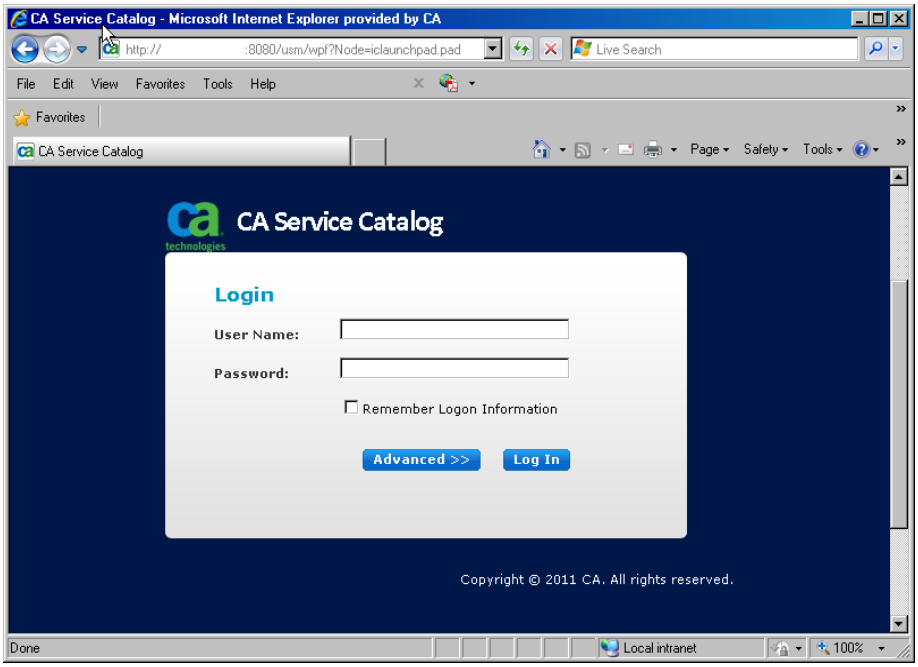
Customize the Login Page

As part of customizing your implementation, you can customize (see page 358) the look-and-feel of the login page to reinforce branding or other messaging. The same login page applies to all users, regardless of business unit that they are logging in to. Before you edit the logon.css file, verify that you meet the prerequisites for editing CSS files (see page 365).

Follow these steps:

1. Open your web browser and access the login page for CA Service Catalog.

   For example, for the predefined CA _Technologies_r7 theme, before you make any customizations, the login page appears similar to the following:



2. Back up the USM_HOME\filestore\themes\common\css\logon.css file.

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

   Important! As a best practice, *always* back up CSS files and other configuration files before editing them.

3. Open the file, using the CSS editor for your web browser.
4. Find the lines that control the look-and-feel specification that you want to update.

   For example, to configure the look-and-feel of the product name, find the following line:

   ```
   .loginproductname {
    text-align: left;
    font-family: CAlibri, Verdana, Arial, Helvetica, sans-serif;
    color: #ffffff;
   ...
   ```

5. Update the lines to match the look-and-feel specification you want, and save the file.

   For example, for the previous step, to change the color of the product name from the current color to blue, update the lines as follows:

   ```
   .loginproductname {
    text-align: left;
    font-family: CAlibri, Verdana, Arial, Helvetica, sans-serif;
    color: blue;
   ...
   ```

6. Repeat the previous step for other look-and-feel changes that you want to make.

   For example, to configure the background color of the login page, find the following lines:

   ```
   .login_page {
    background-color: #00174A;
    text-align: center;
   ...
   ```

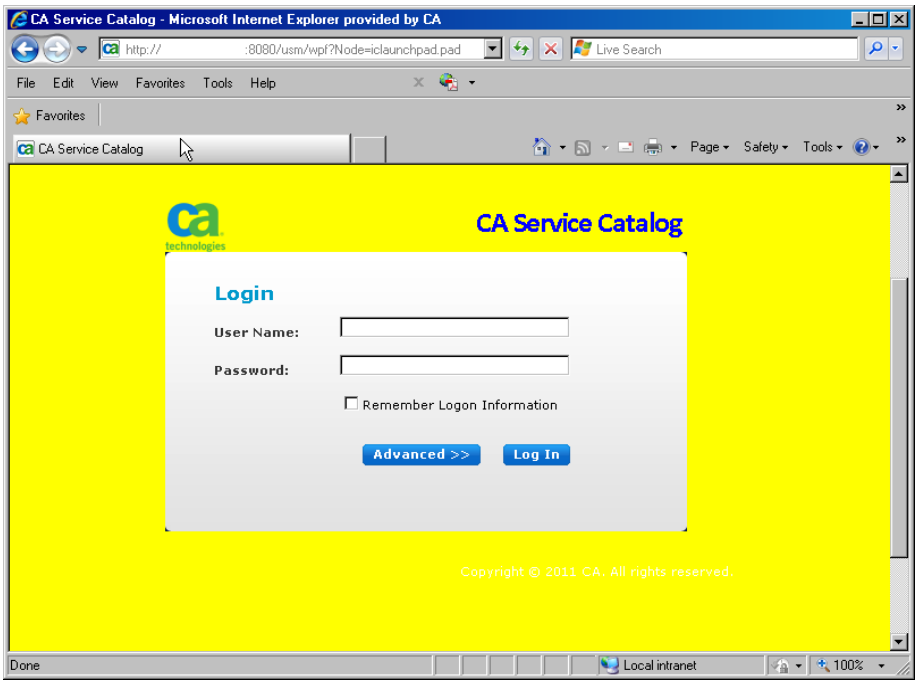
7. Update the lines to match the look-and-feel specification you want, and save the file.

   For example, consider the previous step. To change the background color of the login page to yellow and align the affected text to the right, update the lines as follows:

   ```
   .login_page {
    background-color: yellow;
    text-align: right;
   ...
   ```

8. Refresh your browser and verify your updates on the login page.

   For example, the following page reflects the customizations made in the previous steps. The product name is blue. The background color is yellow. The affected text is aligned on the right.



9. Update the elements of the login page (see page 361) to meet your requirements. Verify each change by saving the file and refreshing the login page.

You have customized the login page.

Elements on the Login Page

The following table lists the elements of the login page that you are most likely to customize, except for the login logo (see page 354). When applicable, each row lists the section of the login.css file that affects the look-and-feel of the element. Callout numbers identify these elements in the sample page that appears after the table.

Callout Number	GUI Element	File Location under USM_HOME*	Section in Logon.css File
1	Text for browser window title and title bar	view\webapps\usm\locale\icusen\logon.xml	.loginpage
2	Text for product name	view\webapps\usm\locale\icusen\logon.xml	.loginproductname

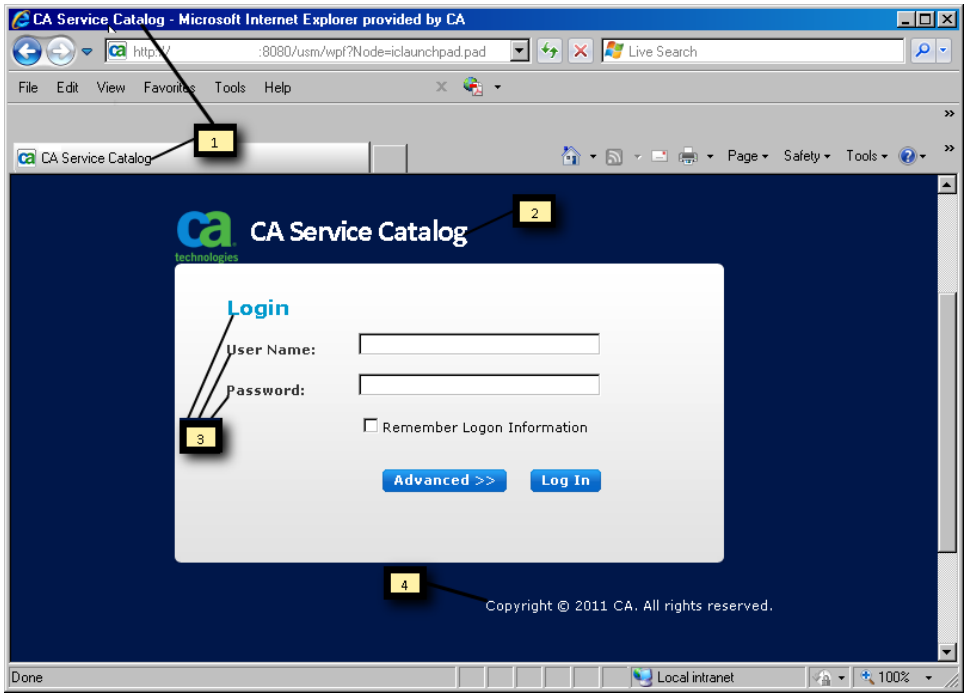
3	Login input text	view\webapps\usm\locale\icusen\logon.xml **Note:** This text supplies the User Name, Password, and Advanced-Business Unit fields.	logininputtext
4	Copyright text and date	view\webapps\usm\locale\icusen\logon.xml	.loginpagecopyright

***USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

In addition, the favorites icon appears in the browser address bar and the product title bar of every product page, including the login page. The favorites icon is a global page element that you can customize (see page 370).

Note: For the Text elements, the File Name column displays the folder location for an English system (icusen). For other languages, the location is different.

Each element in the following picture matches a callout item from the preceding table. You can optionally customize the item by replacing or editing the corresponding file. Your browser page can look different from the following example.



Themes

A theme specifies the settings for the following look-and-feel elements:

- Images and icons (*except for* logos)
- Menus
- Tabs
- Toolbars
- Wizards

When applicable, these elements include the following specifications:

- Colors (especially background colors)
- Font name and point size
- Highlighting, such as bold or underline
- Position on a page or dialog

You customize these look-and-feel elements by editing the Cascading Style Sheet (CSS) files for the theme. Each theme includes the following CSS files:

- logon.css, which applies to the login page *only*
- main.css, which applies to other product pages

Important! *Always* back up a CSS file before editing it, so that you can return to the original specifications if necessary.

You copy and modify predefined CSS files as part of the process of creating a theme (see page 366).

A theme is organized (see page 364) in folders, with one top-level folder for each theme. In addition to the CSS files, a theme includes several other supporting files and several folders. You do not need to edit these additional files and folders. However, you copy them as a group when you copy and modify a CSS file.

Review the overview of custom branding (see page 352) for important information about logos, the login page (see page 358), themes, and global page elements (see page 369). Verify that the customizations you plan to make to each one are compatible with each other, to help provide a consistent look-and-feel to users.

Predefined and Custom Themes

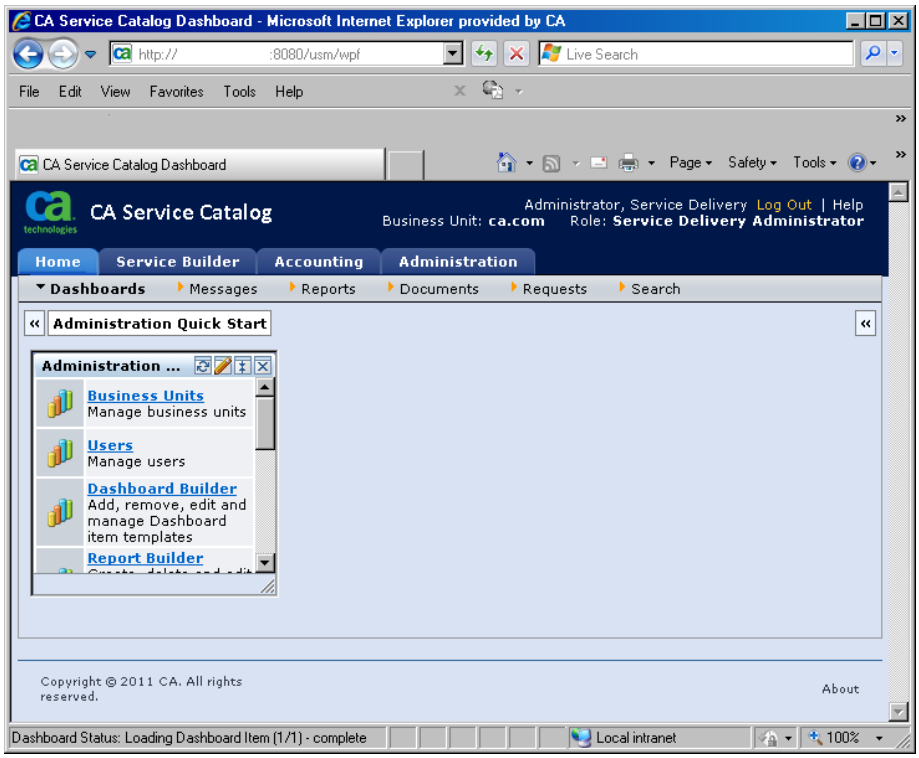
A theme is organized in folders, with one top-level folder for each theme. In addition to the CSS files, a theme includes several other supporting files and several folders. You do not need to edit these additional files and folders. However, you copy them as a group when you copy and modify a CSS file.

In the USM_HOME\filestore\themes folder, CA Service Catalog includes the following top-level folders for each predefined theme:

- CA_Technologies_R7

  Specifies the predefined look-and-feel elements of CA Service Catalog Release 12.7.

  The following is a sample home page using this theme (without customizations):



- common

  Contains look-and-feel elements that apply to *all* predefined and custom themes.

  Important! Do *not* copy and modify the *common* folder.

If you have already created custom themes, your top-level folders for those themes also appear in the USM_HOME\filestore\themes folder.

To create a custom theme, you copy either a predefined folder (such as CA_Technologies_R7) or a custom folder that you created earlier. Afterwards, you modify the CSS file of interest in the folder that you copied.

You store all custom theme folders under the filestore folder. You store them on the same folder level as the CA_Technologies_R7 folder.

Each top-level folder name becomes the name of an option for a theme. When you edit a business unit, you can select a theme for it.

If you update a theme for a specific business unit, the change affects the users who belong to that business unit. The change also affects any child business units that do not have their own theme specified. Child business units inherit the theme of their parent business unit. However, they can optionally override the inherited theme by specifying their own theme.

Customization of Themes

The look-and-feel of the UI matches the theme of the business unit that you are logged in to. If theme is not set for a business unit, CA Service Catalog checks the business unit hierarchy until it finds a theme. Thus, if a business unit does not have its own theme, it uses the theme of its closest parent business unit. You can use the same theme for all business units. Alternatively, you can optionally create and use different themes for different business units.

To customize a theme, you do the following:

- Create (see page 366) a custom theme for one or several business units.
- Customize (see page 367) the theme you created by editing its main.css file.

  Before you edit the main.css file, verify that you meet the prerequisites for editing CSS files (see page 365).

Prerequisites for Editing Themes

As an administrator, edit the theme for one or more business units *only* if you have expertise in the following areas:

- UI design, especially look-and-feel elements
- Standard specifications for CSS files
- Customization of CSS files, using a CSS file editor for your web browser

How to Create Custom Themes

You create a custom theme (see page 363) by copying and modifying an existing theme. You can copy and modify either a predefined CA Service Catalog theme or another existing theme that you created earlier. Using a custom theme for a business unit helps support branding or other messaging for the business unit and, optionally, its child business units.

Important! As a best practice, do *not* modify a predefined CA Service Catalog theme directly. Instead, copy and modify it, so that you can efficiently return to the original version, if necessary. *Always* back up CSS files before editing them.

To customize a theme, follow this process:

1. Verify that you meet the prerequisites for editing themes (see page 365).
2. Access the computer on which the filestore resides.
3. Find and expand the USM_HOME folders. Expand the \filestore\themes folder. Review the organization of the predefined and custom themes (see page 364) in that folder.

   Note: The name of each top-level folder is the name of an option that you can select when you select a theme for a business unit.
4. Copy the top-level folder of existing theme that you want to use as a starting point for your new theme.
5. Wait for the copy operation to finish and rename the new theme.

   For example, suppose the existing theme was named Rome_Super_Tenant_A. If the new theme is for a second super tenant, you can name it Rome_Super_Tenant_B. Conversely, if the new theme is for a new child business unit of the parent super tenant, you can name it Rome_Super_Tenant_A--Child-1.
6. Add or edit the business unit for which you want to use this theme. In the Available Branding field, select the new theme that you created.

   For example:

   - To apply the theme to all business units that do not have their own theme, edit the root business unit and apply this theme.
   - To apply the theme to a specific business unit, add or edit the business unit and apply the theme.

     The theme also applies to all child business units that do not have their own theme.
7. Customize the new theme (see page 367) by editing its main.css file.

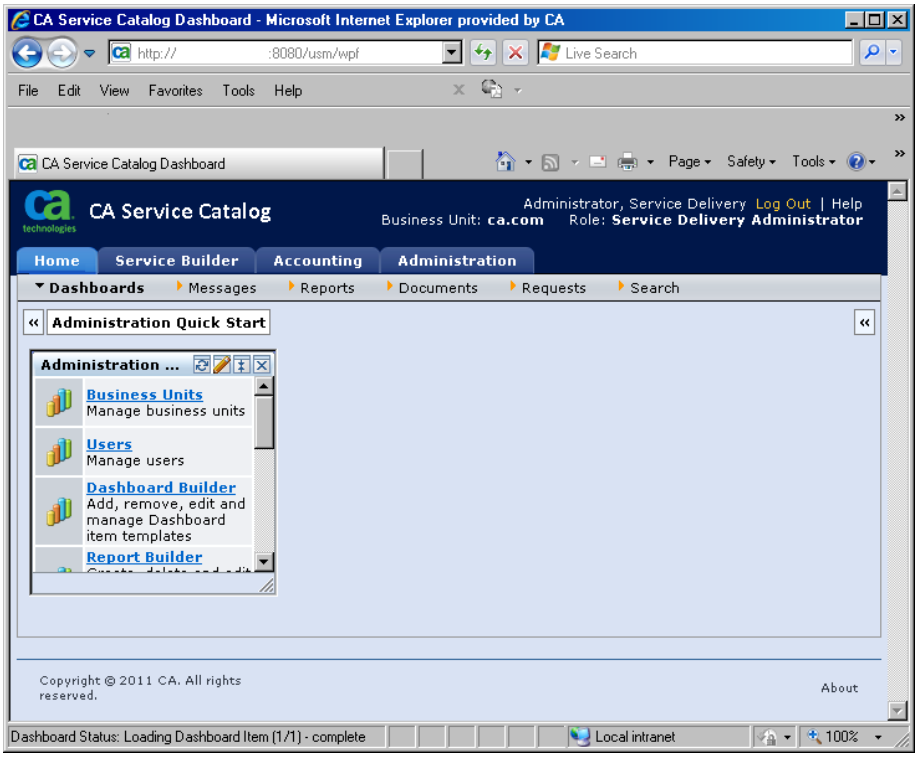
You have created the new theme and are now ready to begin customizing it.

Customize a Theme

After you have created a theme, you can customize it, to give it a unique look-and-feel. Customizing a theme helps to reinforce branding and other messaging for the business unit or the department or organization it represents. Before you edit the main.css file, verify that you meet the prerequisites for editing CSS files (see page 365).

Follow these steps:

1. Log in to CA Service Catalog and note the look-and-feel of the home page. The following sample home page uses the default settings of the CA_Technologies_R7 theme:



2. Back up the main.css file in the custom theme folder that you created (see page 366). A sample path name is USM_HOME\filestore\themes*custom_theme*\css\main.css file.

   Important! As a best practice, *always* back up CSS files and other configuration files before you edit them.

3. Open the main.css file of your custom theme. Use a suitable CSS editor for your web browser.

4. Find the lines that control the look-and-feel specification that you want to update.

   For example, To change the background color globally on product pages, do the following:

   a. Find the following default setting:

      td.pagebg{background-image:url(../images/grid/page-bg.png);background-repeat:repeat-x;background-color:#D9E2F3;}

   b. Delete the following phrase:

      background-image:url(../images/grid/page-bg.png);

      The line now appears as follows:

      td.pagebg{background-repeat:repeat-x;background-color:#D9E2F3;}

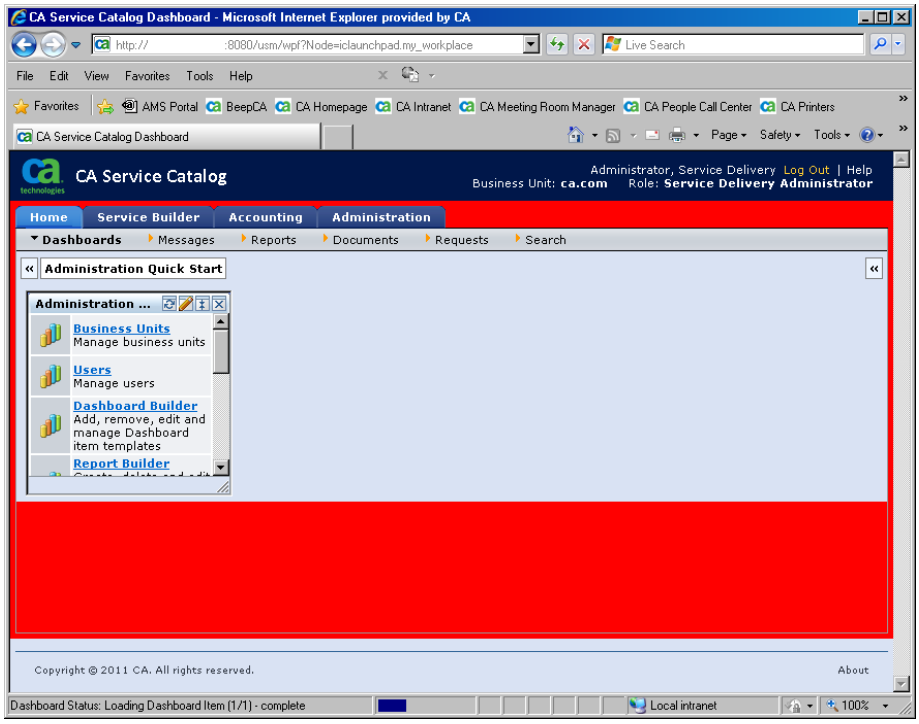
   c. Change the background-color:#D9E2F3 to the color of your choice, for example, background-color:red.

   d. Save the file.

   Note: The setting in this example *does* affect the background color of the *entire* product page. However, the background colors of specific sections of the page *override* the background color of the entire page.

5. Refresh the CA Service Catalog UI. Verify the changes to the product pages.

   A sample page follows. This page displays the updates to the background color specified in the previous step.



6. Update other elements of the theme meet your requirements. Verify each change by saving the file and refreshing the login page.

   For example, you can customize the look-and-feel of the top-level menu tabs (Home, Service Builder, Accounting, and Administration). To do so, find and edit the following section in the main.css file:

   ```
   a.tabs {
   font-family:verdana, arial,sans-serif;
   font-size:10px;
   font-weight:700;
   color:yellow;
   text-align:center;
   white-space:nowrap;
   text-decoration:none;}
   ```

7. If necessary, refine your original edits of the main.css file, or create additional customizations. Verify your updates on the UI, as explained in the previous steps.

You have customized the theme. In addition, you can also customize certain global page elements (see page 369) that are not directly related to themes.

Global Page Elements

You can customize certain global page elements. Like the elements of the login page, global page elements apply to all users, regardless of their business unit. The global page elements also apply regardless of whether you have customized the themes of one or more business units.

Global page elements appear on several or all product pages. They include the product name, shopping icon, and footer.

You customize global page elements (see page 370) by editing the file named includes_shared.xml.

Review the overview of custom branding (see page 352) for important information about logos, the login page, themes, and global page elements. Verify that the customizations you plan to make to each one are compatible with each other, to help provide a consistent look-and-feel to users.

Customize Global Page Elements

As part of customizing your implementation, you can customize global page elements to reinforce branding or other messaging. These elements include both text and icons. The same global page elements apply to all users, regardless of business unit that they are logging in to.

Follow these steps:

1. Back up the USM_HOME\view\webapps\usm\locale\icusen\ includes_shared.xml.

   Important! As a best practice, always back up XML files and other configuration files before editing them.

2. Open the includes_shared.xml file, using the XML editor of your choice, for example, Windows Notepad.

   Note: The folder location is for an English system (icusen). For other languages, the location is different.

3. Find the line that controls the text that you want to update. Some sample settings follow:

   - Text for the product name: <product_title> value

     Default: CA Service Catalog

   - Text for the Logout button: <logoutnode> value

     Default: Log Out

   - Text for the footer: <footer> value

     Default: Copyright (c) 2011. All rights reserved.

4. Update the lines to the values you want, and save the file.

5. Access the folder that contains the icons that you want to update.

   Sample icons and their file names follow, according to the folder in which they reside:

   - USM_HOME\view\webapps\usm\images folder:
     - Add: tb_add.png
     - Calendar: calendar.gif
     - Edit: edit.gif
     - Refresh: reset.gif
     - Search: icon-search.gif
     - Shopping cart: shopping_cart.png

- USM_HOME\view\webapps\root folder:
  - favicon.ico

    The favorites icon appears in the browser address bar and the product title bar of every product page, including the login page (see page 361).

Note: To view an icon, double-click its file name.

6. Do the following for each icon that you want to change:
   a. Rename the original file to filename_OLD.png.
   b. Copy your new file to the folder, and rename it to the original file name.

   For example, first rename the original shopping_cart.png to shopping_cart_OLD.png. Next, copy your new shopping cart icon to the folder and rename it to shopping_cart.png.
7. Log in to CA Service Catalog and verify your updates on the product UI. For completeness, review several pages of the UI.
8. Repeat the previous steps, if necessary, until the UI matches your specifications.
9. Copy the icons that you customized to the USM_HOME\filestore\custom\images folder.

   Important! This step is required to help ensure that your updates apply to all users in your organization.

You have customized the global page elements.

Add a Custom Time Zone

You select the time zone for a business unit when you create or edit it. The time zone selection determines the date and time settings for the business unit, including the following components: the Scheduler, outage calendars, and business hours, date and time fields in forms, and the availability dates for services. You can also select a time zone for conditions in policies. CA Service Catalog supplies several predefined time zones that you can use in these settings. If necessary, you can add a custom time zone.

Follow these steps:

1. Verify that you have set up the filestore (see page 239).
2. Copy the appropriate sharedxml.xml file for the language of your system to the filestore. For example, for English, copy the file USM_HOME%\view\webapps\usm\locale\icusen\sharedxml.xml to the filestore.
3. Use an editor, such as Notepad, to edit the sharedxml.xml file in the filestore. Locate the <timezones> tag and the existing time zone entries under it.
4. Enter the custom time zone under the existing entries. Use the format shown in the following example:

   ```
   <t53>
       <id>GMT-06:00 America/North_Dakota/Center</id>
       <text>(GMT-06:00) Central Time (US&amp;amp;Canada)</text>
   </t53>
   ```

5. Verify that the new custom time zone is implemented, as follows:
   - Edit a business unit and verify that the available time zones include the new custom time zone.
   - Set the business unit to this time zone. Verify that the time zone is used in affected components, such as the Scheduler and the date and time fields in forms.
   - If applicable, verify that this time zone works accurately in conditions in policies.

   Note: For details about working with the Scheduler, business units, policies, and other components mentioned in this topic, see the *Administration Guide*.
6. If you have implemented CA Service Catalog in multiple languages, repeat steps 2 through 5 for all other languages that you are using.

You have added a custom time zone.

Customize the Online Help

Service delivery administrators can optionally replace the predefined online help with custom online help, for any, some, or all roles. Here, the predefined online help refers to the *Administration Guide* and the other guides that are linked to it. The custom online help appears instead of the predefined online help when users with the specified roles click the Help button on the top right of any page.

Note: If the user selects Administration, Tools, Links, Documentation, the predefined online help *always* appears. This menu selection is *not* affected by the customization in this topic for the online help that appears when users click the Help button.

Follow these steps:

1. Create your custom online help file files and copy them to the USM_HOME\filestore\custom\help*language* folder.

   USM_HOME specifies the CA Service Catalog installation directory on this computer. For 32-bit computers, the default path name is C:\Program Files\CA\Service Catalog. For 64-bit computers, the default path name is C:\Program Files (x86)\CA\Service Catalog.

   language

   Specifies the language of the operating system on which you installed CA Service Catalog. For example, specify en_US for U.S. English or ja_JP for Japanese.

   Note: The folder must include an index.html file that, when clicked, opens the custom online help.

2. Click Administration, Configuration, Filestore.
3. Select the option named Enable Custom Help.
4. Specify the roles that you want to see the custom help rather than the predefined online help.
5. Restart Catalog Component.
6. Verify that CA Service Catalog functions as expected when users with the specified roles click the Help button on the top right of any page:
   - If applicable, the custom online help opens instead of the predefined online help.
   - If the index.html file does *not* exist in the USM_HOME\filestore\custom\help*language* folder, the index.html file in the USM_HOMEfilestore/custom/help/default folder runs.
   - If no previous bullet applies or if the custom online help is disabled, the predefined online help opens.

Chapter 13: Uninstalling

This section contains the following topics:

How to Uninstall CA Service Catalog

You can uninstall CA Service Catalog, CA EEM, and CA Workflow from one or more computers.

Follow these steps:

1. Stop all CA Service Catalog Windows services on all computers.

   The services are named CA Service Accounting, CA Service Catalog, and CA Service Fulfillment (if used).

2. Open the Windows Control Panel, select CA Service Catalog, and click Uninstall.

   CA Service Catalog is uninstalled.

   Note: The CA Service Catalog data in the MDB is saved for any future CA Service Catalog installations in your enterprise. You can optionally delete the data from the MDB. However, if you delete the data, you cannot recover it.

3. If no other CA Technologies products in your enterprise use CA EEM, use the Windows Control Panel to uninstall it.

   Important! Before uninstalling CA EEM, unregister all registered applications. For instructions, see your CA EEM documentation.

4. Use the Windows Control Panel to uninstall CA Workflow if no other CA products in your enterprise use it.

5. (Optional) Review the uninstallation log files in the Windows Temp directory:

   - CA_Service_Catalog_view.log
   - CA_Service_Catalog_Uninstall.log

Note: Tomcat and the JRE are installed automatically during the CA Service Catalog installation. They are also uninstalled automatically during the CA Service Catalog uninstallation.

Appendix A: Troubleshooting

This section contains the following topics:

Scope

This appendix contains *only* troubleshooting topics related to the core components of the product: CA Service Catalog, Accounting Component, and Service Fulfillment.

Note: For additional troubleshooting topics related to the integration of CA Service Catalog with other products, including CA Workflow, CA EEM, CA Service Desk Manager, and so on, see the *Integration Guide*.

Some Links on Setup Utility May Be Blocked

Symptom:

This issue has occurred with Internet Explorer 8.0 on Windows servers that are configured to use enhanced security settings. This issue may also affect other implementations.

You use the setup utility to configure CA Service Catalog, for example, when you install (see page 55) or upgrade (see page 55) the product. When you click some links on the setup utility, the browser may block the link and may issue a message like this one:

Content from the web site listed below is being blocked by Internet Explorer Enhanced Security Configuration

Solution:

Update the browser to include the following entry in its trusted sites:

about:blank

For instructions to update the trusted sites for your browser, see your browser help.

Cannot Log In to CA Service Catalog

Symptom:

I cannot log in to a CA Service Catalog computer.

Solution:

Try the following:

- Verify that your user name and password are valid.
- Verify that CA Service Catalog services are running on the computer that you are trying to log in to.
- Verify that *no* underscore character (_) appears in the CA Service Catalog computer name, if you are using Microsoft Internet Explorer to access CA Service Catalog. If an underscore appears in the computer name, do one of the following:
  - Use Mozilla Firefox or Safari instead of Internet Explorer to access CA Service Catalog.
  - Rename the computer to remove the underscore, and update all references to the computer name throughout your environment. Then continue to use Internet Explorer to access CA Service Catalog.

    For more information about this issue in Internet Explorer, see the related information in the knowledge base (KB) on the Microsoft website, microsoft.com. At publication time, the most relevant KB article is 325192, "Issues after you install updates to Internet Explorer or Windows."

Cannot Add or Update a User Because of Duplicate User ID

Symptom:

When I try to add a new user or update an existing user ID, I receive an error message like the following:

Error - User with this user id already exists. Choose a different user id.

Solution:

A duplicate user profile exists. This problem can occur even if that user has been deleted. Deleted users are marked as inactive but are retained in the database.

Before assigning the user ID to a different user, remove the user ID from the inactive user.

To remove a user ID from an inactive user

1. Click Administration, Users.

   The Search User options appear.

2. Click the View Advanced icon option of the Search Users options.

   The Advanced Search fields appear.

3. Select User ID from the list of fields and select Contains from the list of operators.
4. Enter the user ID in the value field and click the Add link.
5. Select Inactive from the list of fields and select Equals from the list of operators.
6. Enter 1 for “true” in the value field and click the Add link.
7. Click Search.

   The list of users that match the selection criteria appears.

8. Edit the user: Change, or clear the User ID field, and click OK.

Cannot Delete an Account

Symptom:

When I try to delete an account, a message appears indicating that I cannot delete this account.

Solution:

You cannot delete an account with an active subscription.

Before you delete an account, prepare to delete it.

To prepare to delete an account

1. Cancel the subscriptions associated with the account.
2. Close the account by setting the status of the account to Closed.
3. Verify that all the billing runs affecting the account are completed.

Note: For details about performing these tasks, see the *Administration Guide*.

Cannot Connect to a Trusted Computer

Symptom:

I have configured CA Service Catalog and an integrating product, such as CA Service Desk Manager, to use Secure Socket Layer (SSL) to connect to each other using a trusted relationship. However, when I test the connection, it fails, and I receive error messages that no trusted relationship exists.

Solution:

- Verify that you have configured CA Service Catalog to use SSL (see page 159).
- Verify especially that you have added self-signed certificates to the keystore (see page 168), if applicable

  When you use *self-signed* certificates for any computer that connects directly to CA Service Catalog or that CA Service Catalog connects to, add these certificates to the keystore. For example, suppose you are using clustering (see page 267) with load balancing (see page 280) for CA Service Catalog. In that case, if you are using a self-signed certificate for the load balancing computer, add them the keystore.

  Moreover, verify the computer to be trusted, that is, the computer that has direct connection with CA Service Catalog. For example, suppose you integrate CA Service Catalog with CA Service Desk Manager through a load balancing computer. In that case, CA Service Catalog connects directly to the load balancer (not CA Service Desk Manager). Therefore, the computer to be trusted is the load balancer (not the CA Service Desk Manager computer).

Cannot Email a Request

Symptom:

I have CA EEM configured to use an external directory containing many groups. When emailing a request, I get the error “Cannot send email, please contact your administrator.”

Solution:

Increase the value of the CA EEM Max Search Size to process the number of groups defined in your external directory.

To set the CA EEM Max Search Size

1. Start the CA EEM user interface by clicking the Administration Quick Start menu Embedded CA EEM link.

   The CA EEM login screen appears.

2. Log in using the EiamAdmin user name and password.

   The CA EEM Home Page appears.

3. Click the Configure, Session, Configuration menu option.

   The Session Configuration screen appears.

4. Change the Max Search Size to a value larger than the number of groups in your external directory.

5. Click Save.

Cannot Locate the Configuration Files

Symptom:

I cannot locate my CA Service Catalog configuration files.

Solution:

The configuration files and locations are as follows:

- Database connection configuration file: USM_HOME\DBSource.properties
- CA EEM connectivity configuration file: USM_HOME\Eiam.properties
- Ixutil utility configuration file: USM_HOME\scripts\ixutil.cfg

Cannot Locate My Log Files

Symptom:

I cannot locate my CA Service Catalog log files.

Solution:

See the names and locations of all log files (see page 252).

Compilation Errors After Customization

Symptom:

After I customized files, I began receiving multiple compilation-related error messages in the log files of additional Catalog Component computers. These error messages appear similar to the following:

…

yyyy/mm/dd computer-name-or-address ERROR [TP-Processor21] [DomProcessor] Error Generating Document javax.xml.transform.TransformerConfigurationException: Could not compile stylesheet

…

Solution:

Do the following:

- Review the instructions for customizing XSL, XML, JavaScript, and image files (see page 349). Verify that you have followed all instructions.
- Verify that the filestore (see page 239) is set up correctly. Especially verify that *all* Catalog Component computers share the filestore.

Log File Does Not Roll Over

Symptom:

The log file does not roll over: The log file is not automatically renamed and started over again when it reaches a specific maximum size. Instead, the log file grows continuously without limit until I manually delete or rename it.

Solution:

Review and follow the process for configuring rollover settings for selected log files (see page 260).

Cannot Locate the Registry Keys

Symptom:

I cannot locate my CA Service Catalog registry keys.

Solution:

The following are the CA Service Catalog registry key locations for 32-bit operating systems:

- Catalog Component

  HKEY_LOCAL_MACHINE\SOFTWARE\ComputerAssociates\Service Catalog\View

- CA Service Catalog

  HKEY_LOCAL_MACHINE\SOFTWARE\ComputerAssociates\Service Catalog\Catalog

- CA Service Catalog Content

  HKEY_LOCAL_MACHINE\SOFTWARE\ComputerAssociates\Service Catalog\Catalog Content

- Accounting Component

  HKEY_LOCAL_MACHINE\SOFTWARE\ComputerAssociates\Service Catalog\Accounting

- CA Workflow

  HKEY_LOCAL_MACHINE\SOFTWARE\ComputerAssociates\Service Catalog\Fulfillment

The following are the CA Service Catalog registry key locations for 64-bit operating systems:

- Catalog Component

  HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ComputerAssociates\Service Catalog\View

- CA Service Catalog

  HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ComputerAssociates\Service Catalog\Catalog

- CA Service Catalog Content

  HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ComputerAssociates\Service Catalog\Catalog Content

- Accounting Component

  HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ComputerAssociates\Service Catalog\Accounting

- CA Workflow

- HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ComputerAssociates\Service Catalog\Fulfillment

Cannot Set Debug Levels

Symptom:

I do not know how to set my debug levels.

Solution:

Follow the process for setting log levels (see page 257).

In HTTPS, Unable to View Invoice in CSV Format from Invoice History UI

Symptom:

I am using Internet Explorer to access CA Service Catalog. When I try to view invoices in CSV format from Invoice History in an HTTPS environment, the invoices do not display correctly.

Solution:

Update your Internet Explorer settings to display these invoices correctly.

To update Internet Explorer settings to display invoices in CSV format

1. Open the Internet Explorer browser.
2. Select Tools, Internet Options, Advanced tab.
3. Scroll down to the Security setting.
4. Select the checkbox named Do not save encrypted pages to disk.
5. Click Apply.
6. Verify that the invoices display correctly.

IXUTIL Out-of-Memory Error Occurs

Symptom:

When I try to use the IXUTIL utility to import or export CA Service Catalog data, the attempt fails. I receive an error message, such as a "generic" SAXException error.

Solution:

Use a text editor to open the ixutil.bat file and increase the size of the JVM parameter in the ixutil.bat file to 1024 or higher. This setting refers to kilobytes (KB). The ixutil.bat file is located in the USM_HOME\scripts folder.

Pages Do Not Appear to Be Refreshing Properly

Symptom:

When I access CA Service Catalog, the pages do not appear as expected in my web browser.

Solution:

Set your browser cache settings to retrieve an updated page from the server on every visit to the page.

Note: For instructions, see the documentation for your web browser.

A Request Approval or Fulfillment Pending Action Is Not Assigned

Symptom:

An approval or fulfillment task for a request is assigned to a user or group. However, the request does not appear in the pending action list for the user.

Solution:

User ID or group names longer than 50 characters are not supported.

Requests Are Assigned to Multiple Users and Groups

Symptom:

CA Service Catalog assigns requests pending action to multiple users and groups.

Solution:

If both the following conditions exist, CA Service Catalog assigns requests pending action to *both* an Application group and a Global group that are defined in CA EEM:

- Both groups have the same name in CA EEM
- Both groups are configured to approve requests

Consider renaming one of the groups or configuring one of them *not* to approve requests.

Requests Do Not Move to the Next Status

Symptom:

Requests do not move to the next status of the request lifecycle as expected, for example, from Submitted to Pending Approval.

Solution:

To move requests to the next status of the request lifecycle as expected, verify the related date settings.

To move requests to the next status of the request lifecycle

1. Identify the status change where requests are getting stuck; for example, the Approved status.
2. Verify that the related CA Process Automation processes or CA Workflow process definitions are activate.
3. Complete this step if you are using CA Workflow; otherwise, skip this step:

   Verify that the active dates for the CA Workflow process definitions match the date specified on the computer on which they are installed.

   For example, suppose that on May 10, you create a process definition for approving requests and specify it to activate the next day, May 11. However, the date setting on the computer where the process is installed is May 8, two days earlier than the actual date. In this case, your new process definitions is not activated until the computer date setting reaches May 10, even though the actual date is May 12. Consequently, requests do not start being approved again until then. To correct this problem and activate the process definitions immediately, verify that the computer date setting and activation date of the process are the same.

   Note: For help setting the date on your computer, see your Windows documentation. For help setting the active date of processes, see your CA Process Automation documentation. For help setting the active date of process definitions, see the CA Workflow IDE online help.

4. Verify the following:
   - Verify that you have enabled the rule actions for updating the request status of interest.
   - Verify whether the Windows services mentioned in the next step are running.
   - If you are using CA Process Automation to manage the request status change of interest, do the following: Verify the configuration parameters (especially the host name, port number, and other connection parameters) for CA Process Automation. Verify especially that the Global Data Set parameter points to the correct Catalog Component computer.

     Note: For information about setting the configuration parameters in CA Process Automation, see the *Integration Guide*.
   - If you are using CA Workflow to manage the request status change of interest, set the CA Workflow configuration parameters (see page 173). Verify especially that the CA Workflow actors point to the correct Catalog Component computer.
   - Verify whether the assignees for the request are members of CA EEM groups whose names include special characters.

     If the assignees are members of such groups, the request statuses can fail to update. If necessary, rename the applicable groups in CA EEM so that their names do *not* include special characters.

     Note: For information about using CA EEM, see the *Integration Guide*.
5. Restart the CA Service Catalog Windows services. They are CA Service Catalog, CA Service Accounting, and CA Service Fulfillment (if used).

Sorting of Services by Selection Type

Symptom:

When I view services in the catalog, they are not sorted by Selection Type as I expect them to be. This observation applies to all services, including the services that appear in the Featured Services section.

Solution:

When you create a service, you specify a Selection Type. The sorting of services according to Selection Type is controlled internally. The sort order is *not* based on the name of the Selection Type. Instead, the sort order is based on the *numeric value* of the Selection Type, as follows:

Numeric Value	Selection Type
0	No Selection
1	Single Selection

Numeric Value	Selection Type
3	Multiple Selection

Product Installation or Upgrade Fails Because Path Name is Too Long

Symptom:

During the installation or upgrade of CA Service Catalog, CA MDB is installed or upgraded automatically. The CA Service Catalog installation or upgrade can fail while attempting to install or upgrade the MDB, displaying a message similar to the following:

Configure SQL Server or Oracle MDB Failed. The installation will terminate.

Solution:

The maximum length of a path name in Windows is 260 characters. The installation or upgrade can fail if the pathnames it uses exceed this limit. For example, pathnames that include several long, nested folder names can violate this limit.

Verify that the path name where you store and access the CA Service Catalog installation files does not exceed the maximum length.

Similarly, verify that the path name on which you install these files does not exceed the maximum length.

Product Installation or Upgrade Fails Because of Duplicate Records

Symptom:

During the installation or upgrade of CA Service Catalog, CA MDB is automatically installed or upgraded.

For example, if CA MDB r1.0.4 is installed, it is automatically upgraded to CA MDB r1.5 during the CA Service Catalog installation or upgrade. However, suppose CA MDB r1.0.4 is shared with other CA products. In that case, the CA MDB upgrade can fail if duplicate records exist where the CA MDB tables require unique constraints. Examples include the following tables: ca_resource_class, ca_resource_family, ca_discovered_software, chgcat, and cr_stat.

Solution:

Back up these tables, evaluate them, and clean up any duplicate records in them. Then try again to install or upgrade CA Service Catalog.

Windows Service Does Not Start

Symptom:

One or both Windows services for CA Service Catalog fail to start. This services are named CA Service Accounting , CA Service Catalog, and CA Service Fulfillment (if used).

Solution:

The services are set by default to start automatically after a reboot or shutdown. If necessary, start the services manually.

CA EEM Installation on 64-Bit Operating Systems

Symptom:

This issue applies when you install CA EEM r8.4 on 64-bit operating systems. If you have previously installed CA Threat Manager, it may fail to work properly after you install CA EEM.

Solution:

Prepare to install CA EEM *before* you install it.

To prepare to install CA EEM

1. Verify whether you installed CA Threat Manager as a 64-bit application and proceed as follows:
   - If No, skip the remaining steps.
   - If Yes, complete the remaining steps.
2. Uninstall CA Threat Manager as a 64-bit application.
3. Install CA Threat Manager as a 32-bit application.

After you complete the previous steps, you are ready to install CA EEM.

CA EEM Upgrade Fails

Symptom:

The CA EEM upgrade can become stuck and fail.

Solution:

The typical cause is the presence of CA Threat Manager. To fix the problem, do the following:

1. Uninstall CA Threat Manager.
2. Upgrade CA Service Catalog and CA EEM.
3. Reinstall CA Threat Manager.