

CA Identity Manager

Release Notes

r12.5



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CA Product References

This document references the following CA products:

- CA Identity Manager
- CA SiteMinder® Web Access Manager
- CA Directory
- CA Enterprise Log Manager
- CA Role & Compliance Manager

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Chapter 1: New Features

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Supported Platforms and Versions

In CA Identity Manager r12.5, there have been some changes made to supported application server versions, directories, and databases.

Note: For a complete list of supported platforms and versions, see the CA Identity Manager support matrix on the [CA Identity Manager support site](#).

CA Role & Compliance Manager Integration

CA Role & Compliance Manager (CA RCM) is an identity lifecycle management product that enables you to quickly and accurately develop, maintain, and analyze role models. It also provides centralized identity compliance policy controls and automates processes associated with meeting compliance and security demands. Using CA RCM, you can do the following:

- Validate that users have appropriate entitlements
- Ensure that privileges are granted in accordance with security policies

- Monitor the effectiveness of identity management controls
- Understand what roles exist in your organization, and then establish a role model that fits your organization
- Analyze and maintain that role model as business evolves

CA Identity Manager integrates with CA RCM in two ways:

- CA Identity Manager Connector

The Connector for CA Identity Manager automatically synchronizes the role-based privilege data between CA Identity Manager and CA RCM. By using the connector, you can import data from CA Identity Manager to CA RCM or export data from CA RCM to CA Identity Manager.

Note: For more information about the CA Identity Manager Connector, see the *CA RCM Connector for CA Identity Manager Guide*.

- Smart Provisioning

When CA Identity Manager integrates with CA RCM, you can configure additional functionality that allows you to use role and compliance information, which is available in a role model, to support day-to-day identity management operations. Changes made in CA Identity Manager dynamically update the role model in CA RCM.

Smart Provisioning

Smart Provisioning is a collection of functionality that simplifies provisioning role assignment when CA Identity Manager integrates with CA RCM. This functionality includes:

- **Suggested Provisioning Roles**

CA Identity Manager can provide administrators with a list of provisioning roles that may be appropriate to assign to a user. The list of provisioning roles is determined by CA RCM, based on criteria entered by the administrator.

Suggested provisioning roles ensure that users have the correct privileges, while maintaining a company's role model.

- **Policy Validations**

CA Identity Manager administrators can validate proposed changes against a role model in CA RCM before committing changes. Validating changes before they are committed helps companies maintain the role model that they have defined for their operations.

Users can validate proposed changes to provisioning roles (assigning or removing them), and changes to user attributes.

CA Identity Manager performs two types of policy validations:

- **Compliance**

Proposed changes are validated against the CA RCM role model to see if they violate explicit, predefined business policy rules in CA RCM.

- **Pattern**

Proposed changes are compared to the CA RCM role model to see if they cause the subject of the change to become "out of pattern." CA Identity Manager also makes sure that the changes do not significantly alter an established pattern in the role model.

You can configure CA Identity Manager to perform these validations automatically when users perform certain tasks, or allow users to initiate the validation manually.

You can implement Smart Provisioning in an Identity Manager Environment once there is an established role model, based on Identity Manager data, in CA RCM.

Connector for Identity Manager - Supported Endpoints

In this release, the connector for Identity Manager supports the following endpoints. Some of these endpoints are supported using predefined endpoint handlers as in r12.0, while others use the customizable xml-based endpoint handler introduced in this release.

Endpoint	Support	Resources	Comments
Unix (ETC)	Customizable handler	UNIXETC Group	No known limitations
Windows (N16)	Customizable handler	NT Group	Update limitations (see page 14)
Oracle Database (ORA)		User Packages, User Role, User Procedure, and Admin Packages	Export is limited to specific endpoint rules.
OS400 (AS4)	Customizable handler	Profile Group and Member Group	Users must have a primary group to have regular groups. You must configure a primary group before you can add regular

Endpoint	Support	Resources	Comments
			groups to a user. Similarly, remove all regular groups before removing a primary group.
Microsoft SQL	Customizable handler	DBAccess and Server Role	To remove a resource from an account template or a user, first remove the DB Access permission.
LDAP	Customizable handler	Group	No known limitations
SAP	Predefined handler	Authorization and Role	Authorization, with the exception of the Retrieval of User - Resource links operation. Role, with the exception of the following operations: ■ Retrieval of Account Template – Resource links ■ Retrieval of User – Resource links ■ Update of removed User - Resource links
DB2	Predefined handler	Index, Schema, Table, Tablespace, and View	User-Resource links are not imported
Active Directory (ADS)	Customizable handler	Active Directory Group	CA RCM account template handling must be based on an AD account policy or an AD

Endpoint	Support	Resources	Comments
			contact policy. The connector can poll and update only one of these policy types. Account templates should reference only one endpoint. During data export, the connector does not accurately parse some change entries in the audit card. When you configure the connector, you must assign a DN field for each data type that is exported.

More information:

[Connector for Identity Manager - Update Limitations](#) (see page 14)

Connector for Identity Manager - Update Limitations

Successful update of endpoint data using the customizable endpoint handler requires thorough knowledge of the data structure, syntax, and rules of the target endpoint type. To avoid problems, you must consider the data structure dictated by the endpoint type when you configure the handler and define data mapping.

The following general issues apply when you use the customizable endpoint handler to send updates to CA Identity Manager:

- **Target endpoint restrictions** - Identity Manager allows configuration of password protection and other validation restriction on endpoints and endpoint types. These restrictions may cause creation of entities on Identity Manager to fail. CA RCM does not verify successful creation of new entities during update, and the CA RCM connector may not record these events in its log.
- **Account Templates** - The following limitations concern how CA RCM and Identity Manager handle resources, endpoints, and account templates:
 - Do not rename account templates in CA RCM. When you rename an account template, CA RCM attempts to update endpoints by deleting the existing template and creating a new template. This unintentionally modifies many template attributes.
 - Changes to an endpoint's resource are reflected in all endpoints of the same type. For example, if you delete the "admin privileges" resource from an account template, and send an update of that template to a *single, specific* Microsoft SQL Server endpoint - the "admin privileges" resource is removed from *every* Microsoft SQL Server endpoint that has that resource.
 - CA RCM does not verify whether an Identity Manager account template is available for a target endpoint or endpoint type. You must verify that the account template is available before you update endpoints of a given type.
 - The default account template (the Identity Manager account template referenced by CA RCM as a model for new account templates) is specified in a static configuration file. CA RCM does not verify this setting and does not detect if the default account template has been deleted or changed in Identity Manager.
- **Error Logging** - In some situations, errors during update are not recorded in the log file of the connector job.

CA Enterprise Log Manager Integration

CA Enterprise Log Manager uses the CA Common Event Grammar (CEG) to map events that originate in various systems in a standard format, and stores all events, even those which are not yet mapped, for review and analysis. Furthermore, CA Enterprise Log Manager provides users with a high-volume solution for managing and reporting on collected data, using configurable database queries and/or reports to search for various types of information and events.

CA Enterprise Log Manager provides better wider and deeper insight into un-managed systems and systems outside of CA Identity Manager's purview and control and also lets you investigate deeper into identities.

Integrating with CA Identity Manager lets you view CA Enterprise Log Manager identity centric reports and/or dynamic queries into CA Enterprise log Manager user Console using the Identity Manager User Console. From the User Console you can configure how existing CA Identity Manager/Enterprise Log Manager reports and/or queries are viewed and modified while you investigate deeper into a specific identity.

CA Enterprise Log Manager Reports

The following CA Enterprise Log Manager Reports are provided with CA Enterprise Log Manager role definitions by default:

Task	Invokes Report
System All Events by User	CA Identity Manager - System All Events filtered by user ID
Account Management by Host	Account Management by Host
Account Creations by Account	Account Creations by Account
Account Deletions by Account	Account Deletions by Account
Account Lockouts by Account	Account Lockouts by Account
Certification Process Activity by Host	CA Identity Manager - Process Activity by Host
Password Policy Modify Activity	CA Identity Manager - Policy Modify Activity

Identity Manager Directory Configuration Wizard

In this release, a new wizard is available that walks administrators through the process of creating an Identity Manager directory for their LDAP user store or Provisioning Server and helps reduce configuration errors. Before launching the wizard, you must first upload an Identity Manager LDAP directory configuration template. These templates are pre-configured with well-known and required attributes. After entering connection details for your LDAP user store or Provisioning Server, you can select LDAP attributes, map well-known attributes, and enter metadata for the attributes. When you are done mapping attributes, click Finish to create the directory.

Account Management Enhancements

In the User Console, you can now perform most account management tasks. For example, you can now:

- Explore the contents of an endpoint and correlate its accounts, or you can pick a subset of the endpoint to explore.
- Create and modify endpoints so that you can use them in account templates
- Create and modify account templates for all endpoints
- Manage individual accounts on an endpoint to unlock them, assign them to a new user, or perform several other tasks.

Also, you can now use the Management Console to define an endpoint type. You import a role definition file that contains the screens, tasks, and roles for that endpoint type. The endpoint types you can define include dynamic endpoint types that you create in Connector Xpress.

Previously, these features were available only in Provisioning Manager.

Endpoint Types that Require Provisioning Manager

You can now use the User Console to manage most endpoint types, however, the following endpoint types are still managed in Provisioning Manager:

- Entrust PKI
- CA SSO
- CA EEM
- Novell Netware
- Ingres
- NSK Safeguard

Install and Upgrade Enhancements

The following improvements have been made to the CA Identity Manager r12.5 installer:

- Install:
 - Pre-installation prerequisite checking
 - All connectors are now installed by default
- Upgrade:
 - New Upgrade Wizard with the following features:
 - Discovers CA Identity Manager components already installed
 - Provides version information of installed components
 - Specifies if the component is up to date or if an upgrade is available
 - Upgrade prerequisite checking
 - Provides direct launch of provisioning component installers
 - Verifies a successful upgrade with error checking
 - Automated CA Directory upgrade that moves from Ingres technology to DXGrid technology
 - Automated Identity Manager Directory and Environment migration
 - Automated task persistence migration
 - JDBC drivers added automatically
 - Automated WorkPoint workflow upgrade, with a choice of manual upgrade, if necessary
 - Automated data sources upgrade
 - Automated import of new feature and account screen role definition files

Automated Task Persistence Garbage Collection and Archiving

In this release, an administrator is able to schedule and modify jobs with specific parameters using the Cleanup Submitted Tasks task to clean up and archive task and event information in the task persistence database and also delete these recurring tasks as needed.

From the System Tab, you can launch a wizard by selecting Cleanup Submitted Tasks. From there, the wizard walks you through setting up and scheduling jobs and whether or not to archive the data. You can also choose to delete the recurring jobs when needed by selecting Delete Recurring Tasks from the System Tab.

By scheduling the tasks to clean up and archive task data, the potential for performance problems or system outages are greatly reduced. With the archive feature, you can back up the tasks to the archive database before deleting them from the runtime database. If you need to go back and view these deleted tasks, select the Search the archive check box on View Submitted Tasks to search and view a list of all tasks that have been deleted and archived.

Task Persistence Migration Tool

With this release, a new migration tool has been added for migrating the task persistence databases from r8.1 SP2 or r12 to r12.5. The command line tool is part of the Identity Manager Administrative Tools and is found in the following location:

admin_Tools/tools/tpmigration

The default location for *admin_tools* is:

- **Windows:** C:\Program Files\CA\Identity Manager\IAM Suite\Identity Manager/tools
- **UNIX:** /opt/CA/IdentityManager/IAM_Suite/Identity_Manager/tools

Connector Xpress Enhancements

In Connector Xpress you can now do the following:

- Use multitable JDBC Connectors- values from multiple columns from a table, rather than from a single column, can populate a single attribute value.
- Use JDBC structural and auxiliary classes.
- Use a new flexible mapping process that includes a tree of class and attribute mappings has replaced the previous sequential wizard process. This lets you add and edit and remove attributes as required.
- Specify direct associations between any two classes of objects
- Specify indirect associations between objects. For example, where the association between the two objects is bidirectional and contained in a third entity such as a table, which holds the association links between the objects.
- Create method and script style operation bindings

- Bind operations to other object and class combinations
- Bind two or more opbindings to the same timing, that is the same operation for the same target object classes. For example, you can have two or more opbindings for the Before Add operation for the account object class.

Bulk Loader Allows Multiple Actions

The Bulk Loader feature in CA Identity Manager now allows you to specify an alternate action mapping for objects that do not exist.

Previously, CA Identity Manager let you select an action to perform on a primary object. If that primary object did not exist and the action specified was Modify or Delete, an error was given. Also, if you specified a Create action on a primary object that already existed in CA Identity Manager, an error was given.

In CA Identity Manager r12.5, you can select a create (or self-create) alternate action to execute if the primary object does not exist.

Role and Task Import Enhancements

The Management Console now provides the ability to select one or more predefined Role Definitions files to import from a list of available files when you create or update an Identity Manager Environment. This significantly reduces the configuration steps for setting up an Environment.



Management Console

[Help](#)

[Home](#) > [Environments](#) > New Environment

(Optional) Select which roledefs to import for this environment

Name	Filename	Description	Version
Category: SmartProvisioning			
☐ Smart Provisioning	SmartProvisioning-RoleDefinitions.xml		1.0
Category: Upgrade to 12.5			
☐ Upgrade-12-to-12.5-RoleDefinitions	Upgrade-12-to-12.5-RoleDefinitions-NoOrganization.xml		1.0
☐ Upgrade-12-to-12.5-RoleDefinitions	Upgrade-12-to-12.5-RoleDefinitions-Organization.xml		1.0
☐ Upgrade-12-to-12.5-RoleDefinitions	Upgrade-12-to-12.5-RoleDefinitions-ProvisioningNoOrganization.xml		1.0
☐ Upgrade-12-to-12.5-RoleDefinitions	Upgrade-12-to-12.5-RoleDefinitions-ProvisioningOrganization.xml		1.0
☐ Upgrade-8.1-to-12.5-	Upgrade-8.1-to-12.5-		

The predefined Role Definitions files create roles and tasks for CA Identity Manager functionality, including:

- Smart Provisioning
- Enterprise Log Manager integration
- Account Management

Note: For more information about importing Role Definitions files, see the *Configuration Guide*.

Reporting Data Sources

In CA Identity Manager r12.5 you can specify a different data source for a report, other than the Snapshot Database. For example, if you want to access audit information, you can now provide the connection information for the audit database to a report and the report will pull its data from the audit database.

Also, specifying connection information for a data source (for reporting) has moved from the Management Console to the User Console, under System, JDBC Connection Management.

Note: For more information on reporting, see the *Administration Guide*.

New Default Reports

The following reports have been added to CA Identity Manager:

Report	Description	Source
Account Details	Displays a list of account templates with associated provisioning roles, endpoint types, endpoints, and accounts.	Snapshot database
Administration	Displays a list of administrators with their administrative entitlements.	Snapshot database
Audit-Assign/Revoke Provisioning Roles	Displays a list of provisioning role events.	Audit database
Audit-De-Provisioning	Displays a list of users and their accounts that were de-provisioned.	Audit database
Audit Details	Displays tasks and events with related status details.	Audit database
Audit-Pending Approval Tasks	Displays a list of pending approval tasks.	Audit database
Audit-Reset Password	Displays the list of users' passwords that have been reset for a given period of time.	Audit database
Endpoint Details	Displays a list of all endpoint types, endpoints, and the endpoint attributes.	Snapshot database

Workflow Enhancements

CA Identity Manager r12.5 includes the following enhancements to workflow functionality.

Support for WorkPoint 3.4.2

CA Identity Manager r12.5 supports Workpoint 3.4.2. Previously, CA Identity Manager r12 supported WorkPoint 3.3.2.

Rule-Based Workflow

Rule-based workflow allows you to associate an event with a workflow process based on the evaluation of a rule. This means that instead of an event always launching a workflow process, the workflow process runs and generates a work item only if a rule associated with the event is true.

For example, when creating a new group, you can define a rule that places the CreateGroupEvent under workflow control and creates a work item only if the new group is part of a designated parent organization. If the new group is not part of that organization, the workflow process does not execute and no work item is created.

If an event has multiple rules, then if one workflow process associated with the event is approved, the event itself is approved as well. Similarly, if one workflow process associated with the event is rejected, the event itself is rejected. Workflow rules can be assigned priority values to determine the order of rule evaluation and workflow execution.

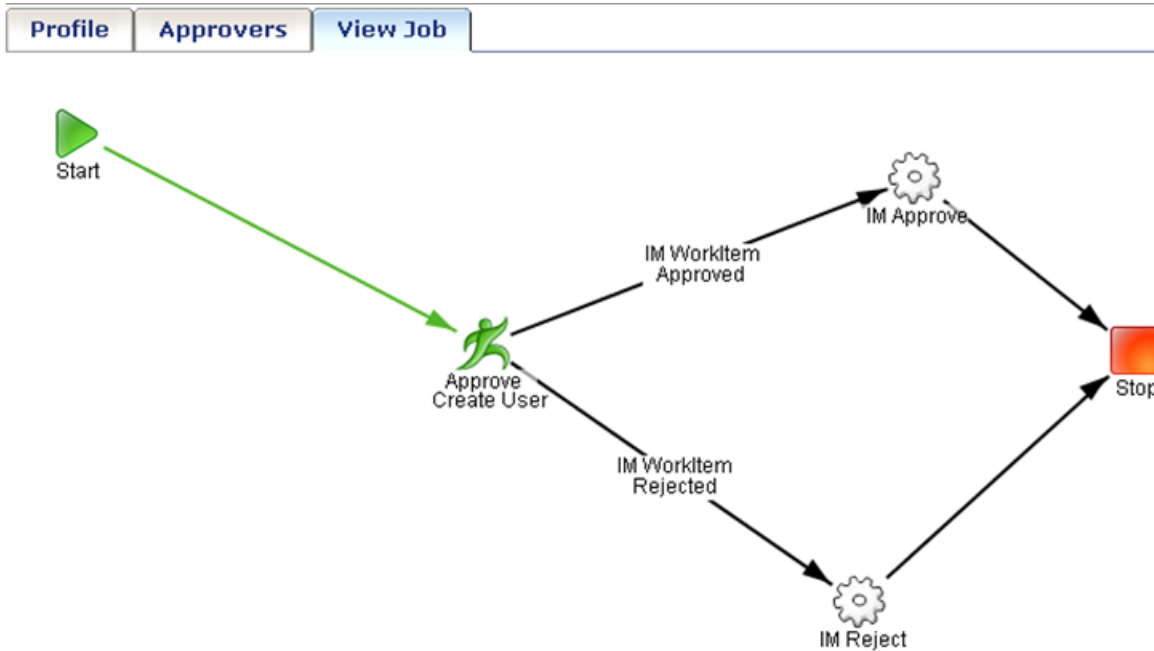
All default Identity Manager workflow templates and predefined processes support workflow rules. You can also create custom workflow processes for use with workflow rules.

Note: For more information about rule-based workflow, see the *Administration Guide*.

Workflow Job View

In this release you can now view a graphical representation of the runtime status of Workpoint jobs for task and event level Workflow in the User Console from the following:

- Approval tasks
- View Submitted Tasks



You can also view both template and legacy process definitions.

In new environments, approval tasks include the View Job tab by default. You can view the job images for events or tasks in the View Submitted Tasks created in this release only. You cannot view the job images for events created in earlier releases.

View Submitted Task Enhancements

The View Submitted Tasks tab now displays information about changes that occur on endpoints as a result of actions initiated from the Identity Manager User Console. For example, when an administrator assigns a provisioning role to a user in the User Console, the View Submitted Tasks tab displays information about which accounts were created successfully, and about any errors or failures that may have occurred.

This information appears in the Related Tasks section of the Event Details screen.

The following example shows the Event Details screen for an Assign User Provisioning Role event:

Assign user provisioning role Event Details: Assign user "jsmith" provisioning role "Base Employee"

Event Name AssignProvisioningRoleEvent

Event Description Assign user "jsmith" provisioning role "Base Employee"

Task performed by etaadmin (etaadmin)

Event creation time Tuesday, November 3, 2009 5:25:01 PM EST

Event status Completed

Primary object User jsmith (John Smith)

Secondary object Provisioning Role Base Employee

Attributes Changed

Attribute	Old Value	New Value
No results.		

Event History

Source	Description
WORKFLOW	There was no default workflow process mapped to this event.
WORKFLOW	There was no workflow process mapped to this event. Fetching default workflow process definition.
TASKSESSION	Global User 'jsmith' provisioning role memberships added and associated accounts added or updated successfully: (accounts created: 2, updated: 0, re-created: 0, failures: 0)
TASKSESSION	Global User 'jsmith' provisioning role memberships added and associated accounts added or updated successfully: (accounts created: 2, updated: 0, re-created: 0, failures: 0) [Number of detail item(s): 2]

Related Tasks

Search for related tasks and return at most rows

There are 2 related task(s) for this event.

Description	Status	Priority	Initiated by	Submitted	Last Updated
 Cause: UNIX ETC Account 'jsmith' on 'framework4' created successfully Action: Assign user "jsmith" provisioning role "Base Employee" task, Provisioning Non Managed Object jsmith	Completed	Medium	etaadmin	11/3/2009 5:26 PM	11/3/2009 5:26 PM

Note: For more information about the View Submitted Tasks tab, see the *Administration Guide*.

Profile Screen Enhancements

In CA Identity Manager r12.5, the Profile screen includes several new configuration settings to support new functionality. These new settings are described in the following sections.

Confirmation Fields

CA Identity Manager r12.5 now includes support for confirmation fields that you can use to verify that the values of two fields on a profile screen match. Examples of confirmation screens include Confirm Password and Confirm Email.

Note: For more information, see the *User Console Design Guide*.

Dynamic Field Display

CA Identity Manager can set certain field display properties based on the value of other fields in a profile screen. Using JavaScript, you can hide and show a field, or enable and disable a field. For example, you can use JavaScript to show an Agency field if the Employee Type is set to Temp. If the Employee Type is Full Time or Part Time, the Agency field is hidden.

Note: For information on using this feature, see the *User Console Design Guide*.

New Object Selector Field Style

CA Identity Manager r12.5 includes a new Object Selector style option for fields on a profile screen. This option displays a control that administrators can use to search for and select a managed object. This style is typically used in account management screens.

Note: For information on using this feature, see the *User Console Design Guide*.

Support for Microsoft Visual Studio 2008

CA Identity Manager fully supports Microsoft Visual Studio 2008 SP1. This means that all custom code written for previous releases of CA Identity Manager, which supported Microsoft Visual Studio 2003, must be recompiled using Visual Studio 2008 SP1. Custom code impacted may include the following:

- C++ custom connectors
- Provisioning manager plug-ins for Java custom connectors
- Common program exits

- Universal Provisioning Option (UPO) program exits
- Pluggable Authentication Module (PAM) DLLs
- Universal Feed Option program exits

Identity Policy Enhancements

You can create a member rule for a policy set, so that the policy set applies only to certain users. The rule is evaluated before evaluating identity policies in the set, which can save significant time. For example, if the member rule limits the identity policy evaluation to 10 percent of users, that rule would save 90 percent of the evaluation time.

Provisioning Role Owner Task

In the User Console, you can use a new task: Create Owner Policies for Provisioning Roles. You can select one or more provisioning roles and assign owner policies to control who can modify the roles. This task is an alternative to the Reset Provisioning Role Owners task, which can only be used on one role at a time.

Chapter 2: Changes to Existing Features

This section contains the following topics:

[Snapshot Database Performance Improvements](#) (see page 27)

[Snapshot Parameter XML File Enhancement](#) (see page 27)

[Connection Management](#) (see page 28)

[Environment Export Includes Additional Objects](#) (see page 28)

[Fixes and Enhancements from CA Identity Manager Cumulative Releases \(CRs\)](#)
(see page 28)

[Active Directory Connector Now Supports Win2003 R2 UNIX Attributes](#) (see page 29)

[Endpoint Type Attribute Mapping Files have Moved](#) (see page 29)

[Default CleverPath Report Templates Are Removed](#) (see page 29)

[Deprecated Provisioning SDKs and Utilities](#) (see page 30)

[iRecorder No Longer Supported](#) (see page 31)

[Web Services Are Disabled For All Tasks in New Environments](#) (see page 31)

Snapshot Database Performance Improvements

Significant performance improvements have been made when exporting data to the snapshot database.

To further improve performance, use a snapshot parameter XML file that targets specific data needs, such as targeting the Identity Manager objects used to generate a Report on endpoint accounts.

Snapshot Parameter XML File Enhancement

When exporting an endpoint object, you can now use the <exportattr> element along with the <objattr> element to define the account attributes to be exported with a particular endpoint type, as follows:

```
<exportattr objecttype="endpoint_type">
  <objattr name="description"/>
  <objattr name="fullName"/>
  <objattr name="lastLogin"/>
</exportattr>
```

Connection Management

Connection Management has been replaced with JDBC Connection Management in CA Identity Manager.

JDBC Connection Management allows you to specify alternate data sources for reporting within Identity Manager. It allows you to provide connection details to different databases and categorize them into connection types. Also, for each connection type you can specify a default connection.

Important! We recommend that you do *not* use the Identity Manager object store database as a data source for generating reports, due to performance reasons.

Environment Export Includes Additional Objects

The following Environment-specific managed objects are now exported with roles and tasks:

- Connections (including connection objects for CA RCM, CA Enterprise Log Manager, and reporting)
- Snapshot definitions
- Export and correlate definitions

If the export includes attributes that have a data classification of attributelevelencrypt or sensitive, CA Identity Manager encrypts those attributes in the exported file.

Fixes and Enhancements from CA Identity Manager Cumulative Releases (CRs)

CA Identity Manager r12.5 includes fixes and enhancements from CA Identity Manager r12 CRs 1 - 6.

Active Directory Connector Now Supports Win2003 R2 UNIX Attributes

The Windows 2003 R2 UNIX extensions in conjunction with CA Access Control UNIX Authentication Broker lets you use Active Directory to manage UNIX computers and accounts. CA Identity Manager provisions UNIX access by populating these attributes on Active Directory instead of provisioning each UNIX server. This highly simplifies the provisioning and identity management of UNIX environments.

Note: This functionality has been merged from CA Identity Manager r12 and is only available in the Provisioning Manager.

Endpoint Type Attribute Mapping Files have Moved

In CA Identity Manager r12, the attribute mapping file for extending Identity Manager to JIAM attributes was located in `IdentityMinder.ear\custom\provisioning\im2jiammapping`.

In CA Identity Manager r12.5, these attribute mapping files have been moved to their respective endpoint type jars. The JAR files are located in `IdentityMinder.ear\user_console.war\WEB-INF\lib`.

Default CleverPath Report Templates Are Removed

Default CleverPath Report Template support is being removed in CA Identity Manager r12.5. CA Identity Manager now supports Business Objects Report Server.

CA Identity Manager r12.5 includes a set of report templates to use with the Business Objects Report Server. For more information, see the chapter on Reporting in the *Administration Guide*.

Note: You can create custom report templates using Crystal Reports Developer, which you can purchase from Business Objects.

Deprecated Provisioning SDKs and Utilities

The following Provisioning Server SDKs and interfaces are deprecated in CA Identity Manager r12.5; however, they continue to function as documented.

To use the C++ Connector SDK and the JIAM SDK, download and install the CA Identity Manager 12.5 Legacy Components package. It includes the *Programming Guide for Provisioning*, which describes these SDKs.

■ C++ Connector SDK

This SDK allows you to write custom static C++ Connectors. Existing C++ Connectors will continue to work with CA Identity Manager r12.5.

Note: New connectors should be developed using the Java Connector SDK, which is described in the *Programming Guide for Java Connector Server*.

■ Java Identity and Access Management (JIAM) SDK

The JIAM SDK provided the following functionality in previous versions of CA Identity Manager:

- Java interface to the Provisioning Server
- An abstraction of Provisioning Server functionality to develop custom client applications
- A single interface to supply multiple clients with access to Identity and Access Management functionality

This API is being deprecated because it only provides access to a subset of CA Identity Manager functionality.

This functionality is replaced by the following CA Identity Manager 12.5 functionality:

- Admin tasks in the User Console

You can use admin tasks to manipulate most of the objects that Identity Manager manages.

- Task Execution Web Services (TEWS)

The CA Identity Manager Task Execution Web Service (TEWS) is a web service interface that allows third-party client applications to submit remote tasks to CA Identity Manager for execution. This interface implements the open standards of WSDL and SOAP to provide remote access to CA Identity Manager.

- Managed Object interfaces

CA Identity Manager provides interfaces for managed objects, which are accessible through CA Identity Manager APIs.

For more information about admin tasks, see the *Administration Guide*. For more information about TEWS and managed object interfaces, see the *Programming Guide for Java*.

- **etutil**

You use the etutil batch utility to perform the same tasks as you do with the Provisioning Manager, but from a command line interface. The etutil utility is part of the installed r12.5 software. It is described in the *Provisioning Reference Guide*.

This functionality is replaced by the Task Execution Web Services (TEWS), which is described in the *Programming Guide for Java*.

- **Universal Provisioning Connector (UPC)**

The UPC provides a mechanism for Identity Manager to invoke user-specified external programs when user provisioning requests are received. It uses program exits to send alerts regarding non-managed systems (non-managed mode) so that administrators can manually carry out the request and update the account request status. It also uses exits in a synchronous mode (managed mode) to provide a direct management interface to remote endpoint types.

iRecorder No Longer Supported

The iRecorder is no longer supported in CA Identity Manager r12.5. The iRecorder functionality has been replaced with CA Enterprise Log Manager.

Web Services Are Disabled For All Tasks in New Environments

Starting in CA Identity Manager 12.5, new tasks created by using the Choose Default Roles option during Environment creation, or created by importing optional role definition plug-ins have web services set to false by default. In previous CA Identity Manager releases, all tasks were enabled for web services by default.

After upgrading to CA Identity Manager 12.5, tasks in existing Environments, which were enabled for web services, continue to be enabled as they were in previous releases. If existing environments apply any of the upgrade role definition plug-ins, these new 12.5 tasks will have the web service flag set to false by default.

Chapter 3: Hardware Requirements

The following *minimum* hardware is required for each system that will host the Identity Manager Server:

- CPU: Intel (or compatible) 1.5 GHz (Windows or Linux), SPARC 1.0 GHz (Solaris) or POWER4 1.1 GHz (AIX)
- Memory: 2 GB
- Available Disk Space: 2 GB

Note: These hardware requirements take into account the requirements of the application server that must be installed on the system where you install the Identity Manager Server.

We *recommend* the following hardware for each system that will host the Identity Manager Server:

- CPU: Dual core Intel (or compatible) 2.5 GHz (Windows or Linux), Dual core SPARC 1.5 GHz (Solaris) or POWER5 1.5 GHz (AIX)
- Memory: 4 GB
- Available Disk Space: 2 GB

The following *minimum* hardware is required for each system that will host the Provisioning Server or standalone Connector Servers:

- CPU: Intel (or compatible) 1.5 GHz (Windows) or SPARC 1.0 GHz (Solaris)
- Memory: 2 GB
- Available Disk Space: 2 GB

We *recommend* the following hardware for each system that will host the Provisioning Server or standalone Connector Servers:

- CPU: Dual core Intel (or compatible) 2.5 GHz (Windows) or Dual core SPARC 1.5 GHz (Solaris)
- Memory: 4 GB
- Available Disk Space: 2 GB

The following *minimum* hardware is required for each system that hosts the Provisioning Directory:

- CPU: Intel (or compatible) 1.5 GHz (Windows) or SPARC 1.0 GHz (Solaris)
- Memory: 2 GB

- Available Disk Space: 2 GB to 10 GB, depending on the number of users and accounts
- 64 bit processor and operating system for intermediate and large deployments

We *recommend* the following hardware for each system that hosts the Provisioning Directory:

- CPU: Dual core Intel (or compatible) 2.5 GHz (Windows) or Dual core SPARC 1.5 GHz (Solaris)
- Memory: 4 GB
- Available Disk Space: 2 GB to 10 GB, depending on the number of users and accounts
- 64 bit processor and operating system

Hosting the entire CA Identity Manager product on a single physical system is not recommended for production environments. However, to do so, the *minimum* hardware requirements are as follows:

- CPU: Dual core Intel (or compatible) 2.0 GHz (Windows) or Dual core SPARC 1.5 GHz (Solaris)
- Memory: 4 GB
- Available Disk Space: 6 GB to 14 GB, depending on the number of users and accounts
- 64 bit processor and operating system for intermediate and large deployments

Chapter 4: Installation Considerations

This section contains the following topics:

[Supported Upgrade Paths](#) (see page 35)

[Solaris Patches Required](#) (see page 36)

[Solaris minimum kernel parameters](#) (see page 36)

[Non-ASCII Character Causes Installation Failure on Non-English Systems](#) (see page 37)

[IPv6](#) (see page 37)

[Configure IPv6 Support](#) (see page 38)

[Provisioning Directory on Windows 2008 with Pure IPv6 Not Supported](#) (see page 39)

[Z/OS Connectors Architecture Change](#) (see page 39)

[Location of CA Directory](#) (see page 39)

[Failover: CA Identity Manager Sometimes Reverts to Old Provisioning Server](#) (see page 39)

[CA Identity Manager Cannot be Configured Using a Non-Fully Qualified URL](#) (see page 40)

[Identity Manager EAR does not Auto-Deploy with WebLogic](#) (see page 40)

Supported Upgrade Paths

You can directly upgrade to CA Identity Manager r12.5 from the following versions:

- eTrust Admin r8.1 SP2
- CA Identity Manager r8.1 SP2
- CA Identity Manager r12

Solaris Patches Required

Prior to installing provisioning on Solaris 9 or 10, download and install patches:

To download the Sun Studio 10 patches for the SDK

1. Go to the following URL:
http://developers.sun.com/prodtech/cc/downloads/patches/ss10_patches.html
2. Download and install patch 117830.

Note: Sun Studio 11 does not require patching.

To download Solaris 9 patches for all components

1. Go to the following URL:
<http://search.sun.com/search/onesearch/index.jsp>
2. Download and install 9_recommended.zip

Solaris minimum kernel parameters

When installing the Provisioning Server on Solaris, check /etc/system and verify the following minimum IPC kernel parameter values:

- set msgsys:msginfo_msgmni=32
- set semsys:seminfo_semmni=256
- set semsys:seminfo_semmns=512
- set semsys:seminfo_semmnu=256
- set semsys:seminfo_semume=128
- set shmsys:shminfo_shmmni=128
- set shmsys:shminfo_shmmin=4

Non-ASCII Character Causes Installation Failure on Non-English Systems

During CA Identity Manager installation, the installer extracts files to a Temp directory. On some localized systems, the default path to the Temp directory contains non-ASCII characters. For example, the default path to the Temp directory on a Spanish Windows system is the following:

C:\Documents and Settings\Administrador\Configuración local\Temp

The non-ASCII characters cause the installer to display a blank Pre-Installation Summary page, and then cause the installation to fail.

Workaround

Change the tmp environment variable to point to a folder that contains only ASCII characters.

IPv6

CA Identity Manager will support IPv6 on the following operating systems:

- Solaris 9 or higher
- Windows XP SP2 or higher
- Windows 2003 SP2 or higher
- Windows 2008 or higher

Each application server has specific JDK requirements:

- WebLogic application servers include JDK 1.5, which supports IPv6 addresses.
- WebSphere application servers require, at a minimum, JDK 1.5 SR9 to work with IPv6.
- For a JBoss application server on a standalone system, CA Identity Manager supports IPv6 with JDK1.5 (on Solaris) or JDK1.5 (on Windows).
- For a JBoss cluster, no JDK is available to work with IPv6 as of release time for CA Identity Manager r12.5. If a JDK is released that works with IPv6, the platform support matrix will be updated.

Note: This limitation only applies to Windows systems.

- For a JBoss cluster that uses an IPv4/IPv6 stack, CA Identity Manager supports IPv6 with JDK1.5 (on Solaris) or JDK1.5 (on Windows).

Note the following before configuring an environment that supports IPv6:

- For CA Identity Manager to support IPv6 addresses, all components in the CA Identity Manager implementation, including the operating system, JDK, directory servers, and databases must also support IPv6 addresses.
- If CA Identity Manager integrates with SiteMinder, the Web Server plug-in for the application server must also support IPv6.
- When you connect to SiteMinder or any database from CA Identity Manager using a JDBC connection, specify the hostname not the IP address.
- The Report Server can be installed on a dual-stack host, which supports IPv4 and IPv6, but the communication to the server must be IPv4.

When you configure a connection to the Report Server in the Management Console, the server name should be in IPv4 format.

- CA Identity Manager does not support IPv6 link local addresses.
- The Java Connector Server does not support IPv6 on Microsoft Windows platforms. No JDK is available to work with IPv6 as of release time for CA Identity Manager r12.5. If a JDK is released that works with IPv6, the platform support matrix will be updated.
- In an IPv4/6 environment, if you want to configure CA Directory DSAs to listen on multiple addresses, you must add the additional addresses to your DSA knowledge files. For more information, see the CA Directory documentation.

Configure IPv6 Support

If you are installing on a JBoss system that supports IPv6, some configuration is required.

To configure IPv6 on a JBoss application server

1. Open the `run_idm.bat/sh` file located in `jboss_installation\bin`.
2. Modify *one* of the the following properties in the `JAVA_OPTS` entry:
 - For IPv6 only systems, uncomment the following entry:
`##DM_OPTS="$DM_OPTS -Djava.net.preferIPv6Addresses=true"`
 - For IPv6/IPv4 systems, uncomment the following entry:
`##DM_OPTS="$DM_OPTS -Djava.net.preferIPv4Stack=true"`
3. Save the file.

Provisioning Directory on Windows 2008 with Pure IPv6 Not Supported

Due to a Sun Java Systems limitation, installing the Provisioning Directory on a Windows 2008 server with the IPv6 networking service uninstalled is not supported.

To work around this issue, install the IPv6 service on the system and leave it disabled.

Z/OS Connectors Architecture Change

The z/OS connectors (CA ACF2, CA Top Secret and RACF) have been re-architected for performance reasons to now use the CA LDAP Server for z/OS instead of the CA DSI Server on z/OS.

Before trying to configure any z/OS connector you must install the CA LDAP Server for z/OS r12 which can be downloaded from support.ca.com.

Location of CA Directory

The Provisioning Directory is installed on CA Directory. The correct version of CA Directory is available from the CA Identity Manager installation media.

Failover: CA Identity Manager Sometimes Reverts to Old Provisioning Server

In the directory.xml file, you can configure Provisioning Server failover by adding multiple Provisioning Servers in the failover attribute in the Connection element in directory.xml, as follows:

```
<Connection host="system1" port="20389" failover="system1:20389,system2:20389,system3:20389" />
```

If you change one of the specified Provisioning Servers, CA Identity Manager may send failover requests to the original Provisioning Server instead of the new Provisioning Server.

CA Identity Manager Cannot be Configured Using a Non-Fully Qualified URL

When installing CA Identity Manager, you must use a fully qualified URL.

Identity Manager EAR does not Auto-Deploy with WebLogic

If you are using WebLogic 9 or 10 in production mode, the Identity Manager EAR may not auto-deploy the first time you start the application server after an install or upgrade. If this should occur, deploy the IdentityMinder.ear manually from the user_projects\applications folder.

Chapter 5: Known Issues

This section contains the following topics:

[General](#) (see page 41)

[Upgrades](#) (see page 46)

[Reporting](#) (see page 52)

[Provisioning](#) (see page 55)

General

The following are general known issues in Identity Manager r12.5.

Identity Manager Starts in Failed State When Databases Not Started

If the runtime databases required for CA Identity Manager are not started when you start the Identity Manager Server, CA Identity Manager will attempt to initialize anyway and will be left in a failed state.

"Out of Memory" Errors May Occur When Searching Large User Stores

When performing wildcard (*) searches on large user stores, the task may fail with a `java.lang.OutOfMemoryError: Java heap space error`. This issue occurs when many objects, such as users, are loaded into memory.

Workaround

Increase the heap settings in the application server startup script. Consider increasing the heap size to 1000 MB allocated, 1400 MB maximum.

Bulk Loader Workflow Limitation

CA Identity Manager currently does not support event-level workflow processes for the Bulk Loader by default.

Workaround

You can enable task-level workflow for the Bulk Loader and use a generic Approve Task to achieve the same functionality.

Error in Auto Deployment of WorkPoint Process Scripts with WebSphere on Linux 64-bit Operating System

The default Linux LANG variable 'en_US.UTF8' causes a failure reading Workpoint property files. This results in a failure during the auto-deploy of WorkPoint Scripts during CA Identity Manager application initialization. Subsequent attempts to map Events to WorkPoint processes in the Management Console fail with workflow process not found errors.

Workaround

Deployments can change the default LANG shell variable to 'en_US' in the WebSphere startup script startServer.sh, or change the variable in the login script of the Administrator that starts WebSphere.

Restart CA Identity Manager After Creating an Environment with Provisioning

After creating an Environment that includes provisioning, restart the application server where CA Identity Manager is installed. If you start the Environment without restarting the application server, as described in the *Configuration Guide*, the Environment does not register with the Provisioning Server.

If the Environment does not include provisioning, you can start the Environment without restarting the application server.

Benign JSF RI Error on JBoss

When implementing JSF RI on JBoss, the following error appears in the application server log:

```
ERROR [org.apache.myfaces.shared_impl.config.MyfacesConfig] Both MyFaces and the RI are on your classpath. Please make sure to use only one of the two JSF-implementations.
```

This is a benign error and does not need to be fixed.

CA Identity Manager Connector Requires Connector Configuration Changes

The CA Identity Manager connector that is shipped by default is the r12 connector and is not compatible with r12.5. As a result, the following connector configuration changes are required:

- **SourceName:** the name of Data Source on the agent machine - `imsauditevent12`
- **AnchorSQL:** `select max(id) from imsauditevent12`
- **AnchorField:** `IMS_EVENTID`
- **EventSQL:** `select imsauditevent12.id as IMS_EVENTID
,imsauditevent12.audit_time as IMS_AUDITTIME
,imsauditevent12.envname as ENVNAME ,imsauditevent12.admin_name as
ADMINUNIQUENAME ,imsauditevent12.admin_dn as ADMINID
,imsauditevent12.tasksession_oid as TRANSACTIONID
,imsauditevent12.event_description as EVENTINFO
,imsauditevent12.event_state as EVENTSTATE
,imsauditevent12.tasksession_oid as TASKOID
,imsaudittasksession12.task_name as TASKNAME
,imsauditeventobject12.object_type as OBJECTTYPE ,
imsauditeventobject12.object_name as OBJECTUNIQUENAME
,imsauditobjectattributes12.attribute_name as ATTRNAME
,imsauditobjectattributes12.attribute_oldvalue as ATTROLDVALUE
,imsauditobjectattributes12.attribute_newvalue as ATTRNEWVALUE
,imsauditobjectattributes12.attribute_newvalue as ATTRVALUE from
imsaudittasksession12, imsauditevent12, imsauditeventobject12,
imsauditobjectattributes12 where imsauditevent12.id >? and
imsauditevent12.tasksession_id = imsaudittasksession12.id and
imsauditevent12.tasksession_oid = imsaudittasksession12.tasksession_oid
and imsauditeventobject12.parent_event_id = imsauditevent12.id and
imsauditobjectattributes12.parent_object_id = imsauditeventobject12.id
ORDER BY imsauditevent12.id ASC;`

Note: The CA Enterprise Log Manager Identity Manager Connector runs on Windows systems only.

Provisioning Role Name Changes are Not Dynamically Updated in CA RCM

If you rename a provisioning role in CA Identity Manager, that name change is not communicated to CA RCM through dynamic notification. This may impact the suggested roles functionality and compliance and policy validations.

Workaround

Use the Identity Manager Connector to import Identity Manager data into CA RCM.

"Not Found" Error When Creating a New Environment in Certain Deployments

If CA Identity Manager integrates with CA SiteMinder 6.0.5 CR 31 or later, an "Error 404 - Not found" message maybe displayed when users try to browse to a new Environment URL.

This issue is due to a caching issue in the Policy Server.

Workaround

To resolve this issue, complete the following steps:

For Windows:

1. Add a keyword to the SiteMinder registry as follows:
 - a. Navigate to
\\HKEY_LOCAL_MACHINE\SOFTWARE\Netegrity\SiteMinder\CurrentVersion\ObjectStore
 - b. Add the "ServerCmdMsec" key with the following settings:
 - Type: DWORD
 - Value: 1
 - c. Restart Policy Server
2. Restart the application server.
3. Close all browser instances. Then, use a new browser instance to access the Environment URL.

For Solaris:

1. Add a line to the <CA_HOME folder>/netegrity/siteminder/registry/sm.registry file
ServerCmdMsec= 0x1 REG_DWORD
2. Restart the Policy Server.
3. Restart the application server.
4. Close all browser instances. Then, use a new browser instance to access the Environment URL.

Benign Error in the CA RCM Logs

When the CA RCM server receives a request from CA Identity Manager to create or modify a user or role, the following error is displayed in the CA RCM server log:

```
ERROR [Call] No returnType was specified to the Call object! You must call  
setReturnType() if you have called addParameter().
```

This error is benign and can be safely ignored. The changes are successfully executed in CA RCM.

Modifying Single Valued Compound Attributes in Identity Manager

If you modify a single valued compound attribute in CA Identity Manager for a dynamic endpoint, specify only a single value. If you specify multiple values, the existing value is cleared and the attribute is not given a value. The problem does not occur in the Provisioning Manager.

Cannot Create a Copy of a Logical Attribute Handler

When you attempt to create a copy of a logical attribute handler in the User Console, the following error appears:

```
"This object is not connected"
```

Workaround

Creating a new logical attribute handler, which is not based on an existing logical attribute handler.

Error When Accessing the View User Activity Task

When you click the Initiated by User tab in the View User Activity task for the first time, an error occurs.

Workaround

To clear the error, refresh the page.

Upgrades

The following issues are related to upgrades in CA Identity Manager r12.5.

Issue Upgrading a Cluster from CA Identity Manager r12 CR6 or later

If you upgrade a cluster from CA Identity Manager r12 CR6 or later to CA Identity Manager r12.5, the upgrade may fail due to some cluster properties in the installation file being cleared.

Workaround

Verify that the following properties are in the installation file before the upgrade:

- WebSphere: Check if the cluster name is populated in DEFAULT_WAS_CLUSTER. If it is not, add it back manually.
- WebLogic: Check if the cluster name is populated in DEFAULT_BEA_CLUSTER. If it is not, add it back manually.

Note: This issue does not affect a JBoss cluster.

By default, the installation file is found in the following locations:

- Windows: C:\Program Files\CA\CA Identity Manager\install_config_info\im-installer.properties
- Unix:
/opt/CA/CA_Identity_Manager/install_config_info/im-installer.properties

Remap DYN Endpoint Attributes After an Upgrade

After an upgrade, some DYN endpoint attributes may not display in the User Console account screen.

Workaround

Remap any DYN endpoint attributes to the account screen using Connector Xpress, as follows:

1. After the upgrade, open the old DYN JDBC project in Connector Xpress.
2. Map the attributes to the account screen.
3. Redeploy the metadata.
4. Run the Role Definitions Generator.

5. Copy the respective file to the application server.
6. Restart CA Identity Manager.

Note: For more information about mapping endpoint attributes using Connector Xpress, see the *Connector Xpress Guide*.

CA Directory Upgrade Message Issue

When upgrading CA Directory, the installer may ask you to close cmd.exe, however cmd.exe is used by the upgrade. If you encounter this message, click Ignore and continue on with the upgrade.

Issue Upgrading From Admin 8.1 SP2 on Solaris

Before upgrading from Admin 8.1 SP2 on Solaris, complete the following:

1. Remove etrust_adt.dxc from
/opt/CA/eTrustDirectory/dxserver/config/schema
2. Restart the DSAs:

su - dsa

dxserver stop all

dxserver start all

dxserver status
3. Verify that the DSAs started correctly.

Note: This procedure is not required when upgrading on Windows.

Errors When Upgrading on WebLogic 9.2.1

When upgrading from CA Identity Manager r12 on WebLogic 9.2.1, the following errors may occur:

- Unable to deploy EJB:
C:\bea\user_projects\domains\base_domain\applications\IdentityMinder.e ar\wpServer.jar from wpServer.jar: Unable to load a class specified in your ejb-jar.xml: com.workpoint.server.ejb.SchemaPvtHome.
- Error while parsing the Tag Library Descriptor at
"C:\bea\user_projects\domains\base_domain\servers\AdminServer\tmp_ WL_user\IdentityMinder\wfq3pk\war\WEB-INF\lib\standard.jar!/META-INF/c-rt.tld".

Workaround:

1. Delete the temp WL_User folder, for example, domains\base_domain\servers\AdminServer\tmp_WL_user.
Note: For WebLogic clusters, the cache needs to be cleared on each managed node. The cache location to clean is *WebLogic_folder*common\nodemanager\servers\server\tmp_WL_user.
2. Edit the setDomainEnv.cmd file located in C:\bea\user_projects\domains\base_domain\bin and add the following line:
set IDM_OPTS= %IDM_OPTS%
-Djavax.xml.stream.XMLInputFactory=weblogic.xml.stax.XMLStreamInputFactory
3. Restart the application server.

SiteMinder Error During Auto Migration

If you attempt an automatic migration of your Directories and Environments during a CA Identity Manager upgrade, you may get a SiteMinder error. If you have changed the default SiteMinder port for authentication (44442), the installer incorrectly detects that SiteMinder is not running, and does not allow you to proceed.

Workaround

You can run the migration after you complete the upgrade. For more information, see the manual upgrade section of the *Upgrade Guide*.

Environment Migration Error

If you are upgrading from CA Identity Manager r8.1 SP2, or r12 CR1, CR2, or CR3, you may see the following error when importing your environments:

Attribute "accumulateroleeventsenabled" is not allowed to appear in element "Provisioning".

Workaround

Open the envsettings.xml file in the exported Env.zip, and update the accumulateroleeventsenabled to acumulateroleeventsenabled (remove the second 'c' in accumulate).

Fix Required Before Upgrading CA Directory

To upgrade CA Directory on a Windows system, you must apply a license patch for CA Directory before beginning the upgrade procedure.

If you do not apply the patch, the upgrade procedure may remove license files which are required by other CA products.

You can [download](#) the patch on the CA Support site.

To locate the patch

1. Log into the support.ca.com.

The CA Support site opens.

2. Click Licensing in the list of links on the left side of the page.
3. Click License Package 1.8 is Now Available.

A page opens that describes the changes to the License Package, and includes a link for downloading it.

4. Follow the instruction to download and install the Windows patch.

Note: You also need this patch if you plan to manually uninstall eTrust Directory r8.

Upgrades from ACE or Option Pack 1 Not Supported

If you currently use a version of CA Identity Manager with ACE or Option Pack 1, upgrades to CA Identity Manager r12.5 are not supported.

MS SQL and Oracle Endpoints Unavailable After Upgrade from eTrust Admin 8.1 SP2

After upgrading from eTrust Admin 8.1 SP2 to Identity Manager r12.5, any MS SQL or Oracle endpoints acquired before the upgrade require a manual reconfiguration using the Provisioning Manager, to use JDBC URLs instead of Data Source Names (DSNs). This is due to the switch from using the SuperAgent to Java CS for managing MS SQL and Oracle endpoints.

Oracle: Modify the details in the Oracle endpoint property sheet.

Example:

```
jdbc:oracle:thin:@oracle_server_host:1521:ORACLE
```

MS SQL: Right-click on the endpoint and select Custom, Change Admin Password. The URL and connection credentials can be changed at this point without needing to view the other endpoint details.

Example:

```
jdbc:sqlserver://serverHost:1433;instanceName=instance1
```

Note: Migration steps and a complete list of possible URL syntaxes can be found in the *Connectors Guide*.

Post-Upgrade Steps for z/OS Connectors

The z/OS connectors (CA ACF2, CA Top Secret and RACF) have been re-architected for performance reasons to now use the CA LDAP Server for z/OS instead of the CA DSI Server on z/OS.

Before trying to configure any z/OS connector you must install the CA LDAP Server for z/OS r12 which can be downloaded from support.ca.com.

Once you have upgraded to Identity Manager r12.5, do the following for each endpoint defined to your system:

1. Select CA ACF2, CA Top Secret, or RACF Endpoint from Object Type.
2. Click the search button. Right click on the Endpoint and select properties. Fill in the following information:

In the Mainframe Server Information section:

- **IP Address/Machine Name** specifies the IP address of the RACF managed system where the CA LDAP Server is configured and running.
- **LDAP Port** specifies the port number that you specified during the CA LDAP Server for z/OS install. If you are not sure of the Mainframe LDAP Port, see the section "Checking your CA LDAP Server for z/OS Configuration Information."
- **LDAP Suffix** specifies the suffix to use for this endpoint. This combo box is automatically populated with all valid and available suffixes when you click the "Get Suffixes" button. Suffixes can be retrieved once valid values have been provided for the Mainframe IP Address/Machine Name and Mainframe LDAP Port fields.

Environment Migration Fails if the Identity Manager User Store Cannot be Contacted

During an environment migration when you are upgrading from CA Identity Manager r8.1 SP2, if the Identity Manager User Store cannot be contacted, the environment is left in an incomplete state. For example, the base URL may be missing or the System Manager may not be set.

Workaround

1. Delete the affected environment.
2. Rename the file *Environment Name*EnvironmentMigrated.properties to *Environment Name*EnvironmentAutoMigrate.properties

This file is located in *App Server Deploy Location/IdentityMinder.ear/user_console.war/META-INF/*

3. Restart the Application Server.

Reporting

The following issues are related to reporting in Identity Manager r12.5.

Error When Capturing Snapshot Data with ExportAll.xml

When using the ExportAll.xml snapshot definition to capture snapshot data, the process fails with the error "java.lang.OutOfMemoryError: Java heap space." This issue occurs when a large number of objects, such as users, are loaded into memory.

Workaround

Increase the heap settings in the application server startup script. Consider increasing the heap size to 1000 MB allocated, 1400 MB maximum.

Also, in the snapshot definition XML files, consider splitting the filter condition for the objects into multiple conditions. For example, instead of using the wildcard filter (*) to load all users, specify a multiple filters, such as "user id starts with 'a'", "user id starts with 'b'", and so on.

Capture Snapshot Data Task Shown as In Progress When Complete

When checking View Submitted Tasks, the Capture Snapshot Data task may be marked as "In progress", despite the task having completed. However, if you drill down to the detail section of the Capture Snapshot Data task, it correctly shows that the task is completed.

Reporting Limitation

Multiple snapshots associated with a single report task must not use the same recurrence time.

Satisfy=All Not Working Properly in XML File

In a Snapshot Parameters XML file, satisfy=all and satisfy=any are both behaving as satisfy=any (similar to an OR operator).

Viewing a Report Redirects To the Infoview Login Page

When viewing a report in CA Identity Manager, you may be re-directed to the Business Objects Infoview login page.

Workaround

1. Be sure you are using the fully-qualified domain name of the CA Report Server (Business Objects).
2. Right-click on the Infoview login web page and select View Source.
3. Find the URL for the report.
4. Copy and paste the URL into a new browser window.
5. If you do not see the report, use an http trace tool to provide more information.
6. If you do see the report, try the following to fix the browser settings:
 - Accept 3rd party cookies.
 - Allow session cookies.
 - Remove High security settings.

Enable Third Part Cookies for View My Reports Task

In order to view reports in CA Identity Manager using the View My Reports task, enable third party session cookies in the browser.

Generating User Accounts Fails if More than 20,000 Records Exist

If over 20,000 records exist, generating a user accounts report fails.

Workaround

1. Open the Business Objects Central Management console.
2. Click Servers and select *servername.pageserver*.
3. Select Unlimited records for the entry Database Records To Read When Previewing Or Refreshing a Report.
4. Using Crystal Reports designer, open the user accounts report.
5. Using Database, Set Datasource Location, set the database location to your snapshot database.
6. Save this change.
7. Using Database, Datasource Expert, right click Command on the right side window.

It shows the SQL syntax on the left hand side and the Parameter List.

8. Enter the parameter name as you find it in the Parameters Fields in the report template.
9. Change the query in the left hand side and add that parameter in the query.

For example, if you have reportid parameter, the query will be:

```
Select * from endPointAttributes, endpointview, imreport6
where endPointAttributes.imr_endpointid = endpointview.imr_endpointid and endPointAttributes.imr_reportid
= endpointview.imr_reportid
endpointview.imr_reportid = imreport6.imr_reportid and imreport6.imr_reportid = {?reportid}
```

10. Save the report.

For WebSphere, Non-Snapshot Reports Require the Date Picker

Non-Snapshot Reports use the current system date and time values for Start Date Time and End Date Time. However, these values do not work for WebSphere. An error appears when you click Schedule Reports.

Workaround

Select the Start and End Date Times using the Date Picker control.

Default Audit Reports do not Support Recurring Invocation

The audit reports supplied with CA Identity Manager do not support recurring invocation.

Provisioning

The following issues are related to provisioning in Identity Manager r12.5.

General

The following issues are general provisioning issues in Identity Manager r12.5.

Solaris ECS Logging Above INFO Level Can Affect the Performance of the Provisioning Server

Enabling ECS logging above INFO level causes logs to be written before you receive a response. This causes your request to be delayed while the log is being written. If you are experiencing poor Provisioning Server performance when using ECS logging, the work around is to turn it off.

SPML Updates Fail When JIAM Specifies Incorrect Objectclass Names

Sometimes the JIAM API may start to use incorrect, abridged object class names in requests sent to the Provisioning Server and the Provisioning Server will refuse the request and raise an "Internal consistency error in Provisioning Server" error. For example, when performing an update of the "eTSBLDirectory" object, the incorrect object class "eTDirectory" is sent to the Provisioning Server. This problem can be resolved by restarting the SPML service.

Special Characters in Global User Names

The Provisioning Manager allows you to create global user names that include special characters, such as the back slash character (\). However, the Identity Manager Server does not support user names with special characters.

When you create a global user in the Provisioning Manager with a special character, Identity Manager attempts to create a corresponding user in the Identity Manager user store. Errors occur and the Create User task fails in the Identity Manager user store.

Errors also occur if you try to delete a global user with special characters in the Provisioning Manager.

Already Exists Error When Adding an Endpoint

If you delete and re-add an endpoint with exactly the same name, sometimes the Provisioning Server reports a failure claiming the endpoint of that name already exists. This can occur when you have configured multiple connector servers to manage that endpoint. The failure results from a problem during endpoint deletion, where not all connector servers are notified of the deletion.

Workaround

Restart all connector servers that are configured to manage the endpoint.

Provisioning Server Chooses DNS Over Local Setting

The Provisioning Server installer prefers the DNS result for the Provisioning Directory host even if you configured the operating system to prefer the local host table over DNS.

SiteMinder Login Name Restriction for Global User Name

The following characters or character strings cannot be part of a global user name if that user needs to log into the SiteMinder Policy Server:

&
*
:
0

Workaround

Avoid using these characters in the global user name.

Some WebSphere Nodes May be Missing Objects

On a WebSphere cluster, changes to an environment may not appear on some nodes in the cluster. For example, after modifying a provisioning role, that change may not show up on another node in the WebSphere cluster.

Workaround

Move the Service Integration Bus out of the cluster and onto dedicated servers. See the WebSphere documentation on [Connecting Applications on the Service Integration Bus](#).

Password Change on 64-Bit Linux does not Trigger the UNIX PAM Services

PAM is only supported on 32-bit Linux systems.

Connector Xpress: Changing Attribute Mapping May Cause a Conflict

When changing the mapping of an attribute in the Class editor, its existing JavaBean property name may be retained. This can conflict with another attribute that may be subsequently mapped to the original.

Workaround

If two attributes share a common JavaBean property name, unmap them from the Class editor, click away from the editor and back again, and remap them.

View Submitted Tasks May not Show All Containers were Explored

When you use View Submitted Tasks on an Explore and Correlate task, only the last container may be shown as explored even if all containers were explored.

Workaround

Check the etrans log file to verify that all containers were explored. This log exists where you installed the Provisioning Server.

Provisioning Manager Includes Obsolete SAWI/DAWI References

The Provisioning Manager includes dialogs that have controls for the SAWI and DAWI features, which are no longer supported. Please use the Identity Manager self-service features instead of SAWI or DAWI.

Java Connector Server (Java CS)

The following issues are related to the Java Connector Server in CA Identity Manager r12.5.

connector.xml Files Renamed During Upgrade

When upgrading the Java Connector Server from r8.1 SP2 to r12.5, all connector.xml files under JCS_HOME/conf/override/* will be renamed to connector.xml.orig.

If you use these connector.xml files, rename these files back to their original names after the upgrade.

Exploration of Java Connector Fails when using " / Character Sequence to Represent Distinguished Names

An unresolved issue exists in the Java CS dealing with the following two-character sequence:

"/

This is important to the handling of Composite Names used by the standard JNDI API to represent Distinguished Names that span multiple technologies.

For more information about other special characters in Distinguished Names passed to the Java CS, see LDAP RFC 2253 on:

<http://ietf.org>

and in the JavaDoc for `javax.naming.ldap.LdapName`

Restarting Java CS Service Fails Using Windows Services

When restarting the Java CS service using Windows Services, it is possible to start the Java CS service before it has fully completed its shut down, causing the service to fail.

Workaround

Use the stop and start buttons instead of the restart buttons in the Windows Service Control Panel.

Reserved Characters Should not be Used in JNDI Account Names

When creating JNDI accounts, do not use reserved characters, including the backslash (/), in the account names. An error occurs when you try to delete them.

JNDI Account Management Screens – Creating Accounts with Multiple Structural objectclasses Fails

You cannot create accounts with multiple structural object classes.

Endpoint Types

The following issues are related to managing endpoint types in CA Identity Manager r12.5.

Endpoints with Retry Autolock must be Configured with a Generous Retry Limit

For endpoints that have "N" retry autolock" behavior, the account used to connect to the endpoint using Java CS should be configured to have a generous (or unlimited) "N" due to attempts to connect being used up quickly by the Java CS.

When the account is natively locked due to "N" being exceeded, it may be necessary to use native tools to unlock the account before the endpoint can be acquired again. This depends on the exact native "locked" behavior of the endpoint.

Incorrect Results During Sub-Tree Search with Active Directory Connector

During a sub-tree search against a sub-tree containing multiple Organization Units with a large number of objects in each Organization Unit, the search could incorrectly return no objects. For example, with a search limit size set to 500 and the number of objects in each organization unit above that limit, no results will be returned. Even if the search filter narrows the search limit size to under 500, the search could still incorrectly return no objects.

Workaround

Increase the search limit size.

Endpoint Descriptions for ADS2008 Endpoints are Displayed as Numbers

When viewing or modifying an ADS2008 endpoint using the User Console, the Domain Controller, Domain, and Forest field values on the ADS Server tab are displayed as numbers.

Acquiring DB2 z/OS Endpoint Crashes CCS

The DB2 UDB and DB2 z/OS connectors must not be routing requests to the same C++ Connector Server (CCS).

Workaround

Install a second CCS on a separate machine so each of the DB2 UDB and DB2 z/OS connectors are hosted on their own C++ Connector Servers.

Authorities Granted Attribute in DB2 Account Template is a Capability Attribute

The Authorities Granted attribute in the DB2 account template is currently shown as an initial attribute but it is actually a capability attribute.

ETC Remote Agent on a Linux OS Running on an S390 Fails

Attempting to install the ETC Remote Agent on a Linux operating system running on an S390 host fails with the error:

```
# ./IdentityManager.LinuxS390.sh lsm.exe: error while loading shared libraries:  
libncurses.so.4: cannot open shared object file: No such file or directory."
```

Workaround

You will need to locate a version 4 of ncurses for the operating system and install it.

Cannot Change the UNIX ETC Account Home Directory

When you change the home directory for a UNIX ETC account to a different location and select the Create check box, the new directory is not created.

VMS modify Delete Account Rights Fails with SPML

You are unable to delete a value from the accountRights attribute on a VMS account using SPML. The SPML Client will return a success message, but the account will not be updated.

Workaround

Use the Provisioning Manager to perform such modifications.

Cannot Set a Secondary Password for OpenVMS Accounts

The OpenVMS remote agent utility 'vmsautl' does not enforce the semantics of the OpenVMS PRIMARY/SECONDARY password for user accounts. If you attempt to specify a secondary password when no primary password is set, the operation will fail with the "password is too short" error message.

Workaround

Always reset the primary password when attempting to set a secondary password for the account.

VMS Attribute eTVMSPWDLifeTime Shows as Out-of-Sync

The Password Lifetime (eTVMSPWDLifeTime) attribute is being shown as out-of-sync after the "Check Account Synchronization" operation if the account template attribute "Never expires" is set to true (checked).

Unable to Set VMS Password Flags

The eTVMSPwdFlags attribute is not being set correctly on an account add or modify operation if the request does not set a value for eTVMSAccessFlags also.

Workaround

An add or modify request should contain a value for eTVMSAccessFlags attribute as well as eTVMSPwdFlags attribute.

VMS Migrate Password Attribute Shows as Out-of-Sync

Any VMS account or account template with the field MIGRATEPW set to true (checked), shows the eTVMSPwdFlags as out of sync after the "Check Account Synchronization" operation.

NDS Connector Cannot Explore New Containers

The first explore tries to find and add containers after an NDS endpoint is acquired. If you add containers using NDS local tools and then try to re-explore the endpoint, the newly added containers nor their sub-entries will not appear in the tree.

Workaround

Remove the endpoint from the Provisioning Server and then re-acquire and explore it in order to view the new containers.

NDS Connector Description is Single-Valued Field

In the NDS Connector, the account description is a single-value field, but in the NDS endpoint, the account description is a multi-valued field.

Provisioning Manager Help is Incorrect When Trying to Acquire a Mainframe Endpoint

The Provisioning Manager help displays the wrong field names for Mainframe LDAP IP Address/Machine Name and Mainframe LDAP Port.

E2K CAFT Error When Managing Mailbox Rights

"CAFT Message : Access denied - or command failed to execute" error message might be returned during management of mailbox rights even when your Exchange Remote Agent is configured correctly.

This can happen when multiple privileges exist in the mailbox rights list for the same object and normally happens when the managed exchange objects inherit rights from the parent object.

E2K7 Mailbox Out of Sync After Initial Creation

After creating an account template with Use Strong Sync checked, and synchronizing a global user with the account template, right-click global user and select Check Account Synchronization. The Mailbox Rights is out of sync.

Workaround

Select Exchange Advanced, Mailbox Rights, Add (using SHIFT+ADD method), 'NT AUTHORITY\Authenticated Users', 'Read permissions' only.

Email Addresses are not Set on Email Enabled Groups

When creating a group and checking 'Create an exchange email address,' no email address is set for the group.

Workaround

Go to the Email Addresses Tab and apply the new email address there after the group is created.

An Error Message is Displayed when Trying to Modify an Account with an E2K7 Mailbox

An error message is displayed when you try to modify an account with an E2K7 mailbox. This error is benign and can be ignored.

Error Message is Insufficient when Trying to Create E2Kx Mailbox

An insufficient error message is displayed for characters within the INT field. This error, [-]?[\d]*, indicates that the required field must be a number.

Message Restrictions do not Allow 'Only From' and 'From Everyone Except' to be Selected Simultaneously in the Provisioning Manager

Exchange Server 2007 lets administrators select both 'Accept messages from only senders in the following list' and 'reject messages from senders in the following list'. The Provisioning Manager only allows one to be selected. This was the behaviour in Exchange 2003. If both are natively selected in Exchange 2007, this functionality is broken in the Provisioning Manager.

PKI Groups Property Sheet Does Not Display Correctly

When trying to open a PKI group property sheet in the Provisioning Manager, the error message "Unable to display the requested property sheet" is displayed.

PKI Accounts Appear as Duplicates

The PKI connector does not support Entrust PKI hierarchical endpoints and stores all accounts in a flat list. Because of this, a unique Entrust PKI accounts with the same name appear as a duplicate to the PKI connector.

Email Notification Warning When Creating PKI Accounts

If you acquire a PKI endpoint using a proxy profile and email notification is turned on, you cannot create a new PKI account without specifying the "create profile" option.

Workaround

Do one of the following:

- Acquire the endpoint without the Proxy profile.
- Turn off the email notifications when acquiring the endpoint and go to the endpoint to check the reference number manually

PKI Connector does not Support Internationalization

Accounts with non-7bit-ASCII characters are not displayed in the Provisioning Manager correctly as the PKI Connector does not support internationalization.

Assigning SAP Contractual User Types

When assigning a contractual user type to a user on the License Data tab, the change can only be applied to the Master system, not any child system.

Workaround

You can change the contractual license types for the children natively.

SAP Endpoint is not Pre-Populated from the SAPLogon.ini File

When the Provisioning Manager is running on Windows 2008, the endpoint details for SAP are not being pre-populated from the SAPLogon.ini file.

Note: This problem is specific to the Provisioning Manager running on Windows 2008 only.

Workaround

You must manually enter the contents of the SAPLogon.ini file into the Provisioning Manager.

Mandatory Fields in the SAP Contractual User Type Attribute

The Contractual User Type that can be specified on the account's License Data tab cannot have mandatory fields other than the LIC_TYPE field. For example, if you have to specify the name of a SAP R3 System (SYSID) to use a Contractual User Type, the assignment will fail and you will get an error saying that there is a missing value for the Name of the SAP R3 System.

The Contractual User Type Attribute in the Account License Data Tab does not Work for all License Types

When a User type is selected from the available list, only some user types work. Some license types produce an error 'BAPI' function call error. The reason is some User types contain extra fields that are not recognized.

SBL Error when Creating Account on Multiple Endpoints

An account template that lists multiple endpoints can only list Siebel groups that exist on all endpoints.

Provisioning Manager does not Display LND Account's Group Memberships if they Contain Japanese Characters

In the Provisioning Manager, accounts created in Organization and Organizational Units containing Japanese characters do not show their Group Membership(s) in the Member Of tab.

LND Account Mail Files are not Being Created During Registration

The Provisioning Manager LND account creation window contains a check box called 'Create Replicas' on the Profile tab page.

When administering a Domino endpoint that is in a clustered environment, when the 'Create Replicas' check box is checked, replicas of the account should be created in the cluster environment, along with its associated mail file. The creation of replica mail files is not being handled during registration in this release.

PLS Account Search Returns Non-Existing Accounts when eTPSLCountry is Specified

When the eTPSLCountry attributed is included in the search request for PLS Accounts, the search response returns an entry even if an account with that name does not exist on the endpoint or provisioning repository.

PLS Connector Cannot Add More than 2000 Accounts to Applications

You cannot add more than 2000 PLS accounts to an application at one time. If you have more than 2000 PLS accounts to add, you must split the accounts into multiple operations.

Account Templates are not Synchronized with Accounts on a Create or Modify Task in the User Console

Using the User Console, explicit account synchronization is not supported.

Workaround

Use Provisioning Manager to synchronize accounts with account templates.

DYN Endpoint Type Missing Endpoint Tab after Upgrading from r8.1 SP2

After upgrading to r12.5, mapping the DYN attributes, and redeploying the metadata into your DYN endpoint types, the first tab on the Endpoint screens generated using the RoleDef Generator tool is not displayed.

Workaround

Use the Provisioning Manager to manage attributes on that tab for the DYN endpoints.

Chapter 6: Documentation

The file names for the CA Identity Manager r12.5 guides are as follows:

Guide Name	File Name
Release Notes	im_release_enu.pdf
Implementation Guide	im_impl_enu.pdf
Installation Guide for WebLogic	im_install_weblogic_enu.pdf
Installation Guide for WebSphere	im_install_websphere_enu.pdf
Installation Guide for JBoss	im_install_jboss_enu.pdf
Upgrade Guide	im_upgrade_enu.pdf
Configuration Guide	im_config_enu.pdf
Administration Guide	im_admin_enu.pdf
User Console Design Guide	im_uc_design_enu.pdf
Programming Guide for Java	im_dev_enu.pdf
Provisioning Reference Guide	im_provisioning_reference_enu.pdf
Connectors Guide	im_connectors_enu.pdf
Connector Xpress Guide	im_connector_xpress_enu.pdf
Java Connector Server Implementation Guide	im_jcs_impl_enu.pdf
Programming Guide for Java Connector Server	im_jcsProg_Enu.pdf
Glossary	im_glossary.pdf
Bookshelf	im_bookshelf_enu.zip

This section contains the following topics:

[Bookshelf](#) (see page 68)

[Online Help Enhancements](#) (see page 68)

[eTrust Rebranding to CA](#) (see page 69)

[Terminology Changes](#) (see page 69)

[Documentation Changes](#) (see page 70)

Bookshelf

The Bookshelf provides access to all CA Identity Manager documentation from a single interface. It includes the following:

- Expandable list of contents for all guides in HTML format
- Full text search across all guides with ranked search results and search terms highlighted in the content
- Breadcrumbs that link you to higher level topics
- Single HTML index to topics in all guides
- Links to PDF versions of guides for printing

To use the Bookshelf

1. Download the bookshelf from the [CA Support Site](#).
2. Extract the contents of the bookshelf ZIP file.

Note: For best performance, when you install the bookshelf on a remote system, make the bookshelf accessible from a web server.

3. View the bookshelf as follows:

- If the bookshelf is on the local system and you are using Internet Explorer, open the Bookshelf.hta file.
- If the bookshelf is on a remote system or if you are using Mozilla Firefox, open the Bookshelf.html file.

Note: For best performance, when you install the bookshelf on a remote system, make the bookshelf accessible from a web server.

The Bookshelf requires Internet Explorer 6 or 7 or Mozilla Firefox 2. For links to PDF guides, Adobe Reader 7 or 8 is required. You can download Adobe Reader at www.adobe.com.

Note: The CA SiteMinder Bookshelf has been published for r12 and r6.0 SP5 at the [CA Support site](#) using the same bookshelf format used by CA Identity Manager.

Online Help Enhancements

Both the User Console online help and the Management Console online help now have the following features:

Breadcrumbs

Indicate where you are in the help hierarchy for easier navigation. They are located at the top of the help page.

Search Highlighting

Identifies the context of your search in the resulting pages with a yellow highlight.

Navigation Buttons

Displays previous and next arrow buttons for easier navigation. They are located at the top of the help page, under the breadcrumbs.

eTrust Rebranding to CA

The branding of some CA security products is currently in transition from "eTrust" to "CA". During this transition, you may see references to both eTrust products and CA products in the documentation. For example, eTrust Directory is now rebranded as CA Directory. Any mention of an eTrust product within the documentation is equivalent to the same product with the new CA brand.

Terminology Changes

Existing eTrust Admin customers may notice certain terms have changed now that eTrust Admin is part of CA Identity Manager. The following table shows these changes:

eTrust Admin Term	New Term in Identity Manager
eTrust Admin Server	Provisioning Server
eTrust Admin Manager	Provisioning Manager
Directory	Endpoint, Endpoints
Namespace	Endpoint Type
Policy or Provisioning Policy	Account Template
Roles	Provisioning Roles
Distributed SuperAgent Framework	Connector Server Framework
SuperAgent	C++ Connector Server
Option	Connector
Administrative Directory or Administrative Repository	Provisioning Directory
Identity Manager Corporate Directory	Identity Manager User Store
Corporate User	Inbound Administrator

Documentation Changes

The following changes have been made to the CA Identity Manager r12.5 documentation set.

Installation Guides and High Availability Guide

The high-availability content for CA Identity Manager has been merged into the Installation Guides for each application server. There is no longer a separate guide to address high availability.

Upgrade Guide

A new guide in CA Identity Manager r12.5. All content related to an upgrade of CA Identity Manager has been separated out from the Installation Guides and placed in the Upgrade Guide.

User Console Design Guide

This new guide is intended for system administrators who initially configure an Identity Manager environment after installation.

This guide includes information about customizing tasks (including task navigation, and screen design), branding, and localization.

Programming Guide for Provisioning

This guide, which describes [deprecated Provisioning APIs](#) (see page 30), has been removed from the bookshelf. It is now available with the installation package for the APIs.

Appendix A: Third-Party Acknowledgements

This section contains the following topics:

[Apache](#) (see page 71)
[ANTLR 2.7.5H#](#) (see page 78)
[ASM 3](#) (see page 79)
[DOM4J](#) (see page 79)
[HSQLDB 1.7.3](#) (see page 81)
[HSQLDB 1.8.0](#) (see page 83)
[IBM DB2 Driver for JDBC and SQLJ](#) (see page 84)
[Jaxen 1.3](#) (see page 84)
[JDOM 1.11](#) (see page 85)
[JSON 1.0](#) (see page 87)
[jtopen 5.1.1](#) (see page 87)
[libcurl 7.15.0](#) (see page 88)
[MX4J 3.0.2](#) (see page 89)
[Oracle JDBC Driver 10g Release 2](#) (see page 91)
[Rhino 1.5R5](#) (see page 92)
[Rhino 1.7R1](#) (see page 101)
[SAAJ 1.2](#) (see page 112)
[SAXPath 1.1](#) (see page 113)
[SpiderMonkey 1.5](#) (see page 114)
[Sun JDK 1.6.0](#) (see page 115)

Apache

Portions of this product include software developed by the Apache Software Foundation.

Apache Ant 1.6.5

Apache Axis 1.1

Apache Axis 1.2

Apache Axis 1.2.1

Apache Axis 1.4

Apache Axis2/Java 1.5

Apache Bean Scripting Framework 2.4.0

Apache Jakarta Commons BeanUtils 1.6.1 and 1.7

Apache Commons Cli 1.0

Apache Jakarta Commons Codec 1.3

Apache Jakarta Commons Collections 3.1

Apache Jakarta Commons DBCP 1.2.1

Apache Jakarta Commons Validator 1.2

Apache Commons Digester 1.7

Apache Commons Discovery 0.2

Apache Commons EL 1.0

Apache Commons File Upload 1.2

Apache Commons IO 1.3.1

Apache Commons Lang 2.1

Apache Commons Logging 1.0.4

Apache Commons Pool 1.3

Apache Derby 10.4.2

Apache ehcache 1.2.4

Apache Jakarta Taglibs 1.0.6

Apache Jakarta ORO 2.0.8

Apache Jakarta Slide 2.1

Apache Log4j 1.2.8

Apache HttpClient 3.0

Apache MyFaces 1.1.5

Apache JSTL Taglib 1.1

Apache POI 3.2

Apache Quartz 1.5.2

Apache Spring Framework 1.2.8

Apache StAX 1.2

Apache Struts 1.2.7 and 1.2.9

Apache Velocity 1.4

Apache Xalan-C 1.9.0

Apache Xalan-J 2.6.0

Apache xmltask 1.13

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