

# Sun™ Identity Manager Release Notes

Version 8.0 May 2008

Part Number 820-2958-10

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These Release Notes contain important information available at the time of release of Sun Identity Manager 8.0. New features and enhancements, known issues and limitations, and other information are addressed here. Read this document before you begin using Identity Manager 8.0.

These Release Notes are organized into the following sections:

- [Introduction](#)
- [Identity Manager 8.0 Features](#)
- [Installation and Update Notes](#)
- [Deprecated APIs](#)
- [Documentation Additions and Corrections](#)

Third-party URLs are referenced in this document and provide additional, related information.

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# Introduction

This section of the Identity Manager 8.0 Release Notes provides information about:

- [Supported Software and Environments](#)
- [Upgrade Paths and Support Policies](#)
- [Redistributable Files](#)
- [How to Report Problems and Provide Feedback](#)
- [Sun Welcomes Your Comments](#)
- [Additional Sun Resources](#)

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## Supported Software and Environments

This section lists software and environments that are compatible with Identity product software:

- [Operating Systems](#)
- [Java Support](#)
- [Application Servers](#)
- [Repository Database Servers](#)
- [Sun Identity Manager Gateway](#)
- [Supported Resources](#)
- [Browsers](#)
- [Discontinued Software](#)

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**NOTE** Because software product developers frequently ship new versions, updates, and fixes to their software, the information published here changes often. Review the release notes for updates before proceeding with installation.

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## Operating Systems

This release of Identity Manager supports the following operating systems:

- AIX 5.2, 5L v5.3
- HP-UX 11i v1, 11i v2
- Microsoft Windows 2000 SP3, 2000 SP4
- Microsoft Windows Server 2003
- Solaris 9, 10 Sparc and x86
- Red Hat Linux Advanced Server 2.1
- Red Hat Linux Enterprise Server 3.x, 4.x
- Novell SuSE Linux Enterprise Server 9 SP1

## Java Support

Identity Manager requires Java Platform, Standard Edition (SE) 5 or higher.

## System Virtualization Support

System virtualization is a technology that enables multiple operating system (OS) instances to execute independently on shared hardware. Functionally, software deployed to an OS hosted in a virtualized environment is generally unaware that the underlying platform has been virtualized. Sun performs testing of its Sun Java System products on select system virtualization and OS combinations to help validate that the Sun Java System products continue to function on properly sized and configured virtualized environments as they do on non-virtualized systems. For information about Sun support for Sun Java System products in virtualized environments, see <http://docs.sun.com/doc/820-4651>.

## Application Servers

The application server you use with Identity Manager must be Servlet 2.2-compliant and installed with the included Java platform (unless noted as follows). Identity Manager requires Java SE Development Kit (JDK) 5 or 6 on the following application servers, if the application server supports these versions.

- Apache® Tomcat 5.5.x, 6.0.x
- BEA WebLogic® Server™ 9.1, 9.2, 10
- IBM WebSphere® 6.1
- JBoss Application Server 4.2
- Oracle Application Server Enterprise Edition 10g Release 3 (10.1.3)
- Oracle Application Server Standard Edition 10g Release 3 (10.1.3)
- Sun Java™ System Application Server 9.1 (GlassFish v2 UR1, 32-bit and 64-bit)
- Sun Java™ System Application Server Platform Edition 8.1, 8.2, 9.0
- Sun Java™ System Application Server Enterprise Edition 8.1, 8.2
- Sun Java™ System Application Server Standard Edition 8.2

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**NOTE**

- If your current application server does not support JDK 5, please check with your vendor to examine the implications of upgrading to one that does before installing Identity Manager
  - Identity Manager requires a JDK that correctly handles the 2007 adjustments to U.S. Daylight Savings Time (DST). You must install any relevant DST patches for the JDK version you are using. For Sun JDK 5, Update 15 contains the necessary DST fixes. All versions of Sun JDK 6 contain the necessary DST fixes.
  - You can run Identity Manager on BEA WebLogic application servers with all WebLogic-supported 5 JDKs.
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# Repository Database Servers

Identity Manager supports the following repository database servers:

- IBM® DB2® Universal Database for Linux, UNIX®, and Windows® (Version 8.1, 8.2)
- Microsoft SQL Server™ 2005
- MySQL™ 5.0, 5.1

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**NOTE** Identity Manager supports MySQL as a database resource in development or production deployments. MySQL is only supported as a repository database server in development deployment.

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- Oracle 9i® and Oracle Database 10g, 10g Release 1 and 10g Release 2®, 11g

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**NOTE** Oracle RAC (Real Application Cluster) is supported in a two-node active-passive configuration. That is, a configuration where the `active_instance_count` parameter is set to 1. Used in conjunction with connection failover for the JDBC driver, this provides failover capability for the repository. (Refer to Oracle documentation for how to configure this in your environment)

Oracle RAC is not currently supported in any other configuration.

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**CAUTION** If you are using an Oracle repository . . .

The Identity Manager 8.0 repository DDL uses data types that are not properly handled by older Oracle JDBC drivers. The JDBC drivers in `ojdbc14.jar` do not properly read all of the columns in the log table.

You must upgrade to the Oracle JDBC drivers for JDK 1.5 for Identity Manager to work properly.

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# Sun Identity Manager Gateway

If you plan to set up Windows Active Directory, Novell NetWare, Remedy, Lotus Notes (Domino) or RSA ACE/Server resources, you must install the Sun Identity Manager Gateway.

## Supported Resources

Identity Manager software supports these resources:

- [Customer Relationship Management \(CRM\)](#)
- [Databases](#)
- [Directories](#)
- [Enterprise Resource Planning \(ERP\)](#)
- [Help Desk](#)
- [Message Platforms](#)
- [Miscellaneous](#)
- [Operating Systems](#)
- [Role Management System](#)
- [Security Managers](#)
- [Web Access Control](#)

### Customer Relationship Management (CRM)

- Siebel version 7.0.4, 7.7, 7.8, 8.0 CRM software

### Databases

- Generic database table
- IBM® DB2® Universal Database for Linux, UNIX®, and Windows® 8.1, 8.2
- Microsoft® Identity Integration Server (MIIS) 2003
- Microsoft SQL Server 2000, 2005

- MySQL™ 4.x, 5.0, 5.1

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**NOTE** Identity Manager supports MySQL as a development and production database.

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- Oracle Database 9i®, 10g Release 1®, 10g Release 2®
- Sybase Adaptive Server® 12.x
- Scripted JDBC (manages resources using JDBC 3.0 drivers or later)

## Directories

- LDAP v3
- RACF LDAP
- Microsoft® Active Directory® 2000, 2003
- Microsoft® Active Directory® Application Mode (ADAM) Windows 2003 SP1 and later
- Novell® eDirectory 8.7.1, 8.8
- Novell NetWare® 6.5
- Open LDAP
- Sun™ ONE Directory Server 4.x
- Sun Java™ System Directory Server 5.x, 6.3

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**NOTES**

- While Identity Manager is tested on Sun Java™ System Directory Server and Open LDAP, LDAP servers that are v3-compliant may work without any changes to the resource adapter.
- Sun Java™ System Directory Server 5 2005Q1 requires a patch to the Directory Server retro changelog plugin if you are using Active Sync. This patch is required for “regular” replication only (not for MMR replication)

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## Enterprise Resource Planning (ERP)

- MySAP ERP 2005 (ECC 6.0) Kernel version 7.00
- Oracle E-Business Suite on Oracle Applications 11.5.9, 11.5.10, 12
- Peoplesoft® PeopleTools 8.1 through 8.4.2
- Peoplesoft PeopleTools HRMS 8.0 through 8.8, 9.0
- SAP® R/3 Enterprise 4.7 (SAP BASIS 6.20)
- SAP® NetWeaver Enterprise Portal 2004 (SAP BASIS 6.40), 2004s (SAP BASIS 7.00)
- SAP® Governance, Risk, and Compliance (GRC) Access Enforcer 5.1, 5.2

## Help Desk

- BMC Remedy Action Request System Server 6.0, 6.3, 7.0
- BMC Remedy Service Desk Application 7.0
- Remedy Help Desk 6.0

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**NOTE** Many substantial differences between Help Desk 6.0 and Service Desk 7.0 exist in terms of their sample data, defaults, and out-of-the-box configuration. For example, the name of the “ticket” schema in Help Desk 6.0 is *HPD:HelpDesk*, while in Service Desk 7.0 it has been changed to *HPD:Help Desk*. Developers should consult the Remedy product documentation for details when upgrading.

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## Message Platforms

- Sun Java System Messaging and Calender Service Java Enterprise System 2005Q1 and later
- Lotus Notes® (Domino) 6.5, 7.0
- Microsoft® Exchange 2000, 2003, 2007

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**NOTE**

- Microsoft Exchange 2000, 2003, and 2007 are managed through the Active Directory resource adapter.
- Microsoft Exchange 2007 is supported on Windows 2003 only.

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- Novell® GroupWise 7.0 (using the Novell NDS adapter)

## Miscellaneous

- Flat files
- JMS Message Queue Listener (manages any JMS 1.0b or later compliant queue)
- Generic UNIX Shell Script

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**NOTE** The Generic UNIX Shell Script adapter runs scripts in supported shell types on supported UNIX operating systems.

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- Generic Windows Script Adapter

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**NOTE** The Generic Windows Script adapter runs scripts in the `cmd` shell on supported Windows operating systems that host the Sun Identity Manager Gateway.

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## Operating Systems

- HP OpenVMS 7.2, 8.3
- HP-UX 11.0, 11i v1, 11i v2
- IBM AIX® 4.3.3, 5.2, 5L, 5.3
- IBM OS/400® V4r3, V4r5, V5r1, V5r2, V5r3, V5r4
- Microsoft Windows® 2000, 2003
- Red Hat Linux 9.0
- Red Hat Linux Advanced Server 2.1
- Red Hat Linux Enterprise Server 3.0, 4.0
- Sun Solaris™ 9, 10
- SuSE Enterprise 9

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**NOTE** If you manage NIS accounts on Solaris, install patch 126632-01 on the resource to improve the performance of the `logins` command and the Solaris adapter.

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## Role Management System

- BridgeStream SmartRoles 2.7

## Security Managers

- eTrust CA-ACF2® Security
- eTrust CA-Top Secret® Security 5.3
- IBM RACF®
- INISafe Nexess 1.1.5
- RSA ClearTrust 5.5.2, 5.5.3
- RSA® SecurID® 5.0, 6.0, 6.1.2
- RSA® SecurID® for UNIX 5.1, 6.0, 6.1.2
- Scripted Host

## Web Access Control

- IBM Tivoli® Access Manager 4.x, 5.1, 6.0.0 FP09
- Netegrity® Siteminder® 5.5
- RSA® ClearTrust® 5.0.1
- Sun™ ONE Identity Server 6.1, 6.2
- Sun Java™ System Identity Server 2004Q2
- Sun Java™ System Access Manager 6 2005Q1, 7 2005Q4 (Realms supported as of 2005Q4), 7.1

## Browsers

Identity Manager supports the following browsers:

- Microsoft Internet Explorer 6.x, 7.x
- Safari 2.0 and later for Mac OS X 10.3.3 and later, 3.0.x
- Firefox 1.04, 1.05, 1.06, 1.5, 2.0.0.4

## Deprecated Identity Manager Features

The following Identity Manager features are deprecated. Support for these features will continue until the next major release of Identity Manager. Please contact your Customer Care representative or Customer Support if you have questions.

### Identity Manager Business Process Editor (BPE)

- The Business Process Editor (BPE) is deprecated, and will be removed in the next major release of Identity Manager. Please use the Identity Manager Integrated Development Environment (Identity Manager IDE) instead. (ID-17693)

### Meta View

- Meta View has been removed from new installations of Identity Manager. Customers who are using MetaView in a pre-8.0 version of Identity Manager will be able to continue using it. Please contact your Customer Care representative or Customer Support if you have questions. (ID-17244)

## Discontinued Software

Identity Manager operating systems, application servers, database repositories and managed resources included in the following tables are deprecated.

### Next Major Identity Manager Release

Identity Manager will continue support of deprecated software in the following table until the next major Identity Manager release. Please contact your Customer Care representative or Customer Support if you have questions about moving to newer versions of these software packages.

Software Category	Software Package
<b>Operating Systems</b>	<ul style="list-style-type: none"> <li>• Red Hat Linux Advanced Server 2.1, 3.0</li> <li>• Red Hat Linux Enterprise Server</li> <li>• Solaris 8</li> <li>• Windows 2000 SP3, 2000 SP4</li> </ul>
<b>Application Servers</b>	<ul style="list-style-type: none"> <li>• JBoss Application Server 4.0.x</li> <li>• Sun Java System Application Server Platform Edition 8.0</li> </ul>
<b>Repository Database Servers</b>	<ul style="list-style-type: none"> <li>• Oracle 9i</li> </ul>

<b>Software Category</b>	<b>Software Package</b>
<b>Resources</b>	<ul style="list-style-type: none"> <li>• BridgeStream SmartRoles</li> <li>• HP OpenVMS 7.2</li> <li>• IBM AIX 4.3.3</li> <li>• IBM Tivoli Access Manager 4.x</li> <li>• INISafe Nexess</li> <li>• Microsoft Active Directory 2000</li> <li>• Microsoft Exchange 2000</li> <li>• Microsoft SQL Server 2000</li> <li>• Microsoft Windows Server 2000</li> <li>• MySQL 4.x</li> <li>• Lotus Notes 6.5</li> <li>• Oracle 9i</li> <li>• Red Hat Linux Enterprise Server</li> <li>• SAP Governance, Risk and Compliance Access Enforcer 5.1</li> <li>• SecurID 5.0, 5.1</li> <li>• Siebel 7.0.4</li> <li>• Solaris 8</li> <li>• Sun Access Manager 6 (2005Q1)</li> <li>• Sun Java system Identity Server 2004Q2</li> <li>• Sun ONE Identity Server 6.1, 6.2</li> <li>• Sun ONE Directory Server 4.x</li> <li>• Windows 2000 SP3, 2000 SP4</li> </ul>
<b>Browsers</b>	<ul style="list-style-type: none"> <li>• Firefox 1.0.x</li> <li>• Mozilla</li> </ul>

## Identity Manager 8.0

Identity Manager 8.0 does not support the following discontinued software packages:

<b>Software Category</b>	<b>Software Package</b>
<b>Operating Systems</b>	<ul style="list-style-type: none"> <li>• IBM AIX 4.3.3</li> <li>• Solaris 7</li> </ul>

Software Category	Software Package
<b>Application Servers</b>	<ul style="list-style-type: none"> <li>• Apache Tomcat 4.1.x, 5.0.x</li> <li>• BEA Weblogic Express 7, 8.1</li> <li>• BEA Weblogic Server 7, 8.1</li> <li>• IBM Websphere Application Server - Express Version 5.1.1</li> <li>• IBM Websphere 4, 4.5, 5, 6.0</li> <li>• iPlanet 6.5</li> <li>• Sun ONE Application Server 7</li> </ul>
<b>Repository Database Servers</b>	<ul style="list-style-type: none"> <li>• IBM DB2 Universal Database for Linux, UNIX, and Windows 7.x</li> <li>• Microsoft SQL 2000</li> <li>• MySQL 4.1</li> <li>• Oracle 8i</li> <li>• SQL Server 2000</li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>• ActivCard 5.0</li> <li>• Blackberry RIM Enterprise Server 4+ (uses generic Windows script adapter) and Blackberry Enterprise Server scripts</li> <li>• IBM DB2 7.x</li> <li>• Lotus Notes (Domino) 5.0, 6.0.x</li> <li>• Microsoft Exchange 5.5</li> <li>• Microsoft Windows NT 4.0</li> <li>• MySQL 4.1</li> <li>• Natural</li> <li>• Novell® GroupWise 5.x, 6.0, 6.5</li> <li>• Novell® eDirectory on Novell NetWare 5.1, 6.0</li> <li>• Oracle 8i (through the Oracle resource adapter)</li> <li>• Red Hat Linux 8.0</li> <li>• Remedy® Help Desk 4.5, 5.0.</li> <li>• SAP R/3 v4.5, v4.6</li> <li>• Siebel 6.2</li> <li>• Sun Identity Manager Gateway running on Microsoft Windows NT 4.0</li> <li>• Sun ONE Identity Server 6.0</li> </ul>
<b>Browsers</b>	<ul style="list-style-type: none"> <li>• Internet Explorer 5.x</li> <li>• Safari 1.2.1+</li> </ul>

## API Support

The Identity Manager 8.0 Application Programming Interface (API) includes any public class (and any public or protected method or field of a public class) listed in the following table.

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**NOTE**      The `com.waveset.object.RepositoryProxy` is intended for internal use only.

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API Type	Class Names
Session	<code>com.waveset.msgcat.*</code> <code>com.waveset.util.*</code> <code>com.waveset.object.*</code> <code>com.waveset.exception.*</code> <code>com.waveset.expression.*</code> <code>com.waveset.config.*</code> <code>com.waveset.session.SessionUtil</code> <code>com.waveset.session.ScriptSession</code> <code>com.waveset.session.SessionFactory</code> <code>com.waveset.session.Session</code> <code>com.waveset.session.UserViewConstants</code>
Adapter	<code>com.waveset.adapter.*</code> <code>com.waveset.util.Trace</code>
Policy	<code>com.waveset.policy.PolicyImplementation</code> <code>com.waveset.policy.StringQualityPolicy</code>
Report	<code>com.waveset.report.BaseReportTask</code>
Task	<code>com.waveset.task.Executor</code> <code>com.waveset.task.TaskContext</code>
UI	<code>com.waveset.ui.FormUtil</code> <code>com.waveset.ui.util.RequestState</code> <code>com.waveset.ui.util.html.*</code>
Workflow	<code>com.waveset.provision.WorkflowServices</code> <code>com.waveset.session.WorkflowServices</code> <code>com.waveset.workflow.WorkflowApplication</code> <code>com.waveset.workflow.WorkflowContext</code>

Identity Manager SPE additionally includes the public classes listed in the following table.

API Type	Class Names
SPE	com.sun.idm.idmx.api.* com.sun.idm.idmx.txn.TransactionPersistentStore com.sun.idm.idmx.txn.TransactionQuery com.sun.idm.idmx.txn.TransactionSummary

These classes are the only classes that are officially supported. If you are using classes that do not appear in these tables, contact Customer Support to determine whether you will be required to migrate to a supported class.

## Deprecated APIs

The [“Deprecated APIs”](#) section in these Release Notes lists all Identity Manager Application Programming Interfaces (APIs) deprecated in this release and their replacements (if available).

# Upgrade Paths and Support Policies

This section provides information about the upgrade paths you should follow when upgrading Identity Manager, and describes Identity Manager's End of Service Life (EOSL) policy for the products software support.

## Identity Manager Upgrade Paths

Use the following to determine the upgrade path you must follow when upgrading to a newer version of Identity Manager.

**NOTE** Upgrading to Identity Manager 8.0 is recommended. When you upgrade to the latest software release, you get the latest new features, bug fixes, and supported resource versions.

Current Identity Manager Version	Target Identity Manager Version					
	2005Q3M1	2005Q4M3	7.0	7.1	7.1 Update 1	8.0
Identity Manager 5.0 SPx	2005Q3M1	2005Q4M3	2005Q4M3 > 7.0	2005Q4M3 > 7.1	2005Q4M3 > 7.1 > 7.1 Update 1	2005Q4M3 > 7.1 > 8.0
Identity Manager 2005Q1M3	2005Q3M1	2005Q4M3	2005Q4M3 > 7.0	2005Q4M3 > 7.1	2005Q4M3 > 7.1 > 7.1 Update 1	2005Q4M3 > 7.1 > 8.0
Identity Auditor 1.0						
Identity Manager 2005Q3M1		2005Q4M3	2005Q4M3 > 7.0	2005Q4M3 > 7.1	2005Q4M3 > 7.1 > 7.1 Update 1	2005Q4M3 > 7.1 > 8.0
Identity Manager 5.5						
Identity Manager 2005Q3M3		2005Q4M3	2005Q4M3 > 7.0	2005Q4M3 > 7.1	2005Q4M3 > 7.1 > 7.1 Update 1	2005Q4M3 > 7.1 > 8.0
Identity Manager SPE 1.0						
2005Q4M3 (6.0)			7.0	7.1	7.1 > 7.1 Update 1	7.1 > 8.0
Identity Manager 7.0				7.1	7.1 > 7.1 Update 1	8.0
Identity Manager 7.1					7.1 Update 1	8.0

**NOTE**

- When upgrading Identity Manager, you do not have to install Updates (*formerly called Service Packs or SPs*) within a major release to upgrade to the next major release. For example, when upgrading from Identity Manager 5.0 to 6.0, you do not have to install any of the 5.0 Service Packs.
- Updates for a major release are cumulative. After upgrading to the major release, you can install the latest Update without having to install all of the Updates (or Service Packs) for that release. For example, if you upgraded to Identity Manager 5.0, installing SP6 gives you all of the functionality provided in SP1 through SP5.
- Identity Manager Installation Pack 2005Q4M3 (version 6.0) was a major release. If you are upgrading from a pre-6.0 version of Identity Manager, Identity Auditor, or Identity Manager Service Provider, you must upgrade to Identity Manager Installation Pack 2005Q4M3 before advancing to later releases.

Updates to the Identity Manager documentation are provided as follows:

- **For Every release** (including Service Packs): Release Notes are provided to describe bug fixes, product enhancements, new functionality, and other important information.
- **For Major releases** (*x.0*): The complete Identity Manager documentation set is updated and republished.
- **For Minor releases and updates**: Individual publications are updated and republished or Documentation Addendum are provided.

## End of Service Life for Software Support

During the End of Service Life (EOSL) period, Identity Manager software support is offered in two phases:

- *Phase 1: Full Support*
- *Phase 2: Limited Support*

**NOTE**

The length of the Full Support Phase varies by product.

### Full Support Phase

During the Full Support Phase, Sun Microsystems, Inc. provides software support in accordance with the customer's support contract with Sun (including the applicable Service Listing) as set forth at:

<http://www.sun.com/service/servicelist/>

However, when a software product's EOL date is announced, customers will no longer have access to software updates and upgrades for that software product.

## Limited Support Phase

During the Limited Support Phase, Sun Microsystems, Inc. provides software support in accordance with the customer's support contract with Sun (including the applicable Service Listing) as set forth at:

<http://www.sun.com/service/servicelist/>

However, customers are not entitled to submit bugs or to receive new patches from Sun Microsystems, Inc. As with Full Support Phase, after the software product's announced EOL date, customers will no longer have access to software updates and upgrades for that software product.

The following table provides information about the EOSL and EOL dates for older versions of Identity Manager.

Product Name	Product Status	Last Ship Date	Phase 1 End Date	Phase 2 End Date (EOSL)	EOL Announcement
Sun Java System Identity Manager 7.0	Post-RR				
Sun Java System Identity Manager 6.0 2005Q4	Post-RR	05/25/2007	05/25/2008	05/2012	11/20/06
Sun Java System Identity Auditor 1.0 2005Q1	Post-RR	02/02/2007	02/2008	02/2012	08/01/06
Sun Java System Identity Manager Service Provider Edition 1.0 2005Q3	Post-RR	02/02/2007	02/2008	02/2012	08/01/06
Sun Java System Identity Manager 5.0 2004Q3	EOL	08/11/2006	08/2007	08/2011	02/07/06
Sun Java System Identity Manager 5.0 SPx 2004Q3	EOL	08/11/2006	08/2007	08/2011	02/07/06
Sun Java System Identity Manager 5.5	EOL	08/11/2006	08/2007	08/2011	02/07/06
Waveset Lighthouse 4.1			03/2006	03/2010	

## Identity Manager's Deprecation Policy

See *Identity Manager Upgrade* for a complete description of Identity Manager's deprecation policy for removing interfaces or changing behaviors.

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## Redistributable Files

Sun Java System Identity Manager 8.0 does not contain any files that you can redistribute.

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## How to Report Problems and Provide Feedback

If you have problems with Sun Java System Identity Manager, contact Sun customer support using one of the following mechanisms:

- Sun Software Support services online at <http://www.sun.com/service/sunone/software>  
This site has links to the Knowledge Base, Online Support Center, and ProductTracker, as well as to maintenance programs and support contact numbers.
- The telephone dispatch number associated with your maintenance contract

So that we can best assist you in resolving problems, please have the following information available when you contact support:

- Description of the problem, including the situation where the problem occurs and its impact on your operation
- Machine type, operating system version, and product version, including any patches and other software that might be affecting the problem
- Detailed steps on the methods you have used to reproduce the problem
- Any error logs or core dumps

# Sun Welcomes Your Comments

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To share your comments, go to <http://docs.sun.com> and click Send Comments. In the online form, provide the document title and part number. The part number is a seven-digit or nine-digit number that can be found on the title page of the book or at the top of the document. For example, the title of this book is Sun Java System Identity Manager May 2008 Release Notes, and the part number is 820-2958-10.

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## Additional Sun Resources

Useful Sun Java System information can be found at the following Internet locations:

- Documentation for Sun™ Identity Manager  
<http://docs.sun.com/app/docs/prod/ident.mgr#hic>
- Sun Java System Documentation  
<http://docs.sun.com/prod/java.sys>
- Sun Java System Professional Services  
<http://www.sun.com/service/sunps/sunone>
- Sun Java System Software Products and Service  
<http://www.sun.com/software>
- Sun Java System Software Support Services  
<http://www.sun.com/service/sunone/software>
- Sun Java System Support and Knowledge Base  
<http://www.sun.com/service/support/software>
- Sun Support and Training Services  
<http://training.sun.com>
- Sun Java System Consulting and Professional Services  
<http://www.sun.com/service/sunps/sunone>
- Sun Java System Developer Information  
<http://developers.sun.com>

- Sun Developer Support Services  
<http://www.sun.com/developers/support>
- Sun Java System Software Training  
<http://www.sun.com/software/training>
- Sun Software Data Sheets  
<http://www.sun.com/software>

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# Identity Manager 8.0 Features

This section of the Identity Manager 8.0 Release Notes provides information about

- [What's New in This Release](#)
- [Bugs Fixed in This Release](#)

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## What's New in This Release

This section provides additional information about the new features provided in Identity Manager 8.0, and the information is organized into the following sections:

- [Major Features](#)
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## Sun's New Patch Process

Beginning with the release of Identity Manager 7.1 Update 1, updates containing major and critical customer-reported bug fixes are now delivered through a *patch process*, which replaces the older hot-fix process.

Patches are developed, tested, and released in six-week intervals. These patches have a GUI installer as well as a manual installation option, and they update the files in `/WEB-INF/lib`. Instructions for installing the patch will be included in the patch Release Notes, which are distributed in PDF format. Any fixes to the Gateway or to Password Sync will be described in the Release Notes and will require updating with the installation of the patch.

Identity Manager patches are cumulative, so you can expect fewer problems with unique fixes. You should plan to update to the latest patch level when installing or upgrading to a major or minor release. For example, if patch 3 is available when you install or upgrade to 8.0, you should apply patch 3 after installing or upgrading to 8.0. You would not be required to install patches 1 and 2 because patch 3 contains all the functionality in the previous patches.

The patch process also makes it easier for you to track a fix by its actual bug number. However, it is still possible that a fix made against an older version may not yet be available in a newer version. Regardless of which process your current version of Identity Manager follows, you must confirm that the new, target Identity Manager version contains all of the bug fixes that you need.

When a new patch is released, an announcement is sent to all of customer support. Patches are available through customer support. Please contact Sun customer support at <http://www.sun.com/service/online/us> for the latest patch available.

## Major Features

Identity Manager 8.0 provides the following major new features:

- [Role Enhancements](#)
- [Enhanced Reporting with Data Exporter](#)
- [Attribute Configuration](#)

### Role Enhancements

Identity Manager 8.0 adds Role life cycle management providing the ability to require change approval on Role creates, edits and deletes as well as apply Role changes to all assigned Users. In addition, User-to-Role Life cycle management has been improved enabling support for future and temporary Role assignments. Role types with configurable features, including by default, Business Roles, IT Roles, Applications, and Assets, are now provided to encourage best practices with regards to Role management. For example, Business Roles can contain roles required by all,

conditional for some, and optional (by request and may require approval) for others. This enables the ability for the Business Role designer to define coarse grain access, while delegating to the user or the user's manager the ability to fine tune the access assigned to each user, within the scope of a single Business Role.

## Enhanced Reporting with Data Exporter

The Data Exporter feature has been added to allow the operational data used and produced by Identity Manager to become available for use by other processes and applications . Data Exporter allows data held by and flowing through Identity Manager to be periodically exported to a customer-managed data warehouse or third-party business intelligence and reporting tools. Data Exporting is optional, and when enabled customers can configured when and what data is exported. The exported data can be used to answer historical questions regarding 'Who had access to Resource X, and who approved that access?'. It can also be used to provide reports on IdM's operational behavior over time, such as 'Provision Operations by Resource' and 'Workflow Manual Action Response Times'. Decoupling the operational data (held inside the Identity Manager repository) and the historical data (exported by Data Exporter) gives the user explicit control over the lifecycle of this data. Providing the data in a documented, schema-conformant manner gives the user the ability to construct and execute analysis processes that will remain valid across future releases of Identity Manager.

## Attribute Configuration

Extended, queryable, and summary attributes can now be configured for roles as well as users. The new extended attribute configuration supports specification of value syntax (STRING, INT, DATE, or BOOLEAN), whether the attribute can have a single or multiple values, and a text description for the attribute.

## Administrator and User Interfaces

- Users now can specify a custom form for the Question Login form and Anonymous Login form through the Configure Form and Process Mappings page. (ID-4697)
- The role administration interface has been enhanced to support the new roles functionality. See the “Roles and Resources” chapter in the *Identity Manager Administration 8.0* publication for details. (ID-15518)
- By default, process diagrams have been turned off in this release of Identity Manager. Process diagrams can be turned on by modifying the System Configuration object and restarting your application server(s). For instructions, see the “Enabling Process Diagrams” section in *Identity Manager Administration 8.0*. (ID-16337)

- An optional safe-guard has been added to the Edit Reconciliation Policy page. This option evaluates the number of missing accounts on a resource and, if a threshold is exceeded, prevents the reconciler from unlinking them. See the "Data Loading and Synchronization" chapter in the *Identity Manager Administration 8.0* publication for details. (ID-16391)
- Identity Manager's behavior has changed with regards to users with pending work items who need to be deleted from Identity Manager. For details, see *Identity Manager Administration 8.0*, "Administration" chapter, "Managing Work Items" section, "Delegations to Deleted Users" subsection. (ID-16417)
- When defining an AdminRole, the scope of control can be specified to exclude all controlled child organizations and their contained objects by selecting the **Exclude All Controlled Child Organizations and Contained Objects** checkbox. If not selected, a user assigned the AdminRole will be granted the associated capabilities on all child organizations and their contents. (ID-16859)
- Admin roles now will be displayed as names in search results. (ID-17130)
- Identity Manager 8.0 simplified the results pages in the End User Interface to display a status message. The default upgrade setting is to retain the original process diagrams, while new installations display the status message. The process diagram option can be set to default by clicking Configure->User Interface and enabling the Enable End-User Process Diagrams setting.

To enable process diagrams for the end user interface, process diagrams must be enabled for the product as a whole. For more information on enabling process diagrams for the product as a whole, please reference ID-16337 in [Administrator and User Interfaces](#). (ID-17365)

- The end-user login form has been simplified and rearranged to improve usability. The JSP `user/login.jsp` has been modified, so any user customizations to this file will need to be manually merged on upgrade. (ID-17368)
- The new default End User Password Change form allows users to change their password. The password policies for all resources assigned to the user are aggregated and summarized in this form, and password changes apply to all assigned resources. The original Basic Change Password form should be specified for deployments in which the user needs to select which resources to apply the password change. (ID-17371)
- The error message presented to users at login indicating the need to answer authentication questions is now rendered as a warning. (ID-17549)
- When the Anonymous Enrollment feature is enabled, the end-user User Interface no longer displays a "Request Account" button. Instead, the text "First time user?" displays, followed by a "Request Account" link. Additional information is displayed below the link. The text on this page is customizable. See the *Identity Manager Technical Deployment Overview* publication for details. (ID-17582)

- The DatePicker display component now has a `disableTextInput` property that can be utilized to prevent user input via a text field, which forces the user to select a date via the pop-up calendar. (ID-17586)

## Auditing

- Audit log entries that describe resource account provisioning actions will now be visible to audit administrators in the object groups that contain the affected resources, whether or not these groups contain the user that is the subject of the action. (ID-17724)
- Email notification events are now audited. In the Administrator interface, there is a new Audit Group on the Audit Configuration page (**Configure > Audit**) named *Event Management*. (ID-17734)

## Data Exporter

- Data Exporter allows Identity Manager data to be periodically exported to a customer-managed data warehouse for further processing.

## Forms

- Fields having a “confirm” property value referring to a source component (for example, the Confirm Password field of the tabbed user form) no longer have their values automatically set to the source component’s value when the form is submitted to the server and the confirm component’s value is null. Because of this change, ensure that any source/confirm field pairs having a default expression apply the expression to both the source field as well as the confirm field. (ID-17838)

## Identity Manager Business Process Editor (BPE)

- The Business Process Editor (BPE) is deprecated, and will be removed in the next major release of Identity Manager. Please use the Identity Manager Integrated Development Environment (Identity Manager IDE) instead. (ID-17510)

## Identity Manager Integrated Development Environment (Identity Manager IDE)

- The Identity Manager Integrated Development Environment (Identity Manager IDE) application is now provided on <https://identitymanageride.dev.java.net>. Instructions for installing, configuring, and migrating projects are also provided on this site. (ID-17700)

## Installation

- This version of Identity Manager no longer supports the following application servers: (ID-16369)
  - Apache Tomcat Version 4.1.x
  - BEA Weblogic Express 8.1
  - BEA Weblogic Server 8.1
  - IBM Websphere Application Server - Express Version 5.1.1
  - IBM Websphere 6.0
  - Sun ONE Application Server 7

## Password Synchronization

- Versions of PasswordSync that are older than version 7.1.1 should be updated to at least version 7.1.1 on all domain controllers.

Support for the `rpcrouter2` servlet has been deprecated in version 8.0 and will be removed in a future release. PasswordSync versions 7.1.1 and newer support the new protocol.

See the *Identity Manager Administration* book for information on how to install PasswordSync.

- There are separate installers for the 32-bit and 64-bit versions of PasswordSync. The 32-bit installer will now only run on 32-bit versions of Windows, and the 64-bit version will only run on 64-bit versions of windows. Attempting to run the incorrect version of the installer will cause an error. (ID-17290)

## Reports

- Identity Manager Usage Reports and Identity Auditor Policy Violation Reports now include charts when downloaded in PDF format. (ID-10719)
- A new report named "Individual User Audit Log Report" is now available. As with the AuditLog reports, the Individual User AuditLog report is based on events captured in the system audit log. This report, however, prompts for a user to report on, and returns a list of activities that have been performed on that user. For more information, see the "Reporting" chapter in the *Identity Manager Administration 8.0* publication. (ID-16976)
- The AuditReportTask (and any report that uses the LogRecordFormatter) can now select which columns appear on the report. Use the `useCustomColumns` and `customColumns` attributes in the TaskDefinition and the TaskTemplate. (ID-17712)
- You can now customize reports so that administrators who have only run-report capabilities can specify report parameters before running a report. (ID-17733) This change allows these administrators to set the report parameters before running the report or before downloading a .csv or .pdf file. Identity Manager does not save changes to the report definition that are generated this way.

To use this feature for existing reports, add `alwaysProcessForm` (set to `true`) to the TaskTemplate. To add this feature to new reports other than the Individual User Auditlog Report, add a field named `alwaysProcessForm` (set to `true`) to the TaskDefinition launch form.

The administrator who is executing a report with `alwaysProcessForm` (set to `true`), should have the appropriate capabilities to fetch the desired data from the repository. For example, if the report will report on roles, the administrator must have the capability to obtain a list of available roles.

- You can select which columns appear in the Individual User Audit Report Task report (and any report whose executor is `com.waveset.report.AuditReportTask`) by working with the `useCustomColumns` and `customColumns` attributes in the Task Definition and the Task Template. Any report other than the Individual User Audit Report will require `taskDefinition` and `TaskTemplate` objects to be updated to include the `customColumns` feature. (ID-17744)
  - `useCustomColumns --` (Boolean) Specifies whether the custom column feature is on.
  - `customColumns --` (Map) Specifies the columns to include in the report, where *key* identifies the Message Catalog key, and *value* represents the Message Catalog value.

See the Individual User Audit Report for an example.

- The Download buttons are now available on the main Reports page for an IDM administrator who has only Run Audit Report capability. (ID-17881)

## Repository

- Identity Manager installations that use Oracle as the repository have the option of converting the `accountAttrChanges` field in the audit log table from `VARCHAR(4000)` to `CLOB`. This change is optional, and should only be performed if you have noticed truncation errors in the audit log. The sample DDL script is in `web/sample/convert_log_acctAttrChangesCHAR2CLOB.oracle.sql`. Be sure to back up the affected tables before running the conversion script. (ID-17343)

## Resources

### New Resource Adapters

The following new resource versions have been added this release:

- The Sybase ASE resource adapter replaces the deprecated Sybase resource adapter. The Sybase ASE adapter provides the ability to manage users in multiple databases. (ID-16872)

### Resource Adapter Updates

- The mainframe adapters support IBM Host on Demand V10. (ID-6419)
- The Microsoft SQL Server adapter resource wizard now simplifies the selection of databases and automatically maintains the `userName$(dbname)` and `roles$(dbname)` attributes in the schema accordingly. (ID-8546)
- The SAP adapters can now display internationalized messages. (ID-9077)
- The `com.waveset.adapter.AttrParse` class has been removed. Use `com.waveset.object.AttrParse` instead. (D-11870)
- The UNIX adapters now support SSHPubKey connections. This new feature allows users to connect to remote hosts without entering a password for a trusted workstation. (ID-11959)
- The SAP adapter can provision to any SAP table called by `BAPI_USER_CREATE1` and `BAPI_USER_CHANGE`, most notably the `GROUPS` and `PARAMETER` tables. (ID-12217)
- The name of an Account can now include "@" symbols as long as the resource that defines the account allows this. (ID-12383)

Resource names and resource IDs must *not* include "@" symbols. A resource name or a resource IDs that contains an "@" symbol will cause Identity Manager to parse the View ID incorrectly.

- A new boolean account attribute TSO.Delete Segment has been added to the RACF and RACF\_LDAP resources. If this Attribute is set to true, the TSO Segment will be deleted from the RACF user. (ID-13347)

If you are upgrading and want to include this attribute, add the following element to the AccountAttributes section of the Resource definition:

```
<AccountAttributeType id='<next ID in sequence>' name='Delete TSO Segment'
syntax='boolean' mapName='TSO.Delete Segment' mapType='boolean' writeOnly='true'>
```

- The RACF and RACF LDAP adapters can be configured to support attributes that are not in the segments supported by default. (ID-13351)
- The SAP Resource Adapter now returns the list of available user types and user groups. (ID-16123)
- The same gateway can now be used for provisioning and pass-through authentication. NetWare accounts. See the *Identity Manager Resources Reference* for information about implementing this feature. (ID-16584)
- The **Ignore Siebel 8.0 nextRecord() Error** resource parameter allows the Siebel CRM adapter to ignore the nextRecord() error that occurs on Siebel 8.0. For more information about this error, refer to Siebel Alert 1315. (ID-16779, 18159)
- The SAP adapter does not attempt to rename accounts when the **Enable CUA** resource attribute is set to true. (SAP does not support renames when in CUA mode.) (ID-16986)
- The database table resource adapter now supports renaming accounts. (ID-16993)
- Added the **Number of Users Read per Connection** resource parameter to the SAP adapter. This parameter ensures that memory is being released in a timely manner. (ID-17017)
- The Solaris resource adapter can now force users to change their passwords upon next login. To enable this feature, add `expirePassword` to the Identity System User Attribute column of the schema map and `force_change` to the Resource User Attribute column. This attribute type must be set to string. (ID-17032)
- The SAP, SAP HR, and AccessEnforcer (underlying SAP implementation) adapters now support Secure Network Communications (SNC). See the *Identity Manager Resources Reference* for information about implementing this feature. (ID-17059)
- The built-in Identity Manager pool for JDBC connections has been improved to support a maximum idle timeout. Connections which are held unused in the pool longer than the maximum idle timeout are closed and discarded. (ID-17107)

During an upgrade to 8.0, existing resource instances of the following adapters will be altered to use a setting of 600 seconds (10 minutes) for the maximum idle timeout:

- Database Table

- Microsoft SQL Server
- MIIS
- Oracle ERP
- Oracle
- Scripted JDBC
- Sybase ASE

Custom resource adapters that extend `JdbcResourceAdapter` can also take advantage of the new feature by adding a new resource attribute named `idleTimeout`.

The `debug/Show_JDBC.jsp` page has been enhanced to display additional related to idle timeouts.

- Identity Manager SAP adapter now provides the `accountLockedNoPwd` and `accountLockedWrngPwd` account attributes. The `accountLockedNoPwd` attribute indicates whether the account is locked because the user has no password. The `accountLockedWrngPwd` attribute indicates whether the account is locked because of failed login attempts. (ID-17296)
- The `sendKeys(EncryptedData)` method has been added to the `HostAccess` class and can be used to avoid logging passwords. (ID-17544)
- The database table adapter handles the Oracle timestamp datatype properly if you select the **Native Timestamps** check box on the Resource Parameters page. (ID-17551)
- A new resource parameter, **Receive Timeout**, is now available on the JMS Listener adapter. It allows you to configure how long the adapter will wait for an incoming message before terminating the poll. It is defaulted to 10 seconds. (ID-17935)
- The JMS Listener adapter now establishes a new connection for each poll. (ID-17941)
- The JMS Listener adapter can now be monitored with Java Management Extensions (JMX). (ID-17943)
- Password updates to NDS Groupwise now handle encrypted passwords correctly. (ID-18020)
- A resource parameter, `Search Scope`, has been added for Sun Access Manager resources in legacy mode. This attribute specifies the scope for searches of Access Manager objects. Valid values are `oneLevel` and `subTree`. `subTree` is the default value. (ID-18079)

## Roles

- Owners can be specified for each role either statically or dynamically with a rule. (ID-10602)
- When you import roles containing links to back to existing super roles, Identity Manager now updates the existing roles with links back to the newly imported roles. (ID-15482)

Identity Manager detects and creates links from existing super roles back to the subroles that reference them. During upgrade, Identity Manager invokes the RoleUpdater class used to repair the roles.

You can update roles outside the upgrade process by importing a new `RoleUpdater.xml` file found in `sample/forms/RoleUpdater.xml`. By default, Identity Manager adds the subrole links during upgrade or when you import `RoleUpdater.xml`.

To disable this new functionality, set the `RoleUpdater` attribute `nofixsubrolelinks` to `true`. For example,

```
<MapEntry key='nofixsubrolelinks' value='true' />
```

See ID-15053 for related information about automatically updating roles during import.

- Role management in Identity Manager has undergone a major revision. New functionality has been added that greatly enhances the ability to do Role life-cycle management, as well as User-to-Role life-cycle management. Identity Manager now supports four role types: Business Roles, IT Roles, Applications, and Assets. Organizations that upgrade from an earlier version of Identity Manager to version 8.0 will automatically have their legacy roles converted to IT Roles. For detailed information on how roles work in Identity Manager 8.0, see the “Roles and Resources” chapter in *Identity Manager Administration 8.0*. (ID-17677)
- The role administration interface now supports the ability to apply role changes to assigned users. (ID-17719)
- The user summary and role reports now report more information about roles and role assignments. (ID-17751)
- Identity Manager now supports extended attribute values on roles. (ID-17770)

## Scenarios

- Identity Manager 8.0 does not include the Sun Communications Services scenario previously located in `idm/sample/scenario1`, and the HR Database/Active Directory Deployment scenario previously located in `idm/sample/scenario2`. References to these scenarios are no longer included in the *Identity Manager Technical Deployment Overview*. (ID-18519)

## Security

- The question login interface now works naturally when used with pass-through authentication using LDAP and AD resources. Previously, when users forgot their passwords, they were required to enter their Identity Manager account ID (which they might not have known) instead of the resource account ID. The interactive challenge page now requires the user to re-enter both their resource account ID and password, where previously only the password was required. (ID-9616)
- SSH authentication now allows private/public key pairings. This new feature allows users to connect to remote hosts without entering a password for a trusted workstation. (ID-11959)
- Passwords stored in the password history section of the user object will now be stored in original case. The comparison made during enforcement of the password policy remains case-insensitive, so this change will not affect product behavior. (ID-12705)
- This release includes a security feature to prevent Cross-site Request Forgery (CSRF) attacks. The feature is not enabled by default. Cookies are required to use this feature. If you have cookies disabled for security reasons, do not enable this feature as it will prevent you from using Identity Manager. There is no user-sensitive data present in the cookie, and it only lives in memory during a user's session. (ID-16703)

To enable the security guard, edit the system configuration object and change `security.csrfGuardToken.enable` to `true`. See *Identity Manager Administration 8.0* for instructions on how to edit the system configuration object.

- Identity Manager now includes a new task-based capability named Debug that the Identity Manager debug pages require before users can access and execute operations. Previously, users with certain capabilities could potentially access and execute operations from the debug pages without proper permissions. Now, users who do not have the Debug capability will be sent to an error page. By default, the administrator and configurator users are assigned this capability. Additionally, the Waveset Administrator and Security Administrator capabilities include this new Debug capability. (ID-16999)
- The ability to set an expiration period for accounts that have been locked due to multiple errors in answering questions to login has been added. To implement this feature select the following options:
  - Under Security / Policies, select a policy to edit.
  - Under "User Account Policy Options" see the new option: "Account lock created by failed question logins expires in" which can have a value and a time unit set. A value of 0 means that question locks will never expire. (ID-17139)

- Failed password and question login counters are not cleared during automatic account lockout expiry. Both failed password and failed question login attempts are correctly displayed in end-user and administrator interfaces. (ID-17412)
- `Waveset.properties` now includes the `ui.web.baseHrefURL` property to support configuration using relative URLs. (ID-17763)
- Identity Manager now supports configuration of PKCS#11 keystores. To incorporate the keystores, it was necessary to make a non-backwards-compatible change to the `TransactionSigner` HTML component. (ID-17769)

The display property `supportedKeyStoreTypes` is no longer supported. There is now a single-valued `supportedKeyStoreType`. This can be one of the following: JKS, PKCS12, PKCS11. The default is determined by the system configuration property `security.nonrepudiation.defaultKeystoreType`. In general, it should be sufficient to simply set the system-wide property `security.nonrepudiation.defaultKeystoreType`.

In order to add PKCS11 signing support, the `TransactionSigner` applet must use functionality only available in JRE 1.5. Any clients using the `TransactionSigner` applet must have JRE1.5 installed and configured as the JRE for their browser.

- Identity Manager now provides support for relative URLs. (ID-18507)

To implement this feature, set the following values in the `Waveset.properties` file:

- Set the `ui.web.relativeURL` property to true.
- Set `ui.web.useBaseHref` property to false.
- Set `ui.web.baseHrefURL` property the context where Identity Manager is deployed in the form of `/IDM/` (for example, `ui.web.basehrefURL=/idm/` ).

## Server

- Performance now significantly increases as the number of users that are dynamic members of an object group increases. (ID-17561)
- Identity Manager 8.0 consolidates the locations where an administrator specifies extended, queryable, and summary attributes for user objects into the new `IDM Schema Configuration` object. (ID-17784) In prior versions of Identity Manager, an administrator edited the `User Extended Attributes` configuration object to add extended attributes for user objects and the `UserUIConfig` configuration object to specify additional queryable or summary attributes for user objects. An administrator now edits the `IDM Schema Configuration` object for these purposes.

Changes to the `IDM Schema Configuration` object are not effective for an Identity Manager server until the next time the server starts. The presence of the `IDM Schema Configuration` object inhibits re-conversion. For more information, see the “[Upgrade Issues](#)” section of the Release Notes.

## SPML

- The OpenSPML implementation now includes a SPML timeout setting for Web Service calls. (ID-17687)
- Those who used SPMLv2 in previous releases, and depended on the value of the "objectclass" attribute, should be aware that the value of that attribute is now maintained under the "saml2ObjectClass" attribute. (ID-17757)

## Synchronization

- Previously, the `idmManager` attribute was not showing up under the `activesync` namespace on certain adapters during Active Sync form processing. In this release, the `toHashMap` method has been modified to append the `idmManager` attribute to the returned Map so that it can be synced against during Active Sync. (ID-16717)

## Other

- The `com.waveset.server.Server` functions `public Map getResourceObjectListCache()` and `public Map getResourceObjectGetCache()` have been deprecated. These caches are internal data structures. Code depending on these structures will no longer function. (ID-14790)
- Identity Manager now has a product registration feature. To register, you will need a Sun Online Account and password. If you do not have a Sun Online Account, you can register for one by completing the form at this address: (ID-17133)

<https://reg.sun.com/register>

Identity Manager can be registered from the console or by using the Administrator interface. Registering from the console allows you to also create a local service tag, which can be used with Sun Service Tag software to track your inventory of Sun systems, software, and services. For more information, see the “[Registering Identity Manager](#)” section in *Identity Manager Administration 8.0*.

- When using the Product Registration feature, if your application server is not configured to allow outgoing SSL connections, you may receive the following error message: (ID-18546)

```
Failed to register on Sun Connection server due to invalid Sun Online Account user/password.
```

To resolve this issue, add the appropriate trusted root certificate(s) to your application server's keystore. Consult your application server's documentation for details.

- When using the Product Registration feature, if old versions of `xml-apis.jar` and `xercesImpl.jar` are present in your application server's classpath, you may receive the following error message:

```
java.lang.NoSuchMethodError:org.w3c.dom.Node.getTextContent()Ljava/lang/String;
```

To resolve this problem, modify the classpath so that only the most recent versions of `xml-apis.jar` and `xercesImpl.jar` are present. (ID-18547)

- When using the Product Registration feature, Java on your Identity Manager server(s) must be properly configured for SSL. All JARs referenced in your `java.security` file (or equivalent) need to be present. (ID-18548)

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# Bugs Fixed in This Release

This section describe the bugs fixed in Identity Manager 8.0, and the information is organized as follows:

- [Administrator and User Interfaces](#)
- [Auditing](#)
- [Delegations](#)
- [Forms](#)
- [Installation](#)
- [Ih Console](#)
- [Logging](#)
- [Organizations](#)
- [Provisioning](#)
- [Reports](#)
- [Repository](#)
- [Resources](#)
- [Roles](#)
- [Security](#)
- [Server](#)
- [Service Provider](#)
- [Synchronization](#)
- [Workflow](#)
- [Additional Defects Fixed](#)

## Administrator and User Interfaces

- Users now can specify a custom form for the Question Login form and Anonymous Login form through the Configure Form and Process Mappings page. (ID-4697)
- The DatePicker form UI component now supports `action=true`. (ID-4930)
- The NetCharts applet has been replaced by a JGraph image. (ID-14736)
- The Server Tasks table now sorts correctly based on type. (ID-14850)
- When enforcing a password policy, Identity Manager was not including the initial user password in the password history. Instead, only changed password values were being tracked. This meant that if a policy stated that the past three passwords could not be reused, and a user had only changed their password twice, Identity Manager would still allow the initial password to be reused. This bug has been fixed in this release. (ID-15026)
- When unassigning resource accounts from a user using the Edit User functionality in the UI, the SITUATION of the accounts in the account index are now properly updated in all cases. (ID-15310)
- Previously, the end-user interface menu that allowed approval work-items to be forwarded to another approver was not populated correctly. This has been fixed. Now this list is populated with a list of approvers that is within the scope of control of the user logged into the end-user interface. (ID-15935)
- Previously, when a timeout occurred on a ManualAction WorkItem, the timeout error was not returned to the user. Instead, the user would receive a stale workflow process diagram that would give the impression that the form was processed correctly. This has been fixed. Now, the user is redirected to the `workItemTimeout.jsp` page unless the `IgnoreTimeout` option is enabled. (ID-16467)
- You can now edit and save current or previous workItem delegations. (ID-16564)
- When an administrator creates delegations on behalf of a user, the administrator cannot select delegates outside of the user's scope of control. The administrator's scope of control is now the same as the user on whose behalf the delegation is being made. Previously, when creating delegations on behalf of a user, administrators could select delegates that users could not. (ID-16561)
- The UI will now display failed password login and failed authentication question login numbers when Sun Identity Manager is unable to authenticate a user. (ID-17188)
- Sorting in the user interface Pending Approvals table works correctly. (ID-17304)
- The results page following an operation now always includes an OK button. (ID-17482)

- A confirmation page indicting success or failure always displays after setting a password through the Forgot My Password button for new installations and upgrades where the `System Configuration.forgotPasswordChangeResults.User` has not been explicitly set. If the `System Configuration.forgotPasswordChangeResults.User` was explicitly set, the behavior remains unchanged. (ID-17619)
- Drop-down boxes for month values now display a complete list of months in all browsers. (ID-17740)
- Several cross-site scripting (XSS) vulnerabilities are now fixed. (ID-17748, 18054)
- Tables generated by the SimpleTable UI display component and the `gentable.jsp` file now correctly close `<TH>` tags in the rendered HTML. (ID-17945)
- When a single browser is connected to both the end user interface and the administrative interface, forms are now displayed only at the appropriate interface. (ID-18039)
- JavaScript is not allowed in the Status column of the resource lists, but safe HTML markup is allowed in the string content and is now displayed correctly. (ID-18050)
- An error in the bulk operations Form now generates an `InlineAlert` without visible HTML markup. (ID-18338)
- A directory traversal vulnerability has been fixed in the UI, which allowed users to gain unauthorized access to files residing on the Identity Manager server. (ID-18653)
- The List Accounts page now displays in more quickly. (ID-18751)

## Auditing

- The Audit log now properly logs “Prioritize” actions. (ID-16924)
- Previously, when creating an Audit Policy where the policy is restricted to a resource with an account type, a `NullPointerException` would occur in the user interface. This problem has been fixed. (ID-16977)
- Previously, creating an Audit Policy rule using “`isTrue`” would result in an error stating the rule requires a comparison value. This problem has been fixed. (ID-17041)
- Attestation comment text is no longer cleared inappropriately. (ID-17418)
- Email notification events are now audited. (ID-17708)
- Duplicate database keys are now removed from the audit log. The duplicate keys are extended type (AV) and extended action (PE). (ID-18642)

The actions that are logged with the PE key are EndProcess and PreOperation. The PreOperation action now uses a DB key of PP. The types that are logged with AV are AccessReview and AccessReviewWorkflow. The AccessReviewWorkflow type now uses a DB key of AW.

Existing audit records with PE are interpreted as EndProcess actions by auditlog reports. Existing records with AV are now interpreted as AccessReview.

Updating audit records in the database with SQL can be a security concern (because the records will appear to have been tampered with), so it is recommended that these records (with PE or AV as the logDb Key) created before version 8.0 be ignored.

## Delegations

- Delegation cycles are now checked at execution time and at creation time. (ID-17387)
- In a two-hop delegation, any existing remediation work items now revert back to the first delegator when the first delegator ends the delegation for remediation work items. (ID-18435)
- All possible work item types that can be delegated now appear in the drop down list when delegation is being configured. In the Administrator UI, the delegation drop down no longer filters the work item types that appear, so all possible work item types that can be delegated are now listed. In the end user UI, only the five basic work item types are listed in the drop down list. (ID-18496)
- Identity Manager 8.0 added role type and role change approvals (including role type specific change approval), along with the ability to delegate these work item types. Support was also added to allow specific roles to be designated when delegating new role type or role change work item types. (ID-18558)

## Forms

- MultiSelect supports a new property, `displayCase`, which can be set to either upper or lower. This convenience feature is equivalent to a defined valueMap that maps each of the allowed values to their uppercase or lowercase equivalents. (ID-8356)

## Installation

- If you are upgrading from 6.0 or 7.0 to version 7.1 or 8.0, and using LocalFiles, you must export all of your data before upgrading and then re-import the data afterdoing a clean installation of 7.1 or 8.0. (ID-15366)

## lh Console

- The `lh syslog` command now correctly returns matching records when a very large number of days is specified. (ID-17844)

## Logging

- The `com.waveset.ui.FormUtil` class now prints a brief message to the application server log that refers to the system log when `ClassNotFoundException` errors (and other errors, when encountered in this class) occur. The System log now contains the details of the error. Previously, the stack traces of these exceptions were printed the application server log. (ID-18473)

## Organizations

- The `User` and `ObjectGroup` objects were enhanced (defect 14973) to support multiple per-user/per-objectgroup custom forms, extending the two (`View User`, `Edit User`) that they previously supported. These new forms are stored in a `<CustomForms>` element in the XML for both `User` and `ObjectGroup`. `waveset.dtd` did not declare `<CustomForms>` as an element of `<ObjectGroup>`, so an `ObjectGroup` XML with custom forms would not validate. This defect adds `<CustomForms>` as an element to `waveset.dtd`. (ID-17812)

## Provisioning

- If multiple resources fail to provision on the initial provisioning attempt and they have different retry periods, all resources where provisioning failed are now retried as specified by retry period and retry count. Previously, only the resources with the shortest retry period were actually retried. (ID-18190)

## Reports

- The `ReportsConfig` and `TrackedEvents` objects are now preserved when upgrading from a previous release. (ID-17363).

To overwrite the existing "Reports Configuration" objects (`ReportsConfig` and `TrackedEvents`), after the upgrade process is complete, remove the following text below from the top of the `reportConfig.xml` file, and import the file into the Identity Manager Repository.

```
<ImportCommand type='preserve'>
  <ObjectRef type='Configuration' id='#ID#Configuration:ReportsConfig' />
  <ObjectRef type='Configuration' id='#ID#Configuration:TrackedEvents' />
</ImportCommand>
```

- You can now concurrently execute Reports that have the same Task name by clicking the **Allow Reports to Execute Concurrently?** checkbox on the Report page. (ID-14631)
- When editing a report, the report can now be executed with the Run button without the side effect of saving the report changes automatically. Use the Save button to save the changes to a report. (ID-17212)
- Some html email reports now correctly contain non-null column headings (Empty links in these columns have been removed). (ID-17369)
- Audit Log reports show all relevant records when a date range is selected for Report Timeline. (ID-17621)
- Generating Group Reports for Active Directory servers that contain security groups with an ampersand (&) in their names now render as expected, without an XMLParserException. (ID-17942)
- The Resource User Report, Resource Group Report, and User Access Report (and any custom reports that use com.waveset.report.IndividualUserReport or com.waveset.report.GroupMemberReport) no longer print "No records were found" between report entries. (ID-18049)
- Report viewer now processes the form property refType correctly when a report is edited and then executed with the "Run" button. The refType property in the form tells the viewer to create an ObjectRef with the type specified in the value of the refType property. This ObjectRef is used as the value as the attribute value for the query instead of the object name. (ID-18107)
- The reports that use IndividualUserReport.java (Resource User Report and Detailed User Report) now obtain reports correctly when the username field is set to a correct value (ID-18260)
- The Access Review Summary Report now uses the parInstanceName attribute instead of the parTaskInstanceName attribute in the conditions for obtaining the list of Access Reviews. Also, the report now correctly reports that no records are found when no Access Review objects are selected. (ID-18282)
- The Individual User AuditLog Report now has a help page. (ID-18539)
- Reports with long non-ASCII task names now download with the correct filename. (ID-18550)

- The Recent System Messages report now truncates the data to 128 characters for display in the main report table to produce a more readable report when the message column contains much data. The details of the report record still contains all the data as before. This fix also applies to any reports that use `com.waveset.report.SyslogReportTask` as the executor in the `TaskDefinition`. (ID-18657)

## Repository

- When `role` is configured as a summary attribute in the `UserUIConfig` object, only three roles will be included in the summary string by default. Use the `SummaryAttrResourceCountLimit` attribute in `UserUIConfig` to change the default value. (ID-13291)
- Identity Manager no longer closes and removes valid connections from the connection pool. Previously, a non-fatal exception could cause Identity Manager to close a working connection. (ID-13719)
- Fixed the `NullPointerException` (NPE) in Today/Weekly Activity audit report for `CLOB log.acctAttrChanges`. (ID-17346)
- An Audit Log with a large table size no longer causes a significant performance impact when writing audit events. (ID-18053)

## Resources

- The `getResourceObjects()` method of `com.waveset.ui.FormUtil` properly returns multi-value attributes for an Active Directory resource when invoked from XPRESS. (ID-11965)
- The skeleton test included with the Resource Extension Facility (REF) kit no longer depends on classes not delivered with the product. Previously, the skeleton test depended on `com.waveset.junit.WavesetRunner` and `com.waveset.junit.WavesetSuite` (which were not included with the product), but the test has been refactored to eliminate this dependency. (ID-12370)
- The `Resource.getAccountAttributeType(name, mapName)` method now functions correctly when the `name` or `mapName` attribute is `null`. (ID-13598)
- When you cancel "Edit Synchronization Policy" for a resource, Identity Manager no longer creates artifacts in the repository and an error no longer occurs for Remedy resources. (ID-14356)
- Identity Manager displays an error message if an invalid group name is specified when updating Solaris NIS accounts. (ID-15841)

- Previously, users of the `ExampleSPML2ResourceAdapter` have reported that Modify Requests are not executed. Now the SPML v2 Modification Request is processed when the change elements are nested in data elements. (ID-16646)
- Previously, error handling for LDAP Resource Adapters used a number of hardcoded strings and message formats. In this release error messages that originate in exceptions by LDAP-based resource adapters are localized. (ID-16721)
- A possible buffer overrun in the gateway trace module has been fixed. (ID-17093)
- If the Copy Realm Configuration option is set in the Sun Access Manager data store, the admin user for a sub-realm (instead of `amAdmin`) provisions to that sub-realm. This is because when this option is set, identities technically exist only the realm or sub-realm in which they are created. (ID-17101)
- There is no single-threaded mode for the 8.0 version of the Identity Manager NDS gateway, so the `ExclusiveNDSContext` Registry key is no longer used. This eliminates the error that was formerly seen when provisioning GroupWise users through a single-threaded NDS gateway. (ID-17144)
- The LDAP resource adapter will not cause an `IndexOutOfBoundsException` during reconciliation. (ID-17454)
- The Scripted Gateway adapter does not support password changes. The adapter now blocks attempts to circumvent this if you add a password account attribute to the schema map. (ID-17533)
- Fixed an issue where turning tracing on for the `LDAPResourceAdapterBase` class would throw a null pointer exception. (ID-17588)
- Referencing `accounts[os400].accountId` will no longer return `waveset.accountId`. It will instead return the correct value for the `accountId` of the OS400 account. (ID-17632)
- The SAP resource adapter no longer throws a `JCO_ERROR_FUNCTION_NOT_FOUND` error when the SAP system that it is connecting with does not contain the `PASSWORD_FORMAL_CHECK` function module. (ID-17665)

In addition, Identity Manager now uses the `BAPI_USER_EXISTENCE_CHECK` (instead of `BAPI_USER_GET_DETAIL`) during password synchronization with SAP R/3 4.6C systems.

- You can now successfully connect to a VMS resource via SSH. If you are upgrading, you must either run `update.xml` or re-import `resourceWizardForms.xml` for changes to apply to VMS resource wizard. (ID-17695)
- The Shell Script resource adapter now honors exit codes for Disable, Enable and Rename operations. (ID-17749)
- When shut down properly, Identity Manager Gateway no longer triggers an "abnormal termination" message to appear in Domino 7.x Server Console logs. (ID-17782)

- The UNIX resource adapters have been modified so that they create temporary files with user read/write permissions only. (ID-17835)
- Encrypted passwords for Netware NDS GroupWise accounts are now updated correctly. (ID-18020)

## Roles

- Rules used to calculate resource attributes from roles are no longer applied when a user logs into the End User page. (ID-13338)
- Based on the UI logged into, all possible work item types that can be delegated now appear in the drop down list when delegation is being configured. In the Administrator UI, the delegation drop down no longer filters the work item types that appear, so all possible work item types that can be delegated are now listed. In the end user UI, only the five basic work item types are listed in the drop down list. (ID-18496)

## Security

- A user must now have the appropriate rights to delete another user's account, otherwise an exception will be thrown and the account deletion will be prevented. In addition, an audit record containing the details of the attempted deletion will be logged. (ID-15552)
- Setting a correlation rule with X509 Login Module will no longer cause an error during login. (ID-17128)
- This release includes fixes for several cross-site scripting (XSS) bugs. (ID-17830, 18015)

## Server

- Timestamps are no longer ambiguous and now use timezone specifications like GMT +/- <num>. (ID-8297)
- The default LocalFiles repository now works under GlassFish. (ID-15589)
- A problem that was causing repository deadlocks during end-user approvals and administrator edit operations has been resolved. (ID-16926)
- Application servers no longer log a warning message if the Character Encoding is set after calling getReader(). (ID-17900)
- A user view no longer contains work items for the subject obtaining the view if the subject is not the user in the view. (ID-18430)

## Service Provider

- The Service Provider Basic User Search page (ID-11245) now reports  
A search value must be supplied.  
when the search value is not specified, rather than  
`javax.naming.CommunicationException: [LDAP: error code 2 - Bad search filter]`  
or  
`java.lang.IndexOutOfBoundsException: Posn: -1, Size: 0`
- If a user authenticates to a single sign-on (SSO) realm configured for use with a Service Provider Edition instance, but the user does not exist in the Server Provider Edition instance, the user will be presented with an appropriate error message. Previously, the user would be presented with the Service Provider Edition home page, but would be unable to perform any of the listed actions. (ID-13194)
- When Service Provider is configured, the export all command of lh console no longer fails with `java.lang.UnsupportedOperationException`. In the debug page, IDMXUser is no longer displayed as an option for List Objects. (ID-16141)
- Previously, two login audit events would be submitted when a service provider user logged on to the service provider end-user interface. This has been fixed so that only a single audit event is submitted. (ID-16742)
- Prior to this release, audit records did not track attribute-level changes for Service Provider users. Identity Manager now audits changes to Service Provider attributes, the name of the server where the transaction was executed, and the login interface name. (ID-16837)  
  
Note that unlike Identity Manager, Service Provider does not record the old values for attribute changes, only attempted and new values. Service Provider does not record changes to resource assignments and authentication answers either.
- Previously, when tracked events were enabled, the task table in the repository would grow very large. This problem has been corrected. (ID-16923)
- Service Provider Service Provisioning Markup Language (SPML) modify requests no longer delete extended attributes that have not been specified in the request. (ID-17145)
- Transaction data in memory and in the persistent data store are now correctly synchronized. (ID-17384)

## Synchronization

- Identity Manager logs an error when you delete a non-existent user, but does not create an audit event for reporting. Now, Identity Manager logs a `delete` operation of a non-existent user accordingly. Note that this log is available in the system logs and the audit log reports in versions 6.0 SP4 and later. (ID-13284)
- The AD Sync Recovery Collector Task works correctly on Global Catalog servers (ID-17851)
- When a Global Catalog is used for Active Sync against an Active Directory resource, each hostname in the AD Sync Recovery Collector Task, against that Active Directory resource, is now considered to be a Global Catalog. (ID-18597)

## Workflow

- Sunrise date now properly calculates the past time. (ID-11247)
- Fixed a `java.lang.NullPointerException` error in the post-reconciliation workflow. (ID-16893)
- The sample post-reconcile workflow, Notify Reconcile Finish, has been changed to remove the `waitForCompletion` option from the call to `getView` on the `ReconcileStatus` view. (ID-17151) Customers should also remove the `waitForCompletion` option in any post-reconcile workflows. This option is never needed from within the workflows, because the reconciler flushes results prior to launching the workflow. If a post-reconcile workflow does set `waitForCompletion=true`, the workflow will hang.

## Additional Defects Fixed

17111, 17242, 17269, 17414, 17668, 18555

# Identity Manager 8.0 Known Issues

This section of the Release Notes lists known issues and workarounds for Identity Manager 8.0

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## Known Issues

This section of the Identity Manager 8.0 Release Notes lists known issues and workarounds:

- [General](#)
- [Install and Update](#)
- [Auditing](#)
- [Data Exporter](#)
- [Identity Manager Service Provider](#)
- [Login Configuration](#)
- [Organizations](#)
- [Policies and Capabilities](#)
- [Reconcile and Import Users](#)
- [Reports](#)
- [Resources](#)
- [Server](#)
- [Sun Identity Manager Gateway](#)
- [Tasks](#)
- [Workflow, Forms, Rules, and XPRESS](#)

## General

- Required fields set on the resource schema map are only checked when a user account is created (ID-220). If a field is to be required on user updates, then the user form should be configured to ensure that the field is required.

- No checking is done on organization name, administrator name, account name, user attribute name (left hand side of schema map), or task names for invalid characters (ID-1145, 1206, 1679, 1734, 1767, 2413, 3331). You cannot use a dollar (\$), a comma (,), a period (.), an apostrophe ('), an ampersand (&), a left bracket ([), a right bracket (]), or a colon (:) in the name for these types of objects.
- A misleading error message is given on the account page if you try to perform an action after your session has timed out (ID-1223).
- The calendar object is not fully viewable if the browser is using large fonts (ID-2120).
- The Select All checkbox on the Find Results page and the List Task page does not become un-selected if one of the items in the list is un-selected (ID-5090). The selectAll checkbox is ignored during the resulting action if not all of the members in the list have their checkbox selected.
- If you make a change to a custom message catalog, it is necessary to restart the server in order to see your changes. (ID-6792)
- The current mechanism for detecting a failed Server assumes that all the systems in an Identity Manager cluster are synchronized with respect to time. (ID-7064) With the default failure interval of five minutes, if one server is five minutes out of sync with another, the server that is ahead will declare the server that is behind to be dead, causing unpredictable results.

**Workaround:** Maintain better time synchronization or increase the failover interval.

- On Windows, if you are logging in as a user whose name contains double-byte characters and the default encoding for the machine only supports single-byte characters, you must set the USER\_JPI\_PROFILE environment variable to an existing directory whose name contains only single byte characters. (ID-8540)
- If you extract a resource to an XML file using the File Format as XML option, and then select CSV File Format from the dropdown list, the following message dialog is displayed:

The form has already been submitted

**Workaround:** To avoid this message, click Accounts > Extract to File > Choose a Resource > Choose CSV File Format. Click Download to download the resource account details in .csv file format. (ID-10847)

- If an expanded node contains less than one page of data and you insert a new child of that node (for example, if you are creating a User in the organization) *before* the first record on the page, Identity Manager will insert a page with one item before the current page on the subsequent refresh. (ID-12151)

**Workaround:** To *realign* the pages, click the First Page button.

- If you modify a Role form to change the `showSuperAndSubRoles` variable from 0 to 1, and then import a super role object definition file containing existing subroles from the Configure tab; those subroles will not be modified to include the `<SuperRoles>` section. However, if you use the Identity Manager graphic user interface to create a super role, the subroles referenced by that super role will be updated. (ID-15053)

This issue can occur with roles created outside Identity Manager that have references to existing roles (either subroles or super roles) already in the system.

When importing these roles, the roles that already exist in the system are not updated to reflect the new relationships; for example, referential integrity is not maintained. Use the `RoleUpdater` to check and correct the referential integrity if roles are imported in this way.

**Workaround:** See ID-15482, described in [Roles](#).

- Editing the `AdminRole` object can throw an `ItemNotFound` exception for some non-ASCII characters. (ID-15782)

**Workarounds:**

- Edit `adminrolemodify.jsp` to stop passing `id` as a query string.

```
<%
String bodyAttributes = "onload=\"selectFirstEditField();\"";
try {
    String id = requestState.getParameter("id");
    if (id == null) {
        :
    }
else {
    form.setTitle(Messages.UI_ADMIN_ROLES_JSP_EDIT_ROLE_TITLE);
    form.setSubTitle(Messages.UI_ADMIN_ROLES_JSP_EDIT_ROLE_SUBTITLE);
    // stop passing id as a query string

    //form.setPostURL(response.encodeURL("security/adminrolemodify.jsp?id="+id));
    form.setPostURL(response.encodeURL("security/adminrolemodify.jsp"));
}
}
```

- Edit `adminrolemodify.jsp` to encode the `id` query parameter value.

```
<%
String bodyAttributes = "onload=\"selectFirstEditField();\"";
try {
    String id = requestState.getParameter("id");
    if (id == null) {
        :
    }
else {
    form.setTitle(Messages.UI_ADMIN_ROLES_JSP_EDIT_ROLE_TITLE);
    form.setSubTitle(Messages.UI_ADMIN_ROLES_JSP_EDIT_ROLE_SUBTITLE);
}
```

```

        // encode id query parameter value

        //form.setPostURL(response.encodeURL("security/adminrolemodify.jsp?id="+id
    ));
        form.setPostURL(response.encodeURL("security/adminrolemodify.jsp?id="
        + com.waveset.util.URLUTF8Encoder.encode(id));
    }

```

- If you modify settings (such as adding additional column attributes) on an existing changelog, these modifications might not appear in a pre-existing changelog CSV file. (ID-15973)
- Some of the words on the tab of “Edit User” screen could wrap around in multi-language mode. (ID-16054)

**Workaround:** To ensure words in tabs are displayed without being wrapped, add the following to \$WSHOME/styles/customStyle.css:

```

table.Tab2TblNew td
{background-image:url(../images/tabs/level2_deselect.jpg);background-repeat:repeat-x;backgroun
d-position:left top;background-color:#C4CBD1;border:solid 1px
#8f989f;white-space:nowrap}

```

```

table.Tab2TblNew td.Tab2TblSelTd
{border-bottom:none;background-image:url(../images/tabs/level3_selected.jpg);backgroun
d-repeat:repeat-x;background-position:left
bottom;background-color:#F2F4F3;border-left:solid 1px #8f989f;border-right:solid 1px
#8f989f;border-top:solid 1px #8f989f;white-space:nowrap}

```

- While in a localized Identity Manager session, users might encounter partial localization (a mix of English and the selected language) in Process Diagram applets. (ID-16139)
- The Repository Configuration object has an attribute named `maxAttrValLength`. The value of this attribute is ignored, and is always 255. (ID-16261)
- Direct-mode password synchronization requires `SimpleRpcHandler` to be configured in the `web.xml` file. By default, this handler is not provided as a handler for the `rpcrouter2` servlet. (ID-16469) To use direct-mode password synchronization, set the handlers initialization parameter in the following way:

```

<init-param>
  <param-name>handlers</param-name>
  <param-value>com.waveset.rpc.SimpleRpcHandler,com.waveset.rpc.PasswordSyncHandler
  </param-value>
</init-param>

```

Note that `SimpleRpcHandler` is known to interfere with certain `RemoteSession` calls. If you plan on using `RemoteSession` as well as direct-mode password synchronization, configure a separate servlet for handling `RemoteSession` calls.

- When editing or updating a user, if you try to assign an idmManager that is assigned to another idmManager that does not yet exist (for example, the idmManager is missing), you will see the following error message and the change cannot be saved. (ID-17339)

'Item User:[idmManager that doesn't exist] was not found in the repository, it may have been deleted in another session'

You do not see this problem when creating a new user.

- Accounts > Extract to File saves XML and CSV file formats as .dat extensions, rather than the expected .xml and .csv extensions. (ID-17521)

**Workaround:** The saved files can be manually renamed with the appropriate file extensions.

- The String Quality Policy page displays text in vertical lines. (ID-18551)
- Role type delegations will override role approval delegations made for a specific role. (ID-18559) For example, if future role work item types for one or more specific roles are delegated to user one, while all future business role work items are delegated to user two, the specific roles from the first delegation will be delegated to user two rather than user one. The scenario delegation summary follows:
  - Delegate role approval for business role 1 to user one
  - Delegate business role approval to user two

In all requests where a user was assigned a business role approval, the business role will be delegated to user two.

- Enabling a role does not give the user an option to update assigned roles. (ID-18647)

**Workarounds:** Manually update the assigned users, or update the assigned users from the List/Find Roles pages.

- Roles contained by other roles can now be conditionally assigned to users when their parent role is assigned. A condition can be specified on the association between the parent and contained role when editing the parent role. A condition can be created or can reference a rule. If a rule is specified, all user view attributes required for the evaluation of the rule must be specified via rule argument. (ID-18734)
- The data warehouse message catalog, `WICMessages.properties`, is loaded based on the server location instead of the user's location. (ID-18898) For example, if an application server is running in a Japanese locale, the query attributes will be displayed in Japanese, even if the user's interface is normally in English.

**Workaround:** Restart the application server in a locale with a UTF-8 variant that corresponds to the browser's language setting.

- Identity Manager 8.0 added a new queryable attribute, `assignedRoles`, which references all direct and indirect roles assigned to a user. (ID-18921) Prior releases contain the still available queryable attribute, `role`, which only contains roles directly assigned to users. The upgrade process only automatically refreshes users with indirect roles to enable population of `assignedRoles`. A report for users Assigned a Role will not return all users assigned to a role in an upgraded environment until all users have been refreshed.

**Workarounds:**

- Refresh all users.
- Create a report for users with directly assigned roles.
- Three reference attributes from the Principal objectclass are not able to be exposed on User for data export in 8.0: `MemberAdminGroups`, `adminRoles`, and `adminGroupsRule`.

The `MemberAdminGroups` and `adminRoles` attributes are queryable attributes of User, even though not displayed as such in the objectclass schema. (ID-18536))

## Install and Update

- The Identity Manager installer may not run with a 64-bit JDK. (ID-18534)

**Workarounds:**

- Install manually.
- Use a 32-bit version JDK to run the installer.
- Set `os.arch=ppc` by setting `JAVA_OPTS` (used by install script) to get through the install. For example,
 

```
export JAVA_OPTS="-Dos.arch=ppc"
install
```
- Or, if `JAVA_OPTS` already contains needed options:
 

```
export JAVA_OPTS="$JAVA_OPTS -Dos.arch=ppc"
install
```
- If the upgrade process fails to log in with the default configurator account and password, the log file logs the error, but does not log anything after the error. (ID-18929)

The `update.xml` file is imported during the upgrade process. The import attempts to log in as configurator with the default password. If the login fails, an error is displayed, and the upgrade program prompts you for the correct login information. If you provide the correct information, the upgrade continues. When looking through the log file for the upgrade process, you can see the error message when the default log in fails, but you do not see any further information about the upgrade in the log file. This issue does not affect the upgrade, only the log file.

- The `upgradeto80from71.mysql` script has an error that causes the script to abort in the middle. (ID-18874, 18977)

To prevent the error, you must edit the script and change the following line:

```
INSERT INTO waveset.roleobj SELECT * from waveset.object where type = 'Role';
```

Modify the line to read as follows:

```
INSERT INTO waveset.roleobj (SELECT id, type, name, lockinfo, modified,
repomod, summary, attr1, attr2, attr3, attr4, attr5, counter, xmlSize, xml FROM
waveset.object WHERE type='Role');
```

The explicit column names are necessary because the columns in an upgraded 7.1 database are in a different order.

## Auditing

- During a scan, there is no support for retrying user accounts that could not be fetched from resources, or where other failures occur. These failures are reported when the scan is complete, but there is no automated way to rescan the accounts. (ID-9112)
- Identity Auditor attempts to keep users in compliance between policy scans by enforcing policy whenever the user is edited. If editing a user that has assigned audit policies and also is in violation of a policy, you cannot save changes to the user, even if the change is as simple as moving a user to another organization. (ID-9504)

**Workaround:** Use the right-click move (or find then move) functionality on the user applet, or temporarily disable the audit policy checks.

To disable the auditor policy checks, edit the system configuration and remove `userViewValidators` property. This property which has a value of a List of strings is added during the import of `init.xml` or `upgrade.xml`.

- Logarithmic scaling on Audit Policy reports is not implemented. (ID-9522)

- Currently, the Auditor Access Scan Report administrator cannot schedule an Audit Policy Scan. An error, Error message: Create access denied to Subject auditadmin on type TaskSchedule is displayed. To schedule any task, administrators must have create privileges for the TaskSchedule authType. (ID-14713)

**Workaround:** Edit the administrator to assign the create privilege for the TaskSchedule, or specify a user with at least the Auditor Administrator or Waveset Administrator capabilities.

- When running Audit Scans that produce multiple violations, Auditor might create a remediation workflow to manage processing of the violations. (ID-15830) The default MySQL setting for `max_allowed_packet` (1M) is too small for a workflow with dozens of violations. If this limit is reached, Auditor will not start the remediation workflow.

Workaround: For heavy use of Auditor, this value should be much larger. To address this issue, add `max_allowed_packet = 32M` to the MySQL configuration file (`my.cnf`) and restart the database server.

- Changing severity and priority values for Compliance Violation remediations can be misleading. The initial values in the form are *not* the current values of the Compliance Violations. They are the last values set when making a change. It is important that you know what severity/priority value you want while still viewing the list view, because you cannot determine the current values when on the page that lets you change the values. (ID-16040)
- Audit policy names cannot contain these characters: ' (apostrophe), . (period), | (line), [ (left bracket), ] (right bracket), , (comma), : (colon), \$ (dollar sign), " (double quote), = (equals sign). (ID-16078)
- ComplianceViolations created before the IdM 7.1 upgrade will not allow the severity or priority to be set. The error message returned indicates that the Compliance Violation no longer exists, but this is incorrect. The violation does exist, but IdM is unable to set the severity or priority. (ID-16420)

## Data Exporter

- The Data Exporter can be configured to run as any Identity Manager administrator with the appropriate capabilities. The export task runs as a daemon, and is started and monitored by the Identity Manager scheduler. Audit records created by the Data Exporter will show the subject of the Identity Manager scheduler (Scheduler:IDMServer), rather than the subject the task is configured to use. (ID-18055)
- Forensic query does not support Edit/Modify actions against role types. (ID-18769)

## Identity Manager Service Provider

- Identity Manager Service Provider and Sun Java System Portal Server may not be compatible; there is a problem related to the encrypted libraries. (ID-10744)

This problem may be corrected by setting the following values in Portal Server's `/etc/opt/SUNWam/config/AMConfig.properties` file, and then restarting the web container:

```
com.iplanet.security.encryptor=com.iplanet.services.util.JCEEncryption
com.iplanet.security.SSLSocketFactoryImpl=netscape.ldap.factory.
    JSSESocketFactory
com.iplanet.security.SecureRandomFactoryImpl=com.iplanet.am.util.
    SecureRandomFactoryImpl
```

- Some configuration options that appear in the Identity Manager Administrator interface are not used with Identity Manager Service Provider. (ID-10843). Among these are:
  - Resource options: exclude accounts rule, approvers, and the organization that the resource is assigned to.
  - Role attributes
- By default, auditing is not performed when using the `checkinObject` and `deleteObject` `IDMXContext` API calls. Auditing has to be explicitly requested by setting the `IDMXContext.OP_AUDIT` key to true in the option map passed to these methods. The `createAndLinkUser()` method in the `ApiUsage` class shows how to request auditing. (ID-11261)
- The default Service Provider login module group expects the Service Provider resource to be named 'SPE End-User Directory'. If the name of the resource is different, then the Service Provider end-user login page will not function properly. The page will not show the login related fields. (ID-14891)

**Workaround:** Update the resource name in the `UI_LOGIN_MOD_GRP_DEFAULT_SPE_PWD` `LoginModGroup` object to reference the correct resource name.

- The SPE Sync task is a scheduled task, so stopping it from the Tasks page will not stop synchronization. To stop it, you can disable the schedule itself. (ID-16000)

**Workaround:** The preferred method of starting and stopping is either through the product interface on the Resource page, or programmatically (for example, from a workflow) through the `SessionUtil` methods to start and stop SPE Sync. To prevent SPE Sync from starting automatically whenever an Identity Manager server instance is started, you must disable it from the Synchronization Policy for the resource. Stopping SPE Sync through the UI or `SessionUtil` method will merely stop synchronization until another Identity Manager server instance is started.

- A `javax.servlet.UnavailableException` occurs when you use the Identity Manager SPE End User Login page in WebSphere, and a 404 error displays in the browser. (ID-16001)

**Workaround:** You must set the following properties in the IBM 1.5 JDK:

- a. In the `was-install/java/jre/lib` directory, rename the `jaxb.properties.sample` to `jax.properties` and uncomment these two lines:

```
javax.xml.parsers.SAXParserFactory=
    org.apache.xerces.jaxp.SAXParserFactoryImpl
javax.xml.parsers.DocumentBuilderFactory=
    org.apache.xerces.jaxp.DocumentBuilderFactoryImpl
```

- b. Save the file and restart the application server.

## Login Configuration

- Pass-through authentication module does not work for the Domino resource (ID-1646).
- Changes made to the Administrator Login Setup and User Login Setup pages are not visible to other administrators logged in (ID-3487). To see the changes, the other administrators will need to log out of the Administrator Interface and log back in.
- If an Administrator logs in and selects Change My Password, and then selects another tab, their account is locked until the lock expires. (ID-3705)

If another Administrator attempts to edit that locked Administrator, the following message displays:

```
com.waveset.util.WavesetException: Unable to access account #ID#Configurator at this
time. Please try again later.
```

If that Administrator clicks OK, the workflow process diagram from the last action is displayed.

## Organizations

- Renaming an organization when there are provisioning requests pending that have users belonging to the organization will cause the provision request to fail (ID-564).

**Workaround:** Ensure there are no outstanding requests before renaming an organization.

- When creating a new organization, if the User Member Rules option is selected before specifying an org name, when the page is refreshed, an organization ID will appear in the Organization name field (ID-6302). The name can still be set prior to saving the new organization.

( ) - Warning: Parenthesized values in field 'Approvers' do not match any of the allowed values.

## Policies and Capabilities

- The Identity Manager account policy attribute Reset Notification Option has a value option of “administrator” that has no effect (ID-944). The only viable options are “immediate” and “user”.
- When deleting multiple roles, if an error is encountered, the entire operation will stop instead of continuing to the other roles (ID-1168).
- The minimum number of questions a user must answer can be set to a value greater than the number of defined questions (ID-1834). If this situation occurs, the user will not be able to log in using the “Forgot My Password” option.
- The Default Lighthouse Account Policy cannot be cloned by editing the policy, changing the name, and selecting to create a new object (ID-5147).

**Workaround:** Create a new account policy.

- Audit scan has an option in the Task Launch form to send an email to a specified email address with a violation report. This email will not be sent if no violations are found. (ID-18773)

## Reconcile and Import Users

- When a full reconciliation is canceled, the error message displays:  
Canceled the incremental reconciliation of [resource] running on [server]  
The message should read:  
Canceled the full reconciliation of [resource] running on [server] (ID-14554)
- The value of the waitForCompletion attribute in the Notify Reconcile Finish workflow must be changed to false to prevent hanging during reconciliation. The waitForCompletion attribute will be removed in the next major Identity Manager release. (ID-16888)

### Workarounds:

- Import the `<idm_root>/sample/wfrecon.xml` file by using `lh console`.
- Manually change the Notify Reconcile Finish workflow by using `lh config`.

- When executing `Load From Resource`, and the resource supports `ACCOUNT_CASE_INSENSITIVE_IDS`, if the user's `accountId` differs in case from the `accountId` stored in Identity Manager's `ResourceInfo` user object, a second `ResourceInfo` will be added to the user object with the `accountId` in the same case as reported by the resource.  
**Workaround:** Ensure that the `accountId` in the Identity Manager `ResourceInfo` object in the user object is the same case as that reported by the resource. (ID-17377)
- If you disabled the `MultiSelect` display component applet (and are using the HTML version instead), and edit the reconciliation policy of a particular resource instance, you can get an error when you uncheck the `Inherit resource type policy` checkbox. (ID-18964)  
**Workaround:** Re-enable the `MultiSelect` applets.

## Reports

- Risk analysis reports can be viewed by administrators other than report administrators (ID-1224).
- Report results that are emailed with the plain text option are not formatted (ID-2191).  
**Workaround:** Use HTML option for the email.
- Numbers display in the `Priority` and `Severity` columns of the `Violation Summary Report` instead of text descriptions. (ID-16932)
- The `Violation Summary Report` does not include fixed violations. The report only includes violations that are currently active (new or recurring) or mitigated. (ID-16933)
- The `Violation State` column in the `Violation Summary Report` should be localized. (ID-17011)
- Add an `EXEMPTED` option to the `Possible States` drop-down menu in the `Violation Summary Report`. (ID-17042)
- When several conditions are specified to generate a usage report, the graph displays correctly on the `Report Result` page, but the fixed line width will truncate the conditional text. (ID-17224)
- All `Inactive Account Scan` reports do not display their results on the `View Risk Analysis` page. To view the result from these reports, go to the `Server Tasks` page. (ID-17255)
- The `User Question` report does not display the report title when `Question Policy` is not configured. (ID-17415)
- The `Resource User` report lists `Reset Administrator` as a user, but `Reset Administrator` is a hidden user that should not be displayed. (ID-17650)

## Resources

- Resource test button does not test all fields. (ID-51)
- Resource port assignments can be set to values greater than 65535. (ID-59)
- Bad error message displayed when setting incorrect Active Directory group name. (ID-393)  
If you attempt to set an Active Directory group name to “groupname” instead of “cn=groupname,cn=builtin,dc=waveset,dc=com” an error message stating “array index out of bounds” is displayed.
- Required account attributes are sometimes ignored if there is another resource with the same account attribute name that does not have the required flag set. (ID-1161)
- If an administrator attempts to add an organization to a resource that he does not have rights over, an error will appear. The edit of the resource must then be canceled and the resource edited again to make any other changes to the resource. (ID-1274)
- The error message when a resource account password or username is not correct on a PeopleSoft resource is not clear. (ID-2235) The error message states:  

```
bea.jolt.ApplicationException: TPESVCFail - application level service failure
```
- Windows Active Directory resource actions that use the %DISPLAY\_INFO\_CODE% exit status cause the action to fail with errors. (ID-2827)
- Setting a user's primary group ID on Active Directory cannot be done when creating the user. (ID-3221)

**Workaround:** Create the user without setting the primary group ID, then edit the user and set the value. The primary group ID is also set by number and not by the distinguished name (DN) of the group.

- Resource IP addresses are cached in the JVM after the hostname is resolved to an IP address. If a resource IP address is changed, the application server must be restarted for Identity Manager to detect the change. (ID-3635) This is a setting in the Sun JDK (version 1.3 and higher) and can be controlled with the `sun.net.inetaddr.ttl` property, which is typically set in `jre/lib/security/java.security`.
- You cannot create multiple accounts for a single user on Oracle resources. (ID-3832)
- End-users cannot use the self-discovery feature for Domino resource accounts. (ID-4775)
- If a user is moved from or to a sub-container within the Active Directory organization, the Active Sync adapter will detect the change, but when you view the user on the edit page, (or make a change and view the confirmation page) the user's accountId is still displayed as the original DN (distinguished name). (ID-4950) Because we use GUID to modify the user, this will not cause any operational problems. Running a reconcile against the resource will fix the problem.

- If a user is moved from an Organization (OU) to a sub-organization, the LDAP ChangeLog adapter will not recognize the change and assumes the user has been deleted. The user object is then locked in Identity Manager (if that is the current setting), and a new account is not created for the moved account. (ID-4953)
- The pooled connections used by the UNIX resource adapters can be left in an undetermined state if an error occurs while executing a command or script. (ID-5406)
- NDS organizations can be created in the top level of the tree only by setting the Base Context for the resource to "[ROOT]". (ID-5509)
- On NDS, if you edit a field (such Grace Login Limit) on the initial provision, and do not provide values for the boolean fields, all the boolean fields are set to false. (ID-6770) This prevents you from setting the other fields on the restriction tab which require certain check box values to be true. To avoid this, always ensure all your boolean fields are true when you expect them to be, so they are properly pushed when editing other fields.
- If you change the password for a UNIX machine using the Manage Connection --> Change Resource Password feature, the task name that appears is:

```
_FM_PASSWORD_CHANGING_TASK null:null
```

A user-friendly name should be displayed. (ID-6947)

- When updating users by selecting update from an Identity Manager organization, users with a Sun One ID Server account will get an error if those users were created natively and loaded into Identity Manager. (ID-7094) The work around is to update those users individually.
- Identity Manager still contains the following deprecated classes:
  - com.waveset.object.IAPI
  - com.waveset.object.IAPIProcess
  - com.waveset.object.IAPIUser

Custom adapter classes should no longer refer to these classes, and should instead refer to the corresponding classes in package com.waveset.adapter.iapi. (ID-8246)

- If you leave the New Resource Object wizard without clicking the Save or Cancel button, the abandoned form may not be destroyed and may interfere with the creation of subsequent new resource objects. (ID-11033) This leads to an error that says

```
No resource form id found in options or view.
```

**Workaround:** Always use the Cancel button to abandon the New Resource Object wizard.

- If you edit a user while you are also running Active Sync as a different administrator, an Active Sync exception occurs. Because the user is locked by another administrator, Active Sync cannot retry the process. (ID-11255)

**Workaround:** To enable Active Sync retry for a resource, update the resource XML to include these two additional resource attributes, in the following format:

```
<ResourceAttribute name='syncRetryCountLimit' type='string' multi='false'
facets='activesync' value='180' />
```

```
<ResourceAttribute name='syncRetryInterval' type='string' multi='false'
facets='activesync' value='10000' />
```

Where:

- **syncRetryCountLimit** is the number of times to retry the update.
- **syncRetryInterval** is the number of milliseconds to wait between retries.

Subsequently, these values will appear as custom resource settings when you configure Active Sync. Specifying a `displayName` is advisable; using a custom catalog key if localization is necessary.

- There are two known issues with the Remedy Integration template editor. (ID-14729)
  - The default Remedy Schema value "HPD:HelpDesk" is not appropriate for later versions of BMC Remedy. Later versions do contain a schema "HPE:Help Desk".
  - The Choices columns is not displayed for some fields. This does not affect the ability to use Remedy templates.
- A regression causes Identity Manager password synchronization to fail when used with Sun Java™ System Directory Server Enterprise Edition 6.0, 6.1, and 6.2. The failure will be corrected in the Directory Server 6.3 release. If versions 6.0, 6.1, or 6.2 are required to work with Identity Manager, please request a Directory Server hotfix from Support, referencing Directory Server bug 6604342. (ID-14895)
- When you expand the resource objects of a Sun Java™ System Access Manager 7.0 resource from the Resources tab, you might see the following error: (ID-15525)

```
Error listing objects. ==> com.waveset.util.WavesetException: Error trying to get
attribute value for attribute 'guid'. ==> java.lang.IllegalAccessException: tried to access
method com.sun.identity.idm.AMIdentity.getUniversalId()Ljava/lang/String; from class
com.waveset.adapter.SunAccessManagerRealmResourceAdapter
```

This error occurs on Access Manager 7.0 resources that have not had any patches applied. To fix this problem, you must apply at least Patch 1 of Access Manager, and then rebuild and redeploy the Access Manager client SDK.

- Due to interoperability issues between WebSphere data sources and Oracle JDBC drivers, Oracle customers who want to use a WebSphere data source with Identity Manager must use Oracle 10g R2 and the corresponding JDBC driver. (The Oracle 9 JDBC driver will not work with a WebSphere data source and Identity Manager.) (ID-16167)

If you have a version of Oracle prior to 10g R2 and cannot upgrade Oracle to 10g R2, then configure the Identity Manager repository so that it connects to the Oracle database using Oracle's JDBC Driver Manager (and not a WebSphere data source).

See the following URL or more information:

<http://www-1.ibm.com/support/docview.wss?uid=swg21225859>

- NDS/Groupwise users created by Identity Manager that possess the Access and AccountID fields can appear to not have their corresponding values saved when inspected by certain viewers within the NDS Console 1 application (for example, by selecting user's properties and then selecting the Groupwise tab).

However, if the user's Groupwise Diagnostic -> Display Object "viewer" is used instead, the field are then seen. Updates made by Identity Manager to the aforementioned fields do not seem to be affected by this "viewer" bug. (ID-16330)

- WRQ looks though the `classpath` to discover its own entry. From that entry, WRQ computes the directory where the JAR is stored, and then uses that directory to read the `.JAW` (licensing file). However, both BEA and WebSphere use non-standard protocol names (BEA uses `zip`, and WebSphere uses `wsjar`) rather than the standard `JAR`, which is the protocol the WRQ code assumes exists. (ID-16709, 17319)

#### Workarounds:

- For BEA, add the following option to the `java` command in the `startWeblogic.sh` file:
 

```
-Dcom.wrq.profile.dir="DirectoryContainingLibraries"
```
- For WebSphere, add the property `com.wrq.profile.dir=DirectoryContainingLibraries` to the `WebSphere/AppServer/configuration/config.ini` file.
- A Sealing violation exception might occur when you use Identity Manager 7.1 or 8.0 with Oracle 10g on Sun Java™ System Application Server Enterprise Edition 8.2. The problem can be caused by having more than one Oracle JDBC JAR file in the `CLASSPATH` or by having an incompatible version of the JDBC JAR file in the `CLASSPATH`. (ID-17311)

Be sure there is only one Oracle JDBC JAR file in the `CLASSPATH` and that it is a compatible version, such as the JAR file supplied during the Oracle install.

- Before creating a new resource, be sure to enable the resource type in the list of configured types. Otherwise, the newly created resource object may not have all the required fields. (ID-17324)

- The default value of the `Create Directory` attribute is inconsistent among Unix OS resources. (ID-18301)
- When Identity Manager is using a locale with a multibyte character set, the bulk action results do not generate the CSV filename correctly. (ID-18661)

## Roles

- The date picker pop-up, used to specify future activation and deactivation dates for roles assigned to users, is not functional when a role's name contains an apostrophe. (ID-18941)

**Workaround:** Type the activation or deactivation date in the text box next to the date picker icon.

- When manually entering activation or deactivation dates for a user's roles, the fields automatically submit when you click out or tab out of the field. This behavior causes a "Form Already Submitted" message to display if you click Save after manually changing the date in the activation or deactivation fields. (ID-18927)
- Deleting a role should check for references to it as a contained role and then by users. If the process finds either of these references, then an error is thrown and the role is not deleted. (ID-18981)

However, the process has a problem checking for references by other roles, where the role is removed from its parent roles even though it should not be removed. The role is not deleted because it is still referenced by users. References to the contained role remain on the User object, even though the parent role no longer contains that role.

Before deleting a role, you must verify that the role is not contained by any roles or assigned to any users, either directly or indirectly.

## Server

- The ticker will not display when selected if there are organizations with apostrophes (') in their name. (ID-5653)

## Sun Identity Manager Gateway

- The Sun Identity Manager Gateway occasionally will not stop when the Stop button is pressed on the Windows Services screen. (ID-590)

**Workaround:** Cancel the stop service request (if it is still hanging) and stop the service again, or exit the Windows services dialog and re-enter and attempt the stop operation again.

- The gateway occasionally will not stop when using 'net stop "Sun Identity Manager Gateway"' (ID-2337).
- The Sun Identity Manager gateway leaks memory when Exchange 2007 support is enabled on the Active Directory resource adapter causing the process to grow over time. (ID-18854)

**Workaround:** Monitor the gateway service process, and restart the service before memory usage reaches the limit.

## Tasks

- The Find Task page does not display the number of tasks matching the search criteria (ID-5152).
- Delegated administrators who do not control Top can schedule tasks and view the task results, but cannot view the task after it has been created (ID-6659). The scheduled task was placed in Top and the delegated administrator does not have rights to view the object.
- A field named Deferred Tasks was added to the library. It provides the ability to list deferred tasks on a user. To implement this field, the following line must be added the Tabbed User Form and Tabbed View User Form (ID-7660).

```
<FieldRef name='Deferred Tasks' />
```

## Workflow, Forms, Rules, and XPRESS

- You cannot use the XPRESS `<eq>` function to compare Boolean values to TRUE or FALSE strings or to the integers 1 or 2. (ID-3904)

**Workaround:** Use the following:

```
<cond>
  <isTrue><ref>Boolean_variable</ref></isTrue>
  <s>True action</s>
  <s>False action</s>
</cond>
```

- Path expressions do not work when iterating a list of generic objects via a dolist. (ID-4920)

```
<dolist name='genericObj'>
  <ref>listOfGenericObjects</ref>
  <ref>genericObj.name</ref>
```

```
</dolist>
```

**Workaround:** Use <get> / <set> as shown:

```
<dolist name='genericObj'>
  <ref>listOfGenericObjects</ref>
  <get><ref>genericObject</ref><s>name</s>
</dolist>
```

- If you use global.attrname variables for fields in your user form, and the attribute is shared among more than one resource, you should also define a Derivation rule. (ID-5074) Otherwise, if the attribute has been changed natively on one of the resources, the attribute may or may not be picked up and propagated to the other resources.
- Cannot use special strings beginning with & in HTML components of forms. For example, &nbsp; will no longer appear as a space. This issue was introduced because of a change to support special characters (&\<>') in Select lists. (ID-5548)
- Form, workflow and rule comments contained in <Comment> tags have &#xA; strings in them representing the line feed character. (ID-6243) These characters are only seen when viewing the XML for these objects; the Identity Manager server and Business Process Editor will process these characters properly.
- If you use the Resource Table User Form for editing users, when editing a user's resource, the resource attributes are not fetched when the form first appears.

**Workaround:** Click the Refresh button, which will fetch the attribute data. (ID-10551)

- If Identity Manager is protected by a Sun Access Manager Policy Agent, workflow process diagrams might render incompletely. (ID-18304)

## Known Issues

# Installation and Update Notes

This section provides information related to installing or updating Identity Manager, and the information is organized as follows:

- [Installation Notes](#)
- [Upgrade Notes](#)

---

**NOTE** For Known Issues related to the installation and upgrade process, please refer to the [Install and Update](#) section of this document.

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## Installation Notes

The following information relates to the product installation process:

- When installing PasswordSync, you must use the appropriate binary file for the operating system on which you are installing. The binary for 32-bit Windows is called `IdmPwSync_x86.msi` and the binary for 64-bit WINDOWS is called `IdmPwSync_x64.msi`.

When uninstalling PasswordSync, use the add/modify programs feature from the Windows Control Panel to ensure correct removal. Installing the wrong binary might appear to succeed, but PasswordSync will not operate properly. (ID-17290)

- You must manually install Identity Manager on HP-UX.
- The Identity Manager installation utility can now install or update to any installation directory name. You must create this directory prior to starting the installation process, or select to create the directory from the setup panel.
- Running the Sun Identity Manager Gateway on a Windows system requires the Microsoft Active Directory Client extension. The DSClient can be found at the following location:

<http://support.microsoft.com/default.aspx?scid=kb;en-us;Q288358>

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**NOTE** Refer to the *Sun Identity Manager Installation* publication for detailed product installation instructions.

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# Upgrade Notes

This section contains information and known issues related to upgrading Identity Manager from version 6.0 or version 7.0 to version 8.0.

The information in this section is organized as follows:

- [Before You Begin](#)
- [Upgrade Issues](#)
- [Refreshing User Objects](#)

---

## NOTES

- See *Identity Manager Upgrade* for upgrade instructions and information.
  - When upgrading Identity Manager, be sure to review the installation section for your application server in *Sun Identity Manager Installation* for application server-specific instructions.
  - If your current Identity Manager installation has a large amount of custom work, you should contact Sun Professional Services for assistance with planning and executing your upgrade.
- 

## Before You Begin

You must be aware of the following information before starting the upgrade process:

---

**CAUTION** If you are using an Oracle repository, the Identity Manager 8.0 repository DDL uses data types that are not properly handled by older Oracle JDBC drivers. The JDBC drivers in `ojdbc14.jar` do not properly read all of the columns in the log table.

You must upgrade to the `oracle11g_jdbc.jar` drivers for Identity Manager to work properly.

---

- Identity Manager 8.0 dedicates some new tables for Roles objects. You must use the sample scripts provided in the `db_scripts` directory to make the schema changes, create the new table structures, and move your existing data.

- 
- NOTE**
- Before updating the repository database table definitions, make a full backup of your repository tables.
  - Refer to the `db_scripts/upgradeto8.0from71.DBMSName` script for more information.
- 

- If you are upgrading to Identity Manager 8.0, and have any custom code that calls `UserUIConfig#getRepoIndexAttributes()`, you must remove the code or change it to call `Type.USER#getInlineAttributeNamees()`.

Importing `update.xml` converts the values from the `UserUIConfig RepoIndexAttrs` into values of XML attributes on the `TypeDataStore` element for `Type.USER` within the `RepositoryConfiguration` object. The `update.xml` file includes the `UserUIConfigUpdater.xml` file, which contains an `Import` command that invokes `UserUIConfigUpdater` to convert `RepoIndexAttrs`. Conversion also sets a flag in `SystemConfiguration` that inhibits reconversion.

Any future changes to the inline attributes for `Type.USER` should be made by editing the `RepositoryConfiguration` object. If you change the inline attributes for `Type.USER`, you generally must refresh all `Type.USER` objects.

---

**NOTE** Changes to `RepositoryConfiguration` do not affect an Identity Manager server until you restart that server.

---

- Be sure to use only one Identity Manager server to import `update.xml` and that only one Identity Manager server is running during the upgrade. If you start any other Identity Manager servers during the upgrade, you must stop and restart those servers before making them available.
- Be careful when you edit the super role field in the Role form because the super role itself may be a nested role. The super roles and subroles fields indicate a nesting of roles and their associated resources or resource groups. When applied to a user, the super role includes the resources associated with any designated subrole. The super role field is displayed to indicate the roles that include the displayed role.
- During the upgrade process, Identity Manager analyzes all roles on the system and then updates any missing subroles and super roles links using the `RoleUpdater` class.

To check and upgrade roles outside of the upgrade process, you can import the new `RoleUpdater` configuration object that is provided in `sample/Forms/RoleUpdater.xml`. For example:

```

<?xml version='1.0' encoding='UTF-8'?>
<!DOCTYPE Waveset PUBLIC 'waveset.dtd' 'waveset.dtd'>
<Waveset>
  <ImportCommand class='com.waveset.session.RoleUpdater' >
    <Map>
      <MapEntry key='verbose' value='true' />
      <MapEntry key='nouupdate' value='false' />
      <MapEntry key='nofixsubrolelinks' value='false' />
    </Map>
  </ImportCommand>
</Waveset>

```

#### Where:

- **verbose:** Provides verbose output when updating roles. Specify **false** to enable a silent update of roles.
- **nouupdate:** Determines whether the roles are updated. Specify **false** to get a report that only lists which roles will be updated.
- **nofixsubrolelinks:** Determines whether super roles are updated with missing subrole links. This value is set to false by default and links will be repaired.
- Administrators who need to view or edit the Identity Manager schema for Users or Roles must be in the IDM Schema Configuration AdminGroup and must have the IDM Schema Configuration capability.
- The SPML 2.0 implementation in Identity Manager has changed in Identity Manager 8.0. In previous releases, the SPML `objectclass` attribute used in SPML messages was mapped directly to the `objectclass` attribute of Identity Manager User objects. The `objectclass` attribute is now mapped internally to the `spml2ObjectClass` attribute and is used internally for other purposes.

During the upgrade process the `objectclass` attribute value is automatically renamed for existing users. If your SPML 2.0 configuration contains forms that reference the `objectclass` attribute, you must manually change those references to `spml2ObjectClass`.

Identity Manager does not replace the sample `spml2.xml` configuration file during an upgrade. If you used the `spml2.xml` configuration file as a starting point, be aware that this file contains a form with references to `objectclass` that you must change to `spml2ObjectClass`. Change the `objectclass` attribute in forms (where it is used internally), but *do not* change the `objectclass` attribute in the target schema (where the attribute is exposed externally).

- For UNIX environments, be sure that an `install` directory exists in one of the following locations, and that you can write to it:
  - **For Linux/HP-UX:** `/var/opt/sun/install`
  - **For Solaris:** `/var/sadm/install`
- Any previously installed hotfixes are archived to the following directory:  
`$WSHOME/patches/HotfixName`

## Upgrade Issues

- After upgrading, the `changedFileList` and `notRestoredFileLists` will contain the following files. These files should not display, and no action is required. (ID-9228)

```
bin/winnt/nspr4.dll
bin/winnt/jdic.dll
bin/winnt/MozEmbed.exe
bin/winnt/IeEmbed.exe
bin/winnt/AceApi.dll
bin/winnt/DominoAPIWrapper.dll
bin/winnt/DotNetWrapper.dll
bin/winnt/gateway.exe
bin/winnt/lhpwic.dll
bin/winnt/msems.inf
bin/winnt/pwicvc.exe
bin/winnt/remedy.dll
bin/solaris/libjdic.so
bin/solaris/mozembed-solaris-gtk2
bin/linux/librfccm.so
bin/linux/libsapjcorfc.so
bin/linux/libjdic.so
bin/linux/mozembed-linux-gtk2
```

- Identity Manager's User Extended Attributes now fully supports multi-valued attributes. (ID-14863)

---

**NOTE** You can add a multi-valued user extended attribute to the accounts list table, and it will render the list without error. However, attempting to sort on that column will yield the following error:

```
java.lang.ClassCastException: java.util.ArrayList
```

---

An attribute condition that refers to a multi-valued extended attribute will evaluate correctly for a user object *only* after that user object has been re-serialized. If you want such an attribute condition to evaluate correctly for all user objects, then you must re-serialize all user objects. See [“Refreshing User Objects” on page 76](#) for instructions.

- If you are upgrading from an Identity Manager version 6.x installation to version 7.x to version 8.0, and you want to start using the new Identity Manager end-user pages, you must manually change the system configuration `ui.web.user.showMenu` to true for the horizontal navigation bar to display. (ID-14901)

Also, if you want the new end user dashboard to display on the end-user home page, you must manually change the end user form mapping for Form Type 'endUserMenu'. Go to Configure > Form and Process Mapping > for Form Type 'endUserMenu' change the Form Name Mapped To to be 'End User Dashboard'.

You should also update the mapping for Form Type 'endUserWorkItemListExt'. Change the Form Name Mapped To to be 'End User Approvals List'.

---

**NOTE** If you are upgrading directly from Identity Manager version 7.x to version 8.0, the preceding modifications are unnecessary.

---

- If you are upgrading from version 6.0 or 7.0 to version 7.1 or version 8.0, and using `LocalFiles`, you must export all of your data before upgrading and then re-import the data after doing a clean installation of 7.1 or 8.0. (ID-15366)
- If your installation contains a Remedy resource, you must place Remedy API libraries in the directory where the Gateway is installed. These libraries can be found on the Remedy server.

**Table 1** Remedy API Libraries

Remedy 4.x and 5.x	Remedy 6.3	Remedy 7.0
• arapiXX.dll	• arapi63.dll	• arapi70.dll
• arrpcXX.dll	• arrpc63.dll	• arrpc70.dll
• arutlXX.dll	• arutl63.dll	• arutl70.dll
where XX matches the version of Remedy. For example, arapi45.dll on Remedy 4.5.	• icudt20.dll	• icudt32.dll
	• icuin20.dll	• icuin32.dll
	• icuuc20.dll	• icuuc32.dll

- Upgrading to Identity Manager 8.0 automatically converts the User Extended Attributes object and QueryableAttrNames and SummaryAttrNames elements of the UserUIConfig object into the IDM Schema Configuration object. (ID-17784) The sample update.xml script contains an import command that invokes IDMSchemaConfigurationUpdater to convert legacy user schema configuration objects. Successful conversion of legacy user schema configuration objects performs the following:
  - Creates within IDM Schema Configuration an IDMObjectClassAttribute element for each extended attribute name from User Extended Attributes.
  - Flags as 'summary' any IDMObjectClassAttribute that corresponds to each value from the SummaryAttrNames element within UserUIConfig.
  - Flags as 'queryable' any IDMObjectClassAttribute that corresponds to each value from the QueryableAttrNames element within UserUIConfig.
  - Empties the SummaryAttrNames element within UserUIConfig.
  - Empties the QueryableAttrNames element within UserUIConfig.
  - Renames any extended attribute named objectClass to spml20objectClass. Legacy attributes named objectClass conflict with a core attribute in the Identity Manager 8.0 schema.
- When you are upgrading to Identity Manager 8.0, and have any custom code that calls UserUIConfig#getRepoIndexAttributes(), you must remove the code or change it to call Type.USER#getInlineAttributeNames(). (ID-18051)

Importing `update.xml` converts the values from the `UserUIConfig RepoIndexAttrs` into values of XML attributes on the `TypeDataStore` element for `Type.USER` within the `RepositoryConfiguration` object. The `update.xml` file includes the `UserUIConfigUpdater.xml` file, which contains an `import` command that invokes `UserUIConfigUpdater` to convert `RepoIndexAttrs`. Conversion also sets a flag in `SystemConfiguration` that inhibits reconversion.

Any future changes to the inline attributes for `Type.USER` should be made by editing the `RepositoryConfiguration` object. If you change the inline attributes for `Type.USER`, you generally must refresh all `Type.USER` objects.

---

**NOTE** Changes to `RepositoryConfiguration` do not affect an Identity Manager server until you restart that server.

---

- Be sure to use only one Identity Manager server to import `update.xml` and have only one Identity Manager server running during the upgrade. (ID-18051)

If you start any other Identity Manager servers during the upgrade, you must stop and restart that server before making it available.

- When upgrading to Identity Manager 8.0 from any Identity Manager release prior to Identity Manager 7.1, there might be `ItemNotFound` Exceptions in the upgrade log due to Identity Manager Service Provider Edition (SPE) objects being renamed to Identity Manager Service Provider within Identity Manager 8.0. (ID-18860)

## Deprecated Features

- Identity Manager 8.0 changed the display method of charts and graphs in reports. Reports created prior to Identity Manager 8.0 will display as expected in the Identity Manger 8.0 release; however, reports will not display as expected in subsequent major releases and patches. For example, a report created in Identity Manager 7.1 will display as expected in Identity Manager 8.0 and Identity Manager 8.0 Patch 1, but not in Identity Manager 9.0. (ID-17636)

## Refreshing User Objects

Certain types of changes require an administrator to refresh all `User` objects. For example, you must refresh all `User` objects when you change the inline attributes for `Type.USER` in `RepositoryConfiguration`. Whenever you mark an attribute as `queryable` or `summary` in the `IDMSchemaConfiguration` object, you must refresh all `User` objects for the change to affect older,

unmodified objects. The same logic applies when a new version of Identity Manager adds a new attribute, or when a new version of Identity Manager changes the values of an existing attribute — the upgrade process or an administrator must refresh all `User` objects for the change to affect older, unmodified objects.

There are three ways to reserialize existing users:

- Modify an individual `User` object during normal operations.

For example, opening a user account through the user interface and saving it with or without modifications.

**Disadvantage:** This method is time-consuming, and the administrator must be meticulous to ensure all existing users are reserialized.

- Use the `lh refreshType` utility to reserialize all users. The `refreshType` utility's output is a refreshed list of users.

```
lh console
```

```
refreshType User
```

**Disadvantage:** Because the `refreshType` utility runs in the foreground and not the background, this process can be time-consuming. If you have a lot of users, reserializing them all takes a long time.

- Use the Deferred Task Scanner.

---

**NOTE** Before running the Deferred Task Scanner process, you must edit the `System Configuration` object using the Identity Manager Integrated Development Environment (Identity Manager IDE) or some other method.

Search for '`refreshOfType`' and remove the attributes for '`2005Q4M3refreshOfTypeUserIsComplete`' and '`2005Q4M3refreshOfTypeUserUpperBound`'.

After editing the `System Configuration` object, you must import that object to repository for your changes to be present.

---

**Disadvantage:** This method causes the next Deferred Task Scanner run to take a long time because it examines and rewrites almost every `User` object. However, subsequent Deferred Task Scanner runs should execute at normal speed and duration.



# Deprecated APIs

This section lists all Identity Manager Application Programming Interfaces (APIs) deprecated since Identity Manager 6.0 2005Q4M3 and their replacements (if available). This information is organized into the following sections:

- [Deprecated Java Classes, Methods, and Fields](#)
- [Deprecated JSP Files and URLs](#)
- [Deprecated Configuration Objects](#)
- [Deprecated Views and Path Expressions](#)

---

**NOTE** MultiSelect and TreeTable applet support will be discontinued in the next major Identity Manager release; however, similar functionality will be maintained. (ID-18785)

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---

## Deprecated Java Classes, Methods, and Fields

The following table lists deprecated classes, methods, and fields and their replacements, when available. The table is sorted by class name, and all classes, methods, and fields are listed using JavaDoc syntax.

---

<b>Deprecated</b>	<b>Replacement</b>
<code>com.sun.idm.idmx.IDMXContext</code>	<code>com.waveset.object.LighthouseContext</code>
<code>com.sun.idm.idmx.IDMXContextFactory</code>	<code>com.waveset.session.SessionFactory</code>
<code>com.sun.idm.idmx.sync.util.CaseInsensitiveStringComparator</code>	<code>java.lang.String.CASE_INSENSITIVE_ORDER</code>
<code>com.waveset.adapter.AccessManagerResourceAdapter#handlePDException(Exception)</code>	<code>com.waveset.adapter.AccessManagerResourceAdapter#handlePDException(PDException)</code>
<code>com.waveset.adapter.ACF2ResourceAdapter#getAccountAttributes(String)</code>	
<code>com.waveset.adapter.ActivCardResourceAdapter</code>	
<code>com.waveset.adapter.ActiveDirectoryActiveSyncAdapter</code>	<code>com.waveset.adapter.ADSIResourceAdapter</code>
<code>com.waveset.adapter.ActiveSync#RA_PARAMETERIZED_INPUT_FORM</code>	

---

Deprecated	Replacement
com.waveset.adapter.ActiveSync# RA_SYNC_CONFIG_MODE	
com.waveset.adapter.ActiveSync# RA_SYNC_POST_PROCESS_FORM	
com.waveset.adapter.ActiveSync# RA_UPDATE_IF_DELETE	
com.waveset.adapter.ActiveSync#RA_USE_INPUT_FORM	
com.waveset.adapter.ActiveSyncUtil#getLogFileFullPath()	
com.waveset.adapter.AD_LDAPResourceAdapter	com.waveset.adapter.LDAPResourceAdapter
com.waveset.adapter.ADSIResourceAdapter# buildEvent(UpdateRow)	com.waveset.adapter.iapi.IAPIFactory# getAPI(Map,Map,ResourceAdapterBase)
com.waveset.adapter.ADSIResourceAdapter# getBaseContextAttrName()	com.waveset.adapter.ResourceAdapter# getBaseContexts()
com.waveset.adapter.ADSIResourceAdapter# RA_UPDATE_IF_DELETE	com.waveset.adapter.ActiveSync# RA_DELETE_RULE
com.waveset.adapter.AgentResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.AIXResourceAdapter.BlockAcctIter	References to this class should be replaced with an AccountIterator based on the Supplier model. For example BufferedAccountQueue(new AIXAccountSupplier).
com.waveset.adapter.AuthSSOResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.BlackberryResourceAdapter	com.waveset.adapter.ScriptedGatewayResourceAdapter
com.waveset.adapter.ClearTrustResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.ConfirmedSync	References to this class should be replaced with an AccountIterator based on the Supplier model. For example BufferedAccountQueue(new LinuxAccountSupplier).
com.waveset.adapter.DatabaseTableResourceAdapter# RA_PROCESS_NAME	com.waveset.adapter.ActiveSync# RA_PROCESS_RULE
com.waveset.adapter.DbIBufIterator	com.waveset.util.BufferedIterator com.waveset.util.BlockIterator com.waveset.adapter.AccountIteratorWrapper

Deprecated	Replacement
com.waveset.adapter.DB2ResourceAdapter# getAccountAttributes(String)	com.waveset.adapter.DominoResourceAdapter
com.waveset.adapter.DominoActiveSyncAdapter	com.waveset.adapter.DominoResourceAdapter
com.waveset.adapter.DominoResourceAdapter# buildEvent(UpdateRow)	com.waveset.adapter.iapi.IAPIFactory# getIAPI(Map,Map,ResourceAdapterBase)
com.waveset.adapter.DominoResourceAdapter# RA_UPDATE_IF_DELETE	com.waveset.adapter.ActiveSync# RA_DELETE_RULE
com.waveset.adapter.DominoResourceAdapterBase# getAccountAttributes(String)	
com.waveset.adapter.Exchange55ResourceAdapter	
com.waveset.adapter.ExampleTableResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.GenericScriptResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.GetAccessResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.HostConnectionPool# getConnectionHostAccessLogin)	com.waveset.adapter.HostConnPool# getAffinityConnection(HostAccessLogin)
com.waveset.adapter.HostConnectionPool# releaseConnection(HostAccess)	com.waveset.adapter.HostConnPool# releaseConnection(HostAccess)
com.waveset.adapter.HostConnectionPool# releaseConnection(IHostAccess)	com.waveset.adapter.HostConnPool# releaseConnection(IHostAccess)
com.waveset.adapter.HostConnPool# getConnection(HostAccessLogin)	com.waveset.adapter.HostConnPool# getAffinityConnection(HostAccessLogin)
com.waveset.adapter.HostConnPool#putFree()	
com.waveset.adapter.HostConnPool#putFree(IHostAccess)	com.waveset.adapter.HostConnPool#putAffinityFree
com.waveset.adapter.iapi.IAPIFactory# getIAPIProcess(Map,Map,String,Resource)	com.waveset.adapter.iapi.IAPIFactory# getIAPI(Map,Map,String,ResourceAdapterBase)
com.waveset.adapter.iapi.IAPIFactory# getIAPIProcess(Element)	
com.waveset.adapter.iapi.IAPIFactory# getIAPIUser(Element)	
com.waveset.adapter.iapi.IAPIFactory# getIAPIUser(Map,Map,String,Map)	com.waveset.adapter.iapi.IAPIFactory# getIAPI(Map, Map, String, ResourceAdapterBase)
com.waveset.adapter.iapi.IAPIFactory# getIAPIUser(Map,Map,String,Resource)	com.waveset.adapter.iapi.IAPIFactory# getIAPI(Map,Map,String,ResourceAdapterBase)

Deprecated	Replacement
com.waveset.adapter.IDMResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.INISafeNexessResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.LDAPChangeLogActiveSyncAdapter	com.waveset.adapter.LDAPResourceAdapter
com.waveset.adapter.LDAPListenerActiveSyncAdapter	com.waveset.adapter.LDAPChangeLogActiveSyncAdapter
com.waveset.adapter.LDAPResourceAdapterBase# addUserToGroup(LDAPObject,String,String)	com.waveset.adapter.LDAPResourceAdapterBase# addUserToGroup(String,String,String)
com.waveset.adapter.LDAPResourceAdapterBase# buildBaseUrl()	
com.waveset.adapter.LDAPResourceAdapterBase# buildBaseUrl(String)	
com.waveset.adapter.LDAPResourceAdapterBase# buildEvent(UpdateRow)	
com.waveset.adapter.LDAPResourceAdapterBase# getAccountAttributes(String)	
com.waveset.adapter.LDAPResourceAdapterBase# getBaseContextAttrName()	com.waveset.adapter.ResourceAdapter# getBaseContexts()
com.waveset.adapter.LDAPResourceAdapterBase# getGroups(Name,String,Vector,Vector)	com.waveset.adapter.LDAPResourceAdapterBase# getGroups(String,String,Vector,Vector)
com.waveset.adapter.LDAPResourceAdapterBase# getLDAPAttributes(String,DirContext[],String)	com.waveset.adapter.LDAPResourceAdapterBase# getLDAPAttributes(String,DirContext,String,String[])
com.waveset.adapter.LDAPResourceAdapterBase# getLDAPAttributes(String,DirContext[])	com.waveset.adapter.LDAPResourceAdapterBase# getLDAPAttributes(String,DirContext,String,String[])
com.waveset.adapter.LDAPResourceAdapterBase# RA_PROCESS_NAME	com.waveset.adapter.ActiveSync# RA_PROCESS_RULE
com.waveset.adapter.LDAPResourceAdapterBase# removeNameFromAttribute(DirContext,Name,Attribute)	com.waveset.adapter.LDAPResourceAdapterBase# removeNameFromAttribute(DirContext,String, boolean,Attribute)
com.waveset.adapter.LDAPResourceAdapterBase# removeUserFromAllGroups(Name,String,WavesetResult)	com.waveset.adapter.LDAPResourceAdapterBase# removeUserFromAllGroups(String,boolean,String, WavesetResult)
com.waveset.adapter.LDAPResourceAdapterBase# removeUserFromGroup(DirContext,Name,String,String, Attributes)	com.waveset.adapter.LDAPResourceAdapterBase# removeUserFromGroup(DirContext,String,boolean, String,String,Attributes)

Deprecated	Replacement
com.waveset.adapter.LDAPResourceAdapterBase# removeUserFromGroups(Name,Vector,String, WavesetResult)	com.waveset.adapter.LDAPResourceAdapterBase# removeUserFromGroups(String, boolean,Vector,String,WavesetResult)
com.waveset.adapter.LinuxResourceAdapter.BlockAcctIter	
com.waveset.adapter.MySQLResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.NaturalResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.NaturalResourceAdapter.getUser()	com.waveset.adapter.NaturalResourceAdapter# affinity
com.waveset.adapter.NaturalResourceAdapter.login (IHostAccess)	com.waveset.adapter.NaturalResourceAdapter# login(IHostAccess,ServerAffinity)
com.waveset.adapter.NDSActiveSyncAdapter	com.waveset.adapter.NDSResourceAdapter
com.waveset.adapter.NDSResourceAdapter# buildEvent(UpdateRow)	
com.waveset.adapter.NDSResourceAdapter# getBaseContextAttrName()	com.waveset.adapter.ResourceAdapter# getBaseContexts()
com.waveset.adapter.NISResourceAdapter	
com.waveset.adapter.NTResourceAdapter	
com.waveset.adapter.ONTDirectorySmartResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.OS400ResourceAdapter# getAccountAttributes(String)	
com.waveset.adapter.PeopleSoftComponentActiveSync Adapter#DEFAULT_AUDIT_STAMP_FORMAT	
com.waveset.adapter.PeopleSoftComponentActiveSync Adapter#DEFAULT_AUDIT_STAMP_START_DATE	
com.waveset.adapter.PeopleSoftComponentActiveSync Adapter#getAccountAttributes(String)	
com.waveset.adapter.PeopleSoftComponentActiveSync Adapter#getUpdateRows(UpdateRow)	com.waveset.adapter.PeopleSoftComponentActive SyncAdapter#getUpdateRows(UpdateRow)
com.waveset.adapter.PeopleSoftComponentActiveSync Adapter#RA_AUDIT_STAMP_FORMAT	
com.waveset.adapter.PeopleSoftResourceAdapter	
com.waveset.adapter.RACFResourceAdapter# getAccountAttributes(String)	

Deprecated	Replacement
<code>com.waveset.adapter.RASecureConnection#ExchangeAuth(boolean)</code>	<code>com.waveset.adapter.RASecureConnection#ExchangeAuth(boolean,byte[])</code>
<code>com.waveset.adapter.RemedyActiveSyncResourceAdapter</code>	<code>com.waveset.adapter.RemedyResourceAdapter</code>
<code>com.waveset.adapter.RequestResourceAdapter#getAccountAttributes(String)</code>	
<code>com.waveset.adapter.ResourceAdapter#getAccountAttributes(String)</code>	
<code>com.waveset.adapter.ResourceAdapter#getBaseContextAttrName()</code>	<code>com.waveset.adapter.ResourceAdapter#getBaseContexts()</code>
<code>com.waveset.adapter.ResourceAdapterBase#getAccountAttributes(String)</code>	
<code>com.waveset.adapter.ResourceAdapterBase#getAdapter(Resource,LighthouseContext)</code>	<code>com.waveset.adapter.ResourceAdapterBase#getAdapterProxy(Resource,LighthouseContext)</code>
<code>com.waveset.adapter.ResourceAdapterBase#getAdapter(Resource,ObjectCache,WSUser)</code>	<code>com.waveset.adapter.ResourceAdapterBase#getAdapterProxy(Resource,ObjectCache)</code>
<code>com.waveset.adapter.ResourceAdapterBase#getAdapter(Resource,ObjectCache)</code>	
<code>com.waveset.adapter.ResourceAdapterBase#getBaseContextAttrName()</code>	<code>com.waveset.adapter.ResourceAdapterBase#getBaseContexts()</code>
<code>com.waveset.adapter.ResourceAdapterBase#isExcludedAccount(String,Rule)</code>	<code>com.waveset.adapter.ResourceAdapterProxy#isExcludedAccount(String,Map,ResourceOperation,Rule)</code>
<code>com.waveset.adapter.ResourceAdapterBase#isExcludedAccount(String)</code>	<code>com.waveset.adapter.ResourceAdapterProxy#isExcludedAccount(String,Map,ResourceOperation,Rule)</code>
<code>com.waveset.adapter.ResourceAdapterBase.SimpleAccountIterator</code>	Users of this class should switch to using the supplier model for account iteration. A direct replacement for this class would be: <code>new BufferedAccountQueue(new SimpleAccountSupplier(accounts));</code>
<code>com.waveset.adapter.ResourceAdapterProxy#getAccountAttributes(String)</code>	
<code>com.waveset.adapter.ResourceAdapterProxy#getBaseContextAttrName()</code>	<code>com.waveset.adapter.ResourceAdapterProxy#getBaseContexts()</code>
<code>com.waveset.adapter.ResourceManager#getResourceTypes()</code>	<code>com.waveset.adapter.ResourceManager#getResourcePrototypes()</code>
	<code>com.waveset.adapter.ResourceManager#getResourcePrototypes(ObjectCache,boolean)</code>

Deprecated	Replacement
com.waveset.adapter.ResourceManager#getResourceTypeStrings()	com.waveset.adapter.ResourceManager#getResourcePrototypeNames(ObjectCache)
com.waveset.adapter.SAPHRActiveSyncAdapter#RA_PROCESS_NAME	com.waveset.adapter.ActiveSync#RA_PROCESS_RULE
com.waveset.adapter.SAPResourceAdapter#reverseMapMultiAttr(String, Object, WSUser)	
com.waveset.adapter.SAPResourceAdapter#setUserField(JCO.Function, String)	Function#setUserField(String)
com.waveset.adapter.SAPResourceAdapter#unexpirePassword(String,WavesetResult)	com.waveset.adapter.SAPResourceAdapter#unexpirePassword(String,String,String,WavesetResult)
com.waveset.adapter.SAPResourceAdapter#unexpirePassword(WSUser,WavesetResult)	com.waveset.adapter.SAPResourceAdapter#unexpirePassword(String,String,String,WavesetResult)
com.waveset.adapter.ScriptedConnection.Script#hasNextToken()	
com.waveset.adapter.ScriptedConnection.Script#nextToken()	
com.waveset.adapter.ScriptedConnection.ScriptedConnection#disconnect()	com.waveset.adapter.ResourceConnection#disconnect()
com.waveset.adapter.ScriptedConnection.ScriptedConnectionFactory#getScriptedConnection(String,HashMap)	com.waveset.adapter.ScriptedConnectionPool#getConnection(HashMap,String,long,boolean)
com.waveset.adapter.ScriptedConnection.SSHConnection#disconnect()	com.waveset.adapter.ScriptedConnection.SSHConnection#disconnect()
com.waveset.adapter.ScriptedConnection.TelnetConnection#disconnect()	com.waveset.adapter.ScriptedConnection.TelnetConnection#disconnect()
com.waveset.adapter.ScriptedHostResourceAdapter#getAccountAttributes(String)	
com.waveset.adapter.SkeletonActiveSyncAdapter	
com.waveset.adapter.SkeletonResourceAdapter	
com.waveset.adapter.SkeletonResourceAdapter#getAccountAttributes(String)	
com.waveset.adapter.SMEResourceAdapter#getAccountAttributes(String)	
com.waveset.adapter.SQLServerResourceAdapter	com.waveset.adapter.MSSQLServerResourceAdapter
com.waveset.adapter.SunAccessManagerResourceAdapter#getAccountAttributes(String)	

Deprecated	Replacement
<code>com.waveset.adapter.SunAccessManagerResourceAdapter#getBaseContextAttrName()</code>	<code>com.waveset.adapter.ResourceAdapter#getBaseContexts()</code>
<code>com.waveset.adapter.SVIDResourceAdapter.BlockAcctIter</code>	References to this class should be replaced with an AccountIterator based on the Supplier model. For example <code>BufferedAccountQueue(new SVIDAccountSupplier)</code> .
<code>com.waveset.adapter.SybaseResourceAdapter</code>	<code>com.waveset.adapter.SybaseASEResourceAdapter</code>
<code>com.waveset.adapter.TestResourceAdapter#getAccountAttributes(String)</code>	
<code>com.waveset.adapter.TopSecretActiveSyncAdapter</code>	<code>com.waveset.adapter.TopSecretResourceAdapter</code>
<code>com.waveset.adapter.TopSecretResourceAdapter#hasError(String,String)</code>	<code>com.waveset.adapter.TopSecretResourceAdapter#hasError(String,String,String)</code>
<code>com.waveset.adapter.TopSecretResourceAdapter#login(HostAccess hostAccess)</code>	<code>com.waveset.adapter.TopSecretResourceAdapter#login(HostAccess,ServerAffinity)</code>
<code>com.waveset.adapter.TopSecretResourceAdapter#login(IHostAccess hostAccess)</code>	<code>com.waveset.adapter.TopSecretResourceAdapter#login(IHostAccess hostAccess,ServerAffinity affinity)</code>
<code>com.waveset.adapter.VerityResourceAdapter#getAccountAttributes(String)</code>	
<code>com.waveset.adapter.XMLResourceAdapter#getAccountAttributes(String)</code>	
<code>com.waveset.exception.ConfigurationError</code>	<code>com.waveset.util.ConfigurationError</code>
<code>com.waveset.exception.IOException</code>	<code>com.waveset.util.IOException</code>
<code>com.waveset.exception.XmlParseException</code>	<code>com.waveset.util.XmlParseException</code>
<code>com.waveset.extractor.CSVFormatter</code>	<code>com.sun.idm.changelog.CSVFormatter</code>
<code>com.waveset.msgcat.Catalog#getMessage(String,Object[],Locale)</code>	<code>com.waveset.msgcat.Catalog#format(Locale,String,Object[])</code>
<code>com.waveset.msgcat.Catalog#getMessage(Locale,String,Object[])</code>	<code>com.waveset.msgcat.Catalog#format(Locale,String,Object[])</code>
<code>com.waveset.msgcat.Catalog#getMessage(Locale,String)</code>	<code>com.waveset.msgcat.Catalog#format(Locale,String)</code>
<code>com.waveset.msgcat.Catalog#getMessage(String,Locale)</code>	<code>com.waveset.msgcat.Catalog#format(Locale,String)</code>
<code>com.waveset.msgcat.Catalog#getMessage(String,Object[])</code>	<code>com.waveset.msgcat.Catalog#format(Locale,String,Object[])</code>
<code>com.waveset.object.Account#getUnowned()</code>	<code>com.waveset.object.Account#hasOwner()</code>
<code>com.waveset.object.Account#setUnowned(boolean)</code>	<code>com.waveset.object.Account#setOwner(WUser)</code>
<code>com.waveset.object.AccountAttributeType#getAttrType()</code>	<code>com.waveset.object.AccountAttributeType#getSyntax()</code>

<b>Deprecated</b>	<b>Replacement</b>
com.waveset.object.AccountAttributeType# setAttrType(String)	com.waveset.object.AccountAttributeType# setSyntax(String)
	com.waveset.object.AccountAttributeType# setSyntax(Syntax)
com.waveset.object.Attribute#BLOCK_SIZE	com.waveset.object.Attribute#BLOCK_ROWS_GET
	com.waveset.object.Attribute#BLOCK_ROWS_LIST
com.waveset.object.Attribute#EVENTDATE	com.waveset.object.Attribute#EVENT_DATETIME
com.waveset.object.Attribute#EVENTTIME	com.waveset.object.Attribute#EVENT_DATETIME
com.waveset.object.Attribute#getDbColumnLength()	
com.waveset.object.Attribute#getDbColumnName()	
com.waveset.object.Attribute#STARTUP_TYPE_AUTO	com.waveset.object.Resource# STARTUP_TYPE_AUTO
com.waveset.object.Attribute# STARTUP_TYPE_AUTO_FAILOVER	com.waveset.object.Resource# STARTUP_TYPE_AUTO_FAILOVER
com.waveset.object.Attribute#STARTUP_TYPE_DISABLED	com.waveset.object.Resource# STARTUP_TYPE_DISABLED
com.waveset.object.Attribute#STARTUP_TYPE_MANUAL	com.waveset.object.Resource# STARTUP_TYPE_MANUAL
com.waveset.object.Attribute#STARTUP_TYPES	com.waveset.object.Resource#STARTUP_TYPES
com.waveset.object.Attribute# STARTUP_TYPES_DISPLAY_NAMES	com.waveset.object.Resource# STARTUP_TYPES_DISPLAY_NAMES
com.waveset.object.AttributeDefinition# AttributeDefinition(String,String)	com.waveset.object.AttributeDefinition# AttributeDefinition(String,Syntax)
com.waveset.object.AttributeDefinition# setAttrType(String)	com.waveset.object.AttributeDefinition# setSyntax(Syntax)
com.waveset.object.AuditEvent#setAttributeMap(Map)	com.waveset.object.AuditEvent# setAuditableAttributes(Map)
com.waveset.object.AuditEvent# addAuditableAttributes(AccountAttributeType[], WSAttributes)	com.waveset.object.AuditEvent# setAuditableAttributes(Map)
com.waveset.object.AuditEvent#getAttributeMap()	com.waveset.object.AuditEvent# getAuditableAttributes()
com.waveset.object.AuditEvent#getAttributeValue(String)	com.waveset.object.AuditEvent# getAuditableAttributes()
com.waveset.object.AuditEvent# setAccountAttributesBlob(Map)	com.waveset.object.AuditEvent# setAccountAttributesBlob(Map,Map)

Deprecated	Replacement
<code>com.waveset.object.AuditEvent#setAccountAttributesBlob(WSAttributes, List)</code>	<code>com.waveset.object.AuditEvent#setAccountAttributesBlob(WSAttributes, WSAttributes, List)</code>
<code>com.waveset.object.AuditEvent.setAccountAttributesBlob(List)</code>	Use one of the other forms of <code>setAccountAttributesBlob</code> (to allow for new, attempted, or old values).
<code>com.waveset.object.AuditEvent.setAccountAttributesBlob(Map, Map)</code>	Put the list of attributes into <code>name=value;;</code> format, which in turn will be stored in a blob. The delimiter <code>;;</code> will be filtered.
<code>com.waveset.object.AuditEvent.setAccountAttributesBlob(Map, Map, Set)</code>	Use one of the other forms of <code>setAccountAttributesBlob</code> (to allow for new, attempted, or old attribute values).
<code>com.waveset.object.CacheManager#getAllObjects(Type, AttributeCondition[])</code>	<code>com.waveset.object.CacheManager#listObjects(Type, AttributeCondition[])</code>
<code>com.waveset.object.CacheManager#getAllObjects(Type, WSAttributes)</code>	<code>com.waveset.object.CacheManager#listObjects(Type, WSAttributes)</code>
<code>com.waveset.object.CacheManager#getAllObjects(Type)</code>	<code>com.waveset.object.CacheManager#listObjects(Type)</code>
<code>com.waveset.object.Constants#MAX_SUMMARY_STRING_LENGTH</code>	
<code>com.waveset.object.EmailTemplate#setToAddress(String)</code>	<code>com.waveset.object.EmailTemplate#setTo(String)</code>
<code>com.waveset.object.EmailTemplate#getFromAddress()</code>	<code>com.waveset.object.EmailTemplate#getFrom()</code>
<code>com.waveset.object.EmailTemplate#getToAddress()</code>	<code>com.waveset.object.EmailTemplate#getTo()</code>
<code>com.waveset.object.EmailTemplate#setFromAddress(String)</code>	<code>com.waveset.object.EmailTemplate#setFrom(String)</code>
<code>com.waveset.object.EmailTemplate#VAR_FROM_ADDRESS</code>	<code>com.waveset.object.EmailTemplate#VAR_FROM</code>
<code>com.waveset.object.EmailTemplate#VAR_TO_ADDRESS</code>	<code>com.waveset.object.EmailTemplate#VAR_TO</code>
<code>com.waveset.object.Form#EL_HELP</code>	<code>com.waveset.object.GenericObject#toMap(int)</code>
<code>com.waveset.object.Form#getDefaultDataType()</code>	<code>com.waveset.object.Form#getDefaultSyntax()</code>
<code>com.waveset.object.Form#getType()</code>	<code>com.waveset.object.Form#getSyntax()</code>
<code>com.waveset.object.Form#setType(String)</code>	<code>com.waveset.object.Form#setSyntax(Syntax)</code>
<code>com.waveset.object.GenericObject.addAlias(String, String)</code>	
<code>com.waveset.object.GenericObject#toMap(boolean)</code>	<code>com.waveset.object.GenericObject#toMap(String, int)</code>
<code>com.waveset.object.GenericObject#toMap(String, boolean)</code>	
<code>com.waveset.object.IAPI</code>	<code>com.waveset.adapter.iapi.IAPI</code>

Deprecated	Replacement
com.waveset.object.IAPIProcess	com.waveset.adapter.iapi.IAPIFactory
com.waveset.object.IAPIUser	com.waveset.adapter.iapi.IAPIUser
com.waveset.object.LighthouseContext#OP_NO_RESULT	
com.waveset.object.LoginConfig#getApp(String)	com.waveset.object.LoginConfig# getLoginApp(String)
com.waveset.object.MessageUtil# getActionDisplayKey(String)	
com.waveset.object.MessageUtil# getEventParmDisplayKey(String)	
com.waveset.object.MessageUtil# getResultDisplayKey(String)	
com.waveset.object.MessageUtil# getTypeDisplayKey(String)	com.waveset.ui.FormUtil# getTypeDisplayName(LighthouseContext,String)
com.waveset.object.PersistentObject()	com.waveset.object.PersistentObject(ObjectClass)
com.waveset.object.PersistentObject.fakeId(Type,String)	com.waveset.object.IDFactory.fakeID(type,name).to String()
com.waveset.object.PersistentObject.isId(String)	com.waveset.object.IDFactory.isValidID(id)
com.waveset.object.Principal()	com.waveset.object.Principal(ObjectClass)
com.waveset.object.Principal(String)	com.waveset.object.Principal(ObjectClass,String)
com.waveset.object.RemedyTemplate	
com.waveset.object.ReportCounter	
com.waveset.object.RepositoryProxy.sort(RepositoryResult)	
com.waveset.object.RepositoryResult#get(int)	
com.waveset.object.RepositoryResult#getId(int)	
com.waveset.object.RepositoryResult#getName(int)	
com.waveset.object.RepositoryResult#getObject(int)	
com.waveset.object.RepositoryResult#getRowCount()	
com.waveset.object.RepositoryResult#getRows()	
com.waveset.object.RepositoryResult#seek(int)	com.waveset.object.RepositoryResult#hasNext() com.waveset.object.RepositoryResult#next()
com.waveset.object.RepositoryResult#sort()	
com.waveset.object.RepositoryResult.Row# getSummaryAttributes()	com.waveset.object.RepositoryResult.Row# getAttributes()

Deprecated	Replacement
<code>com.waveset.object.ResourceAttribute#setType(String)</code>	<code>com.waveset.object.ResourceAttribute#setSyntax(Syntax)</code>
<code>com.waveset.object.Role()</code>	<code>com.waveset.object.Role(ObjectClass)</code>
<code>com.waveset.object.Service()</code>	<code>com.waveset.object.Service(ObjectClass)</code>
<code>com.waveset.object.SourceManager</code>	<code>com.waveset.view.SourceAdapterManagerView</code>
<code>com.waveset.object.Syntax.getDescription()</code>	
<code>com.waveset.object.TaskInstance#DATE_FORMAT</code>	<code>com.waveset.util.Util#stringToDate(String,String)</code> <code>com.waveset.util.Util#getCanonicalDate(Date)</code> <code>com.waveset.util.Util#getCanonicalDate(Date,TimeZone)</code> <code>com.waveset.util.Util#getCanonicalDate(long)</code>
<code>com.waveset.object.TaskInstance#VAR_RESULT_LIMIT</code>	<code>com.waveset.object.TaskInstance#setResultLimit(int)</code> <code>com.waveset.object.TaskInstance#getResultLimit()</code>
<code>com.waveset.object.TaskInstance#VAR_TASK_STATUS</code>	
<code>com.waveset.object.TaskTemplate#setMode(String)</code>	<code>com.waveset.object.TaskTemplate#setExecMode(String)</code>
<code>com.waveset.object.TaskTemplate#setMode(TaskDefinition.ExecMode)</code>	<code>com.waveset.object.TaskTemplate#setExecMode(TaskDefinition,ExecMode)</code>
<code>com.waveset.object.Type#AUDIT_CONFIG</code>	
<code>com.waveset.object.Type#AUDIT_PRUNER_TASK</code>	
<code>com.waveset.object.Type#AUDIT_QUERY</code>	
<code>com.waveset.object.Type#DISCOVERY</code>	
<code>com.waveset.object.Type#getSubtypes()</code>	<code>com.waveset.object.Type#getLegacyTypes()</code>
<code>com.waveset.object.Type#NOTIFY_CONFIG</code>	
<code>com.waveset.object.Type#REPORT_COUNTER</code>	
<code>com.waveset.object.Type#SUMMARY_REPORT_TASK</code>	
<code>com.waveset.object.Type#USAGE_REPORT</code>	
<code>com.waveset.object.Type#USAGE_REPORT_TASK</code>	
<code>com.waveset.object.UserUIConfig.emptyQueryableAttributeNames()</code>	
<code>com.waveset.object.UserUIConfig.emptyRepolIndexAttributes()</code>	

Deprecated	Replacement
com.waveset.object.UserUIConfig.emptySummary AttributeNames()	
com.waveset.object.UserUIConfig#getAppletColumns()	com.waveset.object.UserUIConfig# getAppletColumnDefs()
com.waveset.object.UserUIConfig# getFindMatchOperatorDisplayNameKeys()	
com.waveset.object.UserUIConfig#getFindMatchOperators()	
com.waveset.object.UserUIConfig#getFindResultsColumns()	
com.waveset.object.UserUIConfig# getFindResultsSortColumn()	
com.waveset.object.UserUIConfig# getFindUserDefaultSearchAttribute()	
com.waveset.object.UserUIConfig# getFindUserSearchAttributes()	
com.waveset.object.UserUIConfig# getFindUserShowAttribute(int)	
com.waveset.object.UserUIConfig# getFindUserShowCapabilitiesSearch(int)	
com.waveset.object.UserUIConfig# getFindUserShowDisabled(int)	
com.waveset.object.UserUIConfig# getFindUserShowOrganizationSearch(int)	
com.waveset.object.UserUIConfig# getFindUserShowProvisioningSearch(int)	
com.waveset.object.UserUIConfig# getFindUserShowResourcesSearch(int)	
com.waveset.object.UserUIConfig# getFindUserShowRoleSearch(int)	
com.waveset.object.UserUIConfig# getQueryableAttributeNames	com.waveset.object.IDMSchema.get QueryableAttributeNames(String ocName)
com.waveset.object.UserUIConfig.getRepoIndexAttributes()	
com.waveset.object.UserUIConfig.getSummary AttributeNames()	com.waveset.object.IDMSchema#getSummary AttributeNames(String name)
com.waveset.object.UserUIConfig.getSummary AttributeTypes()	com.waveset.object.WSUser#getSummary AttributeTypes()
com.waveset.object.UserUIConfig# SUMMARY_ATTTR_TYPES_WRAPPER	

Deprecated	Replacement
com.waveset.object.ViewMaster()	
com.waveset.object.ViewMaster.ViewMaster(String,String)	
com.waveset.object.ViewMaster.ViewMaster(Subject,String)	
com.waveset.object.WorkItem.getDelegator()	
com.waveset.object.WorkItem.setDelegator(String)	
com.waveset.object.WSUser.clearExtendedAttributes()	
com.waveset.object.WSUser#getApproverDelegate()	com.waveset.object.WSUser# getWorkItemDelegate(String workItemType)
com.waveset.object.WSUser.getCurrentServiceRefs()	
com.waveset.object.WSUser#getDelegateHistory()	com.waveset.object.WSUser# getWorkItemDelegateHistory()
com.waveset.object.WSUser.getRoleAttributeRefs()	
com.waveset.object.WSUser# setApproverDelegate(WsUser.Delegate)	com.waveset.object.WSUser# addWorkItemDelegate(Delegate workItemDelegate)
com.waveset.object.WSUser#setDelegateHistory(List)	com.waveset.object.WSUser# setWorkItemDelegateHistory (ListworkItemDelegateHistory)
com.waveset.rpc.SimpleRpcHandler	
com.waveset.security.authn.EncryptedData	
com.waveset.security.authn.Encryptor	
com.waveset.security.authn.LoginInfo	com.waveset.object.LoginInfo
com.waveset.security.authn.SignedString	com.waveset.util.SignedString
com.waveset.security.authn.Subject	com.waveset.object.Subject
com.waveset.security.authz.Permission	com.waveset.object.Permission
com.waveset.security.authz.Right	com.waveset.object.Right
com.waveset.server.Server#getResourceObjectGetCache()	
com.waveset.server.Server#getResourceObjectListCache()	
com.waveset.session.LocalSession# deleteAccountImmediate()	
com.waveset.session.LocalSession#getAdministrators(Map)	com.waveset.view.WorkItemUtil#getAdministrators
com.waveset.session.Session#listApprovers()	com.waveset.session.Session# getAdministrators(Map)
com.waveset.session#listControlledApprovers()	com.waveset.session#getAdministrators(Map)

Deprecated	Replacement
com.waveset.session#listSimilarApprovers(String adminName)	com.waveset.session#getAdministrators(Map)
com.waveset.session.SessionFactory#getApp(String)	com.waveset.session.SessionFactory#getLoginApp(String)
com.waveset.session#getApps()	com.waveset.session#getLoginApps()
com.waveset.session.WorkflowServices#ARG_TASK_DATE	com.waveset.object.Attribute#DATE
com.waveset.task.TaskContext#getAccessPolicy()	
com.waveset.task.TaskContext#getRepository()	
com.waveset.ui.SearchTableBase	
com.waveset.ui.util.FormUtil#getAdministrators(Session,List)	com.waveset.ui.util.FormUtil#getUser(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getAdministrators(Session,Map)	com.waveset.ui.util.FormUtil#getUser(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getApplications(LighthouseContext,List)	com.waveset.ui.util.FormUtil#getApplications(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getApplications(LighthouseContext)	com.waveset.ui.util.FormUtil#getApplications(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getApproverNames(Session,List)	com.waveset.ui.util.FormUtil#getUser(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getApproverNames(Session)	com.waveset.ui.util.FormUtil#getUser(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getApprovers(Session, List)	com.waveset.ui.util.FormUtil#getUser(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getApprovers(Session)	com.waveset.ui.util.FormUtil#getUser(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getCapabilities(LighthouseContext,List,Map)	com.waveset.ui.util.FormUtil#getCapabilities(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getCapabilities(LighthouseContext,List)	com.waveset.ui.util.FormUtil#getCapabilities(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getCapabilities(LighthouseContext,String,String)	com.waveset.ui.util.FormUtil#getCapabilities(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getCapabilities(LighthouseContext)	com.waveset.ui.util.FormUtil#getCapabilities(LighthouseContext,Map)
com.waveset.ui.util.FormUtil#getObjectNames(LighthouseContext,String,List,Map)	com.waveset.ui.util.FormUtil#getObjectNames(LighthouseContext,String,Map)
com.waveset.ui.util.FormUtil#getObjectNames(LighthouseContext,String,List)	com.waveset.ui.util.FormUtil#getObjectNames(LighthouseContext,String,Map)

Deprecated	Replacement
com.waveset.ui.util.FormUtil# getObjectNames (LighthouseContext,String,String,String,List,Map)	com.waveset.ui.util.FormUtil# getObjectNames(LighthouseContext,String,Map)
com.waveset.ui.util.FormUtil# getObjectNames (LighthouseContext,String,String,String,List)	com.waveset.ui.util.FormUtil# getObjectNames(LighthouseContext,String,Map)
com.waveset.ui.util.FormUtil# getObjectNames (LighthouseContext,Type,String,String,List,Map)	com.waveset.ui.util.FormUtil# getObjectNames(LighthouseContext,String,Map)
com.waveset.ui.util.FormUtil# getObjectNames(LighthouseContext,Type,String,String,List)	com.waveset.ui.util.FormUtil# getObjectNames(LighthouseContext,String,Map)
com.waveset.ui.util.FormUtil# getOrganizations(LighthouseContext,boolean,List)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getOrganizations(LighthouseContext,boolean)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getOrganizations(LighthouseContext,List)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getOrganizations(LighthouseContext)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames(LighthouseContext,boolean, List)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames(LighthouseContext,boolean)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames(LighthouseContext)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getOrganizationsDisplayNamesWithPrefixes (LighthouseContext,List)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getOrganizationsDisplayNamesWithPrefixes (LighthouseContext)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getOrganizationsWithPrefixes(LighthouseContext,List)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)

Deprecated	Replacement
com.waveset.ui.util.FormUtil# getOrganizationsWithPrefixes(LighthouseContext)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getSimilarApproverNames(Session,String)	com.waveset.ui.util.FormUtil# getUsers(LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getSimilarApproverNames(Session)	com.waveset.ui.util.FormUtil# getUsers(LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedOrganizations(LighthouseContext,List)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedOrganizations(LighthouseContext)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedOrganizationsDisplayNames (LighthouseContext,List)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedOrganizationsDisplayNames (LighthouseContext,Map)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedOrganizationsDisplayNames (LighthouseContext)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedOrganizationsDisplayNamesWithPrefixes (LighthouseContext,List)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedOrganizationsDisplayNamesWithPrefixes (LighthouseContext)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedOrganizationsWithPrefixes (LighthouseContext,List)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedOrganizationsWithPrefixes (LighthouseContext)	com.waveset.ui.util.FormUtil# getOrganizationsDisplayNames (LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedResources(LighthouseContext,List,List)	com.waveset.ui.util.FormUtil# getUnassignedResources(LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedResources(LighthouseContext,String)	com.waveset.ui.util.FormUtil# getUnassignedResources(LighthouseContext,Map)
com.waveset.ui.util.FormUtil# getUnassignedResources(LighthouseContext,String,List)	com.waveset.ui.util.FormUtil# getUnassignedResources(LighthouseContext,Map)

Deprecated	Replacement
<code>com.waveset.ui.util.html.Component#isNoWrap()</code>	
<code>com.waveset.ui.util.html.HtmlHeader#NORMAL_BODY</code>	
<code>com.waveset.ui.util.html.MultiSelect#isLockhart()</code>	
<code>com.waveset.ui.util.html#setHelpKey(String)</code>	
<code>com.waveset.ui.util.html#setLockhart(boolean)</code>	
<code>com.waveset.ui.util.html#setNoWrap(boolean)</code>	
<code>com.waveset.ui.util.html.TransactionSigner.getSupportedKeyStoreTypes()</code>	<code>com.waveset.ui.util.html.TransactionSigner.getSupportedKeyStoreType</code>
<code>com.waveset.ui.util.html.TransactionSigner.setSupportedKeyStoreTypes(String)</code>	<code>com.waveset.ui.util.html.TransactionSigner.setSupportedKeyStoreType</code>
<code>com.waveset.ui.util.html.WizardPanel#setPreviousLabel(String)</code>	<code>com.waveset.ui.util.html.WizardPanel#setPrevLabel(String)</code>
<code>com.waveset.ui.web.account.SearchForm</code>	
<code>com.waveset.ui.web.account.SearchTable</code>	
<code>com.waveset.ui.web.account.UserAppletTable</code>	
<code>com.waveset.ui.web.resources.ResourceAppletTable</code>	
<code>com.waveset.ui.web.roles.SearchRoleForm</code>	
<code>com.waveset.ui.web.roles.SearchRoleTable</code>	
<code>com.waveset.util.ArgumentsParser.parse(String[])</code>	<code>com.waveset.util.ArgumentsParser.parse(String[] args,List additionalArguments,boolean ignoreIncorrectUsage)</code>
<code>com.waveset.util.CaseInsensitiveStringComparator</code>	<code>java.lang.String.CASE_INSENSITIVE_ORDER</code>
<code>com.waveset.util.ConnectionPool.getConnection(String,String,boolean,String)</code>	<code>com.waveset.util.ConnectionPool#getConnection(String,String,String,boolean,String)</code>
<code>com.waveset.util.ConnectionPool.getConnection(String,String,String)</code>	<code>com.waveset.util.ConnectionPool#getConnection(String,String,String,String)</code>
<code>com.waveset.util.ConnectionPool.getConnection(String,String,String,String,String,boolean)</code>	<code>com.waveset.util.ConnectionPool#getConnection(String driverClass,String driverPrefix,String url,String user,String password,boolean checkConnection,String validationSql)</code>
<code>com.waveset.util.CSVParser</code>	<code>com.waveset.util.ConfigurableDelimitedFileParser</code>
<code>com.waveset.util.Debug</code>	<code>com.sun.idm.logging.Trace</code>
<code>com.waveset.util.HtmlUtil</code>	<code>com.waveset.ui.util.html.HtmlUtil</code>
<code>com.waveset.util.JSSE#installIfAvailable()</code>	

Deprecated	Replacement
<code>com.waveset.util.ITrace</code>	<code>com.sun.idm.logging.Trace</code>
<code>com.waveset.util.PipeDelimitedParser</code>	<code>com.waveset.util.ConfigurableDelimitedFileParser</code>
<code>com.waveset.util.PdfReportRenderer#render(Element,boolean,String,OutputStream)</code>	<code>com.waveset.util.PdfReportRenderer#render(Element,boolean,String,OutputStream,String,boolean)</code>
<code>com.waveset.util.PdfReportRenderer#render(Element,boolean,String)</code>	<code>com.waveset.util.PdfReportRenderer#render(Element,boolean,String,String,boolean)</code>
<code>com.waveset.util.PdfReportRenderer#render(Report,boolean,String,OutputStream)</code>	<code>com.waveset.util.PdfReportRenderer#render(Report,boolean,String,OutputStream,String,boolean)</code>
<code>com.waveset.util.PdfReportRenderer#render(Report,boolean,String)</code>	<code>com.waveset.util.PdfReportRenderer#render(String,boolean,String,String,boolean)</code>
<code>com.waveset.util.PooledConnection.isValid()</code>	<code>isValid(String SQL)</code>
<code>com.waveset.util.Quota#getQuota()</code>	
<code>com.waveset.util.ReportRenderer#renderToPdf(Report,boolean,String,OutputStream)</code>	<code>com.waveset.util.ReportRenderer#renderToPdf(Report,boolean,String,OutputStream,String,boolean)</code>
<code>com.waveset.util.ReportRenderer#renderToPdf(Report,boolean,String)</code>	<code>com.waveset.util.ReportRenderer#renderToPdf(Report,boolean,String,String,boolean)</code>
<code>com.waveset.util.Trace#data(long,Object,String,byte[])</code>	<code>com.sun.idm.logging.trace.Trace#data(long,String,byte[])</code>
<code>com.waveset.util.Trace#entry(long,Object,String,Object[])</code>	<code>com.sun.idm.logging.trace.Trace#entry(long,String,Object[])</code>
<code>com.waveset.util.Trace#entry(long,Object,String,String)</code>	<code>com.sun.idm.logging.trace.Trace#entry(long,String)</code>
<code>com.waveset.util.Trace#entry(long,Object,String)</code>	<code>com.sun.idm.logging.trace.Trace#entry(long,String)</code>
<code>com.waveset.util.Trace#exception(long,Object,String,t)</code>	<code>com.sun.idm.logging.trace.Trace#throwing(long,String,Throwable)</code> <code>com.sun.idm.logging.trace.Trace#caught(long,String,Throwable)</code>
<code>com.waveset.util.Trace#exit(long,Object,String,boolean)</code>	<code>com.sun.idm.logging.trace.Trace#exit(long,String,boolean)</code>
<code>com.waveset.util.Trace#exit(long,Object,String,int)</code>	<code>com.sun.idm.logging.trace.Trace#exit(long,String,int)</code>
<code>com.waveset.util.Trace#exit(long,Object,String,long)</code>	<code>com.sun.idm.logging.trace.Trace#exit(long,String,long)</code>
<code>com.waveset.util.Trace#exit(long,Object,String,Object)</code>	<code>com.sun.idm.logging.trace.Trace#exit(long,String,Object)</code>
<code>com.waveset.util.Trace#exit(long,Object,String)</code>	<code>com.sun.idm.logging.trace.Trace#exit(long,String)</code>

Deprecated	Replacement
<code>com.waveset.util.Trace#getTrace()</code>	<code>com.sun.idm.logging.trace.TraceManager# getTrace(String)</code>
<code>com.waveset.util.Trace#getTrace(Class)</code>	<code>com.sun.idm.logging.trace.TraceManager# getTrace(String)</code>
<code>com.waveset.util.Trace#getTrace(String)</code>	<code>com.sun.idm.logging.trace.TraceManager# getTrace(String)</code>
<code>com.waveset.util.Trace#level1(Class,String)</code>	<code>com.sun.idm.logging.trace.Trace#level1(String)</code>
<code>com.waveset.util.Trace#level1(Object,String)</code>	<code>com.sun.idm.logging.trace.Trace#level1(String)</code>
<code>com.waveset.util.Trace#level2(Class,String)</code>	<code>com.sun.idm.logging.trace.Trace#level2(String)</code>
<code>com.waveset.util.Trace#level2(Object,String)</code>	<code>com.sun.idm.logging.trace.Trace#level2(String)</code>
<code>com.waveset.util.Trace#level3(Class,String)</code>	<code>com.sun.idm.logging.trace.Trace#level3(String)</code>
<code>com.waveset.util.Trace#level3(Object,String)</code>	<code>com.sun.idm.logging.trace.Trace#level3(String)</code>
<code>com.waveset.util.Trace#level4(Class,String)</code>	<code>com.sun.idm.logging.trace.Trace#level4(String)</code>
<code>com.waveset.util.Trace#level4(Object,String)</code>	<code>com.sun.idm.logging.trace.Trace#level4(String)</code>
<code>com.waveset.util.Trace# variable(long, Object, String, String, boolean)</code>	<code>com.sun.idm.logging.trace.Trace# variable(long, String, String, boolean)</code>
<code>com.waveset.util.Trace# variable(long, Object, String, String, int)</code>	<code>com.sun.idm.logging.trace.Trace# variable(long, String, String, int)</code>
<code>com.waveset.util.Trace# variable(long, Object, String, String, long)</code>	<code>com.sun.idm.logging.trace.Trace# variable(long, String, String, long)</code>
<code>com.waveset.util.Trace# variable(long, Object, String, String, Object)</code>	<code>com.sun.idm.logging.trace.Trace# variable(long, String, String, Object)</code>
<code>com.waveset.util.Trace#void info(long, Object, String, String)</code>	<code>com.sun.idm.logging.trace.Trace# info(long, String, String)</code>
<code>com.waveset.util.Util#DATE_FORMAT_CANONICAL</code>	<code>com.waveset.util.Util#stringToDate(String, String)</code> <code>com.waveset.util.Util#getCanonicalDate(Date)</code> <code>com.waveset.util.Util# getCanonicalDate(Date, TimeZone)</code> <code>com.waveset.util.Util#getCanonicalDate(long)</code>
<code>com.waveset.util.Util#debug(Object)</code>	
<code>com.waveset.util.Util#getCanonicalDateFormat()</code>	<code>com.waveset.util.Util#stringToDate(String, String)</code> <code>com.waveset.util.Util#getCanonicalDate(Date)</code> <code>com.waveset.util.Util# getCanonicalDate(Date, TimeZone)</code> <code>com.waveset.util.Util#getCanonicalDate(long)</code>

Deprecated	Replacement
<code>com.waveset.util.Util#getLocalHostName()</code>	<code>#getServerId()</code> (to get a unique server identifier)
<code>com.waveset.util.Util# getOldCanonicalDateString(Date,boolean)</code>	<code>com.waveset.util.Util#getCanonicalDateString(Date)</code>
<code>com.waveset.util.Util.getUniqueld()</code>	<code>com.waveset.util.Util.generateGUID()</code>
<code>com.waveset.util.Util#rfc2396URLEncode(String)</code>	<code>com.waveset.util.RFC2396URLEncode# encode(String)</code>
<code>com.waveset.util.Util# rfc2396URLEncode(String,String)</code>	<code>com.waveset.util.RFC2396URLEncode# encode(String,String)</code>
<code>com.waveset.view.ViewUtil.getExtendedAttributes (LighthouseContext)</code>	<code>com.sun.idm.util.ObjectClasses.getExtended Attributes(ObjectClass)</code>
<code>com.waveset.view.ViewUtil.isExtendedAttribute (ViewMaster vm, String name)</code>	<code>ObjectClasses.getExtendedAttributes(ObjectClass)</code>
<code>com.waveset.view.ViewUtil.reloadExtendedAttributes()</code>	
<code>com.waveset.view.ViewUtil.setExtendedAttributes (LighthouseContext, List attributes)</code>	<code>IDMSchemaConfiguration</code>
<code>com.waveset.workflow.WorkflowContext# VAR_CASE_TERMINATED</code>	<code>com.waveset.object.WFProcess# VAR_CASE_TERMINATED</code>

## Deprecated JSP Files and URLs

The following table lists deprecated JSP files and URLs and their replacements, when available.

Deprecated	Replacement
<code>account/listapplet.jsp</code>	
<code>resources/listapplet.jsp</code>	
<code>resources/reconLinkAccountFilter.jsp</code>	

---

## Deprecated Configuration Objects

The following table lists deprecated configuration objects and their replacements, when available.

---

<b>Deprecated</b>	<b>Replacement</b>
UserExtendedAttributes	IDMSchemaConfiguration
UserUIConfig	IDMSchemaConfiguration

---

---

## Deprecated Views and Path Expressions

The following table lists the deprecated views and path expressions within views and their replacements, when available.

---

<b>Deprecated</b>	<b>Replacement</b>
DelegateApproversViewer	DelegateWorkItemsViewer

---

# Documentation Additions and Corrections

This section contains new and corrected information that was required after the Identity Manager 8.0 documentation set was published. This information is organized as follows:

- [Identity Manager 8.0 Administration](#)
- [Identity Manager Technical Deployment Overview](#)
- [Identity Manager Workflows, Forms, and Views](#)
- [Identity Manager Deployment Tools](#)
- [Localization Scope](#)
- [Online Help](#)

---

## *Identity Manager 8.0 Administration*

This section contains a correction for *Sun Identity Manager Administration*:

- On page 340, the Administration book contains the following note:

Identity Manager uses email templates to deliver information and requests for action to administrators, approvers, and users. For more information about Identity Manager email templates, see the section titled Understanding Email Templates in this guide.

Instead, the note should say "see the section titled "Customizing Email Templates" on page 196."

# *Identity Manager Technical Deployment Overview*

This section contains new information and documentation corrections for *Sun Identity Manager Technical Deployment Overview*:

The following information will be added to, or corrected in, the “Private Labeling of Identity Manager” chapter of the *Identity Manager Technical Deployment Overview*:

- The Lighthouse account is now called the *Identity Manager* account. You can override this name change using a custom catalog. The following catalog entries control the display of the product name:

```
PRODUCT_NAME=Identity Manager
```

```
LIGHTHOUSE_DISPLAY_NAME=[PRODUCT_NAME]
```

```
LIGHTHOUSE_TYPE_DISPLAY_NAME=[PRODUCT_NAME]
```

```
LIGHTHOUSE_DEFAULT_POLICY=Default [PRODUCT_NAME] Account Policy
```

See [Appendix B, “Enabling Internationalization”](#) for more information about custom catalogs.

- The “Changing the Appearance of the User Interface Navigation Menus” section should include the following information:

For Identity Manager End User pages, the End User Navigation UserForm in `enduser.xml` determines how the horizontal navigation bar is displayed. The End User pages contain a `userHeader.jsp` that contains another JSP named `menuStart.jsp`. The `menuStart.jsp` accesses two system configuration objects:

- `ui.web.user.showMenu` – Toggles the display of the navigation menu on and off (Default is `true`)
- `ui.web.user.menuLayout` – Determines whether the menu is rendered as a horizontal navigation bar (`horizontal`) with tabs or a vertical tree menu (`vertical`). (Default is `horizontal`.)

The CSS style classes that determine how the menu is rendered are in `style.css`.

---

**NOTE**      If you implement custom JavaScript functions in the end user navigation bar (tabs), you must use `endUserNavigation` to reference that form  
For example

```
document.forms['endUserNavigation'].elements
```

---

- You can use CSS to set column widths in the User list and Resource list tables to a fixed pixel or percentage value. To do so, add the following style classes (commented out by default) to `customStyle.css`. You can then edit the values to meet the user's requirements.

```
th#UserListTreeContent_Col0 {
    width: 1px;
}

th#UserListTreeContent_Col1 {
    width: 1px;
}

th#UserListTreeContent_Col2 {
    width: 50%;
}

th#UserListTreeContent_Col3 {
    width: 50%;
}

th#ResourceListTreeContent_Col0 {
    width: 1px;
}
```

```

th#ResourceListTreeContent_Col1 {
    width: 1px;
}
th#ResourceListTreeContent_Col2 {
    width: 33%;
}
th#ResourceListTreeContent_Col3 {
    width: 33%;
}
th#ResourceListTreeContent_Col4 {
    width: 33%;
}

```

You can also resize table columns by clicking and dragging the right border of the column header. If you mouse over the right border of the column header, the cursor will change to a horizontal resize arrow. Left-click and drag the cursor to resize the column. (Resizing ends when you release the mouse button.)

- Customers who want to use custom JavaScript functions specifically in the end user navigation bar (tabs) must reference that form using `endUserNavigation`. For example, `document.forms['endUserNavigation'].elements.` (ID-13769)
- The Access Review Dashboard and Access Review Detail Report both show instances of reviews that are recorded in the audit logs. Without database maintenance, the audit logs are never trimmed, and the list of reviews grows. Identity Manager provides the ability to limit the reviews shown to a certain age range. To change this limit, you must customize `compliance/dashboard.jsp` (for the dashboard) and `sample/auditortasks.xml` (for the Details report). (The default is to show only reviews that are less than 2 years old.)

To restrict the reviews included in the Access Review Dashboard, customize `compliance/dashboard.jsp` as follows:

- Open `compliance/dashboard.jsp` in either the Identity Manager IDE or editor of your choice:
- Change the line: `form.setOption("maxAge", "2y");` to `form.setOption("maxAge", "6M");` to limit the list to reviews run in the last 6 months.

The qualifiers are:

- m - minute
- h - hour
- d - day
- w - week

- M - month
- y - year

To show all reviews that still exist in the audit logs, comment out this line.

To restrict the reviews included in the Access Review Detail Report,

- a. Open sample/auditortasks.xml in either the IDE or editor of your choice.
- b. Change the following line as indicated to limit reviews to the last 6 months. The same qualifiers as above apply:

```
<s>maxAge</s>
  <s>2y</s>
```

to

```
<s>maxAge</s>
  <s>6M</s>
```

Each Periodic Access Review includes a set of UserEntitlement records that were created when the review was run. These records, which accumulate over time, provide valuable historical information about accounts. However, to conserve database space, consider deleting some records. You can delete a record by executing **Server Task > Run Task > Delete Access Review**. Deleting a review adds new audit log entries that indicate the review is deleted, and deletes all UserEntitlement records associated with the review, which conserves database space.

- In the section “Changing Background Image on the Login Page”, the third line of code should read:

```
url(../images/other/login-backimage2.jpg)
```

- Code Example 5-5 contains information that should appear in Code Example 5-4. Code Example 5-4 should be as follows:

#### Code Example 5-4 Customizing Navigation Tabs

```
/* LEVEL 1 TABS */
.TabLv11Div {
  background-image:url(../images/other/dot.gif);
  background-repeat:repeat-x;
  background-position:left bottom;
  background-color:#333366;
  padding:6px 10px 0px;
}
a.TabLv11Lnk:link, a.TabLv11Lnk:visited {
  display:block;
  padding:4px 10px 3px;
  font: bold 0.95em sans-serif;
  color:#FFF;
```

**Code Example 5-4 Customizing Navigation Tabs (Continued)**

```

        text-decoration:none;
        text-align:center;
    }
    table.TabLvl1Tbl td {
        background-image:url(../images/other/dot.gif);
        background-repeat:repeat-x;
        background-position:left top;
        background-color:#666699;
        border:solid 1px #aba1b5;
    }
    table.TabLvl1Tbl td.TabLvl1TblSelTd {
        background-color:#9999CC;
        background-image:url(../images/other/dot.gif);
        background-repeat:repeat-x;
        background-position:left bottom;
        border-bottom:none;
    }
}

/* LEVEL 2 TABS */
.TabLvl2Div {
    background-image:url(../images/other/dot.gif);
    background-repeat:repeat-x;
    background-position:left bottom;
    background-color:#9999CC;
    padding:6px 0px 0px 10px
}
a.TabLvl2Lnk:link, a.TabLvl2Lnk:visited{
    display:block;
    padding:3px 6px 2px;
    font: 0.8em sans-serif;
    color:#333;
    text-decoration:none;
    text-align:center;
}
table.TabLvl2Tbl div.TabLvl2SelTxt {
    display:block;
    padding:3px 6px 2px;
    font: 0.8em sans-serif;
    color:#333;
    font-weight:normal;
    text-align:center;
}
table.TabLvl2Tbl td {
    background-image:url(../images/other/dot.gif);
    background-repeat:repeat-x;
    background-position:left top;
    background-color:#CCCCFF;
    border:solid 1px #aba1b5;
}
table.TabLvl2Tbl td.TabLvl2TblSelTd {
    border-bottom:none;
    background-image:url(../images/other/dot.gif);
    background-repeat:repeat-x;
    background-position:left bottom;
    background-color:#FFF;
}

```

**Code Example 5-4 Customizing Navigation Tabs (Continued)**

```
border-left:solid 1px #aba1b5;
border-right:solid 1px #aba1b5;
border-top:solid 1px #aba1b5;
```

Code Example 5.5 should be as follows:

**Code Example 5-5 Changing Tab Panel Tabs**

```
table.Tab2TblNew td
{background-image:url(../images/other/dot.gif);background-repeat:repeat-x;background-positi
on:left top;background-color:#CCCCFF;border:solid 1px #8f989f}
table.Tab2TblNew td.Tab2TblSelTd
{border-bottom:none;background-image:url(../images/other/dot.gif);background-repeat:repeat-
x;background-position:left bottom;background-color:#FFF;border-left:solid 1px
#8f989f;border-right:solid 1px #8f989f;border-top:solid 1px #8f989f}
```

- In the Identity Manager End User Interface, the horizontal navigation bar is driven by the End User Navigation UserForm in `enduser.xml`. (ID-12415)

`userHeader.jsp`, which is included in all the end user pages, includes another JSP named `menuStart.jsp`. This JSP accesses two system configuration objects:

- `ui.web.user.showMenu` - Toggles the display of the navigation menu on/off (default: true)
- `ui.web.user.menuLayout` - Determines whether the menu is rendered as horizontal navigation bar with tabs (the default: horizontal) or a vertical tree menu (vertical)

The CSS style classes that determine how the menu is rendered are in `style.css`.

- The code sample included in the section titled “Changing Masthead Appearance” incorrectly lists the first line as “MstDiv”. This line should read “.MstDiv”. (ID-16072)

- The section titled “Customizing the Browser Bar” has been revised as follows: (ID-16073)

You can now replace the product name string in the browser title bar with a localizable string of your choice.

1. Import the following XML file:

#### Code Example 1 XML to Import

```
<?xml version='1.0' encoding='UTF-8'?>
<!DOCTYPE Configuration PUBLIC 'waveset.dtd' 'waveset.dtd'>
<Configuration name='AltMsgCatalog'>
  <Extension>
    <CustomCatalog id='AltMsgCatalog' enabled='true'>
      <MessageSet language='en' country='US'>
        <Msg id='UI_BROWSER_TITLE_PROD_NAME_OVERRIDE'>Override Name</Msg>
      </MessageSet>
    </CustomCatalog>
  </Configuration>
</Extension>
```

2. Using the Identity Manager IDE, load the System Configuration object for editing. Add a new top-level attribute:

Name = customMessageCatalog

Type = string

Value = AltMsgCatalog

3. Open the ui.web Generic Object and look for the browserTitleProdNameOverride attribute. Set this value to true.
4. Save this change to the System Configuration object, and restart your application server.

- The instructions for customizing login pages provided in “Customizing Identity Manager End User Pages” should now include the following information about message keys. (ID-16072)

JSP or Identity Manager Component	Interface Affected	Message Key
Login Page TITLE	Administrator and User	UI_LOGIN_TITLE_TO_RESOURCE UI_LOGIN_CHALLENGE
Login Page SUBTITLE	Administrator and User	Select a key depending on the login mode: Forgot Password, Forgot User ID, Login Challenge. UI_LOGIN_WELCOME3 UI_LOGIN_WELCOME4 UI_LOGIN_WELCOME5 UI_LOGIN_WELCOME6 UI_LOGIN_CHALLENGE_INFO
staticLogout.jsp and user/staticUserLogout.jsp	Administrator and User	UI_LOGIN_TITLE
continueLogin.jsp	Administrator	UI_LOGIN_IN_PROGRESS_TITLE UI_LOGIN_WELCOME

The following keys are no longer used:

- UI\_LOGIN\_TITLE\_LONG
- UI\_LOGIN\_WELCOME2
- The instructions for “Changing the Default “Logged in as ...” Text” should be corrected as follows: (ID-18545)
- The following note should be added after the bulleted deactivateDate information in the “features” section of Appendix A, “Editing Configuration Objects.”

---

**NOTE** You can set both activateDate and deactivateDate to true, even if userAssignment.manual is not. If you set both attributes to true for a roleType, and if the role is contained by another role optionally, then you can specify activate and deactivate dates when assigning the optional role to a user.

---

## Changing the Default “Logged in as ...” Text

1. Import the following XML file:

```
<?xml version='1.0' encoding='UTF-8'?>
<!DOCTYPE Configuration PUBLIC 'waveset.dtd' 'waveset.dtd'>
<Configuration name='AltMsgCatalog'>
  <Extension>
    <CustomCatalog id='AltMsgCatalog' enabled='true'>
      <MessageSet language='en' country='US'>
        <Msg id='UI_NAV_FOOT_LOG_AS'>mytext {0}!</Msg>
      </MessageSet>
    </CustomCatalog>
  </Extension>
</Configuration>
```

2. Add the following line to the System Configuration object within the <Configuration><Extension><Object> element:  
  
<Attribute name='customMessageCatalog' value='AltMsgCatalog' />
3. Save change and restart your application server.

# Identity Manager Workflows, Forms, and Views

This section contains new information and documentation corrections for *Sun Identity Manager Workflows, Forms, and Views*.

- You can turn off policy checking in your user form by adding the following field to the form: (ID-13346)

```
<Field name='viewOptions.CallViewValidators'>
  <Display class='Hidden' />
  <Expansion>
    <s>false</s>
  </Expansion>
</Field>
```

This field overrides the value in the OP\_CALL\_VIEW\_VALIDATORS field of `modify.jsp`.

- The Identity Manager User Interface pages include a second XPRESS form that implements the navigation bar. As a result, the rendered page contains two `<FORM>` tags, each with a different name attribute:

```
<form name="endUserNavigation"> and <form name="mainform">
```

To avoid potential confusion between these two `<FORM>` elements, make sure you use the name attribute as follows to distinguish which `<FORM>` you are referencing: `document.mainform` or `document.endUserNavigation`.

## Chapter 1, Identity Manager Workflow

- Identity Manager provides the following new sample Access Review workflow in `/sample/workflows`. (ID-15393)

### Test Auto Attestation

Use to test new Review Determination rules without creating Attestation work items. This workflow does not create any work items, and simply terminates shortly after it starts. It leaves all User Entitlement objects in the same state that they were created in by the access scan. Use the Terminate and Delete options to clean up the results from access scans run with this workflow.

You can import this stub workflow as needed. (Identity Manager does not import it automatically.)

- Identity Manager Compliance uses workflows as integration and customization points for the application. The default compliance-related workflows are described below. (ID-15447)

<b>Workflow Name</b>	<b>Purpose</b>
Remediation	Remediation for a single Remediator working with a single Compliance Violation
Access Review Remediation	Remediation for a single remediator working with a single UserEntitlement
Attestation	Attestation for a single Attestor working with a single UserEntitlement
Multi Remediation	Remediation for a single Compliance Violation and multiple remediators
Update Compliance Violation	Mitigates a Compliance Violation
Launch Access Scan	Launch an Access Scan task from an Access Review task
Launch Entitlement Rescan	Launch a rescan of an Access Scan for a single user
Launch Violation Rescan	Launch a rescan of an Audit Policy Scan for a single user

- The description of the maxSteps property has been revised as follows: (ID-15618)

Specifies the maximum number of steps allowed in any workflow process or subprocess. Once this level is exceeded, Identity Manager terminates the workflow. This setting is used as a safeguard for detecting when a workflow is stuck in an infinite loop. The default value set in the workflow itself is 0, which indicates that Identity Manager should pull the actual setting value from the global setting stored in the SystemConfiguration object's `workflow.maxSteps` attribute. The value of this global setting is 5000.

- This chapter now contains the following description of the Scripted Task Executor task. (ID-15258)

Executes Beanshell or JavaScript based on the script provided. As a task, it can be scheduled to run periodically. For example, you can use it to export data from the repository to a database for reporting and analysis. Benefits include the ability to write a custom task without writing custom Java code. (Custom Java code requires a re-compile on every upgrade and must be deployed to every server because the script is embedded in the Scripted Task Executor task there is no need to recompile or deploy it.)

## Chapter 2, Workflow Services

- The Arguments table of the `createViewSession` Workflow Service is incorrect. The following table describes the arguments available in this service.(ID-14201)

**Table 1**

Name	Required	Valid Values	Description
<code>op</code>	yes	<code>createView</code>	
<code>viewId</code>	yes		Specifies the type of view to create.
<code>options</code>	no		Specifies view-specific options. The values you can pass are specific to the view being used. The most common is the User view.  Options can be found in <code>session.UserViewConstants</code> . The simpler views should declare their option constants in the <code>Viewer.java</code> file.  Probably the second most common view used from workflow is <code>ProcessViewer</code> , followed by <code>PasswordViewer</code> , <code>DisableViewer</code> , <code>EnableViewer</code> , and <code>RenameViewer</code> . These have comparatively few options

- The description of the `disableUser` Workflow Service should clarify that the default behavior of this service is to disable the Identity Manager account as well as the resource account. (ID-14572) If you do not want to disable the Identity Manager account, pass the following argument:

```
<Argument name='doWaveset' value='false' />
```

The discussion of this method's arguments should read as follows:

Name	Required	Valid Values	Description
<code>op</code>	yes	<code>disableUser</code>	
<code>accountId</code>	yes		Identifies the Identity Manager user to disable accounts for.
<code>doWaveset</code>	no	<code>true/false</code>	If <code>true</code> , the Identity Manager account is disabled for this user. If not supplied, it defaults to <code>true</code> , and the account is disabled.
<code>services</code>	no		Identifies a list of resources to disable. If this argument is not supplied, all of the user's resource accounts will be disabled.

- This document incorrectly represents the `viewId` attribute of the `checkoutView` and `createView` methods as *“viewid”*. Note that the correct spelling of this parameter is *viewId*. (ID-15411)
- This chapter now contains the following description of the lock and unlock workflow services.(ID-17070)

### *lock Provisioning Workflow Service*

Use to lock an object.

<b>Argument</b>	<b>Required</b>	<b>Description</b>
<i>subject</i>	no	Indicates the effective subject for the call. If not supplied, Identity Manager uses the task's <i>subject</i> . If the value of this argument is none, Identity Manager performs no authorization.
<i>options</i>	no	(Map) A value map of option name/option value pairs. If not supplied, specific arguments below are used. If supplied, any specific arguments below will override the same argument contained in this options map.
<i>accountId</i>	no	(String) Identifies the name of the Identity Manager user to lock.
<i>adminName</i>	no	(String) Indicates the name of the administrator performing the operation.
<i>loginAppName</i>	no	(String) Specifies the login application name.
<i>op</i>	yes	Valid value is <i>unlock</i>

This method returns a null value.

### *unlock Workflow Service*

Use to unlock a locked object.

**Table 1**

<b>Argument</b>	<b>Required</b>	<b>Description</b>
<i>subject</i>	no	(String) Indicates the effective subject for the call. If not supplied, the task's subject is used. If the value of this argument is none, then no authorization is performed.
<i>options</i>	no	(Map) A value map of option name/option value pairs. If not supplied, Identity Manager uses the specific arguments below. If supplied, any specific arguments below will override the same argument contained in this options map.
<i>accountId</i>	no	(String) Identifies the name of the Identity Manager user to unlock.
<i>adminName</i>	no	(String) Indicates the name of the administrator performing the operation

**Table 1**

Argument	Required	Description
<i>loginAppName</i>	no	(String) Specifies the login application name.
<i>doLighthouse</i>	no	(Boolean) Indicates whether or not to unlock the Identity Manager account.
<i>doResources</i>	no	(Boolean) Indicates whether or not to unlock the user's resources.
<i>doAuthenticators</i>	no	(Boolean) If true, unlocks all pass-through authentication.
<i>op</i>	yes	Valid value is <i>unlock</i> .

This method returns a *WavesetResult* with the result of the operation.

- The description of the *removeDeferredTask* session workflow service has been revised as follows: (ID-17302)

Used to remove a deferred task from an Identity Manager object. Identity Manager will ensure that the administrator that launched the workflow is authorized to remove the object.

**Table 2**      *removeDeferredTask* Method Arguments

Name	Required	Valid Values	Description
<i>type</i>	no	valid values are the list of types	Specifies the type of the object that the deferred task will be removed from. If not supplied, the type is defaulted to <i>user</i> .
<i>name</i>	yes		Specifies the name of the object that the deferred task will be removed from.
<i>task</i>			Specifies the name of the TaskDefinition to remove.

## Chapter 3, Identity Manager Forms

- This chapter now contains the following description of forms used in auditing and compliance procedures. (ID-15447, 16240)

Identity Manager auditing and compliance forms provide a feature unique among Identity Manager forms: You can assign a form on a per-user and per-organization basis. Forms assigned on a per-user basis can boost the efficiency of attestation and remediation processing.

For example, you can specify the user form that Identity Manager displays for editing a user in the context of an access review, remediation or a compliance violation remediation. You can specify this user form at the level of user or organization. When Identity Manager re-scans a user in context of an access review re-scan or access review remediation, the re-scan will respect the audit policies as defined in the AccessScan. You can define this to include the continuous compliance audit policies.

---

**NOTE** To configure auditing components, you must be an Identity Manager administrator with the Configure Audit and Auditor Administrator capabilities.

---

### *Related Information*

- See *Identity Manager Administration* for a discussion of the concepts that support Identity Manager auditing and compliance features as well as the basic procedures for implementing the default auditing and compliance features.
- See Identity Manager Rules in *Identity Manager Deployment Tools* for a general discussion of rules as well as specific information about remediation rules.

### *About Auditing-Related Form Processing*

Much like `userForm` and `viewUserForm`, you can set the form on a specific user, or on an organization, and the user (or all users in the organization) will use that form. If you set a form on both user and organization, the form set on the user takes precedence. (When looking up the form, Identity Manager searches organizations upwards.)

Auditing-related forms behave the same way that the User Form and View User Form work: Each user can designate a specific form to use, and the resolution of which form a specific user should use will honor the user's organization.

## Specifying User Forms

The Audit Policy List and Access Scan List forms support a `fullView` property that causes the form to display a significant amount of data about the elements in the list. Set this policy to `false` to improve the performance of the list viewer.

The Access Approval List form has a similar property named `includeUE`, and the Remediation List form uses the `includeCV` property.

## Default Auditing-Related Forms

The following table identifies the default auditing-related forms that ship with Identity Manager.

**Table 2**

Form Name	Mapped Name	Per-User Control	General Purpose
Access Approval List	accessApprovalList		Display the list of attestation workitems
Access Review Delete Confirmation	accessReviewDeleteConfirmation		Confirm the deletion of an access review
Access Review Abort Confirmation	accessReviewAbortConfirmation		Confirm the termination of an access review
Access Review Dashboard	accessReviewDashboard		Show the list of all access reviews
Access Review Remediation Form	accessReviewRemediationWorkItem	Yes	renders each UE-based remediation workitem
Access Review Summary	accessReviewSummary		Show the details of a specific access review
Access Scan Form	accessScanForm		Display or edit an access scan
Access Scan List	accessScanList		Show the list of all access scans
Access Scan Delete Confirmation	accessScanDeleteConfirmation		Confirm the deletion of an access scan
Access Approval List	attestationList	Yes	Renders the list of all pending attestations.
Attestation Form	attestationWorkItem	Yes	Renders each attestation work item
UserEntitlementForm	userEntitlementForm		Display the contents of a UserEntitlement
UserEntitlement Summary Form	userEntitlementSummaryForm		

**Table 2**

<b>Form Name</b>	<b>Mapped Name</b>	<b>Per-User Control</b>	<b>General Purpose</b>
Violation Detail Form	violationDetailForm		Show the details of a compliance violation
Remediation List	remediationList	Yes	Show a list of remediation work items
Audit Policy List	auditPolicyList		Show a list of audit policies
Audit Policy Delete Confirmation Form	auditPolicyDeleteConfirmation		Confirm the deletion of an audit policy
Conflict Violation Details Form	conflictViolationDetailsForm		Show the SOD violation matrix
Compliance Violation Summary Form	complianceViolationSummaryForm		
Remediation Form	reviewWorkItem	Yes	Renders a compliance violation.

### *Why Customize These Forms?*

Attestors and remediators can specify forms that show exactly the detail they need to more efficiently attest and remediate. For example, a resource attestor could show specific resource-specific attributes in the list form to allow them to attest without looking at each specific work item. Because this form would differ depending on the resource type (and thus attributes) involved, customizing the form on a per-attestor basis makes sense.

During attestation, each attestor can look at entitlements from a unique perspective. For example, the `idmManager` attestor may be looking at the user entitlement in a general way, but a resource attestor is interested only in resource-specific data. Allowing each attestor to tailor both the Attestation-list form and the `AttestationWorkItem` form to retrieve and display only the information they need can boost the efficiency of the product interface.

### Scan Task Variables

The Audit Policy Scan Task and Access Scan Task task definitions both specify the forms to be used when initiating the task. These forms include fields that allow for most, but not all, of the scan task variables to be controlled.

Variable Name	Default Value	Purpose
maxThreads	5	Identifies the number of concurrent users to work at one time for a single scanner. Increase this value to potentially increase throughput when scanning users with accounts on very slow resources.
userLock	5000	Indicates time (in mS) spent trying to obtain lock on user to be scanned. If several concurrent scans are scanning the same user, and the user has resources that are slow, increasing this value can result in fewer lock errors, but a slower overall scan.
scanDelay	0	Indicates time (in mS) to delay between issuing new scan threads. Can be set to a positive number to force Scanner to be less CPU-hungry.

- The description of the Disable element has been revised as follows: (ID-14920)

Calculates a Boolean value. If true, the field and all its nested fields will be ignored during current form processing.

Do not create potentially long-running activities in Disable elements. These expressions run each time the form is recalculated. Instead, use a different form element that will not run as frequently perform this calculation.

- The section titled “Inserting Javascript into a Form” incorrectly states that you can include JavaScript in your form with a <JavaScript> tag (ID-15741). Alternatively, include JavaScript as follows:

```
<Field>
  <Expansion>
    <script>
    .....
```

---

**NOTE** The display.session and display.subject variables are not available to Disable form elements.

---

- You can now insert WARNING, error (ERROR), or informational (OK) alert messages into an XPRESS form. (ID-14540, ID-14953)

---

**NOTE** Although this example illustrates how to insert a `Warning ErrorMessage` object into a form, you can assign a different severity level.

---

1. Use the Identity Manager IDE to open the form to which you want to add the warning.
2. Add the `<Property name='messages'>` to the main `EditForm` or `HtmlPage` display class.
3. Add the `<defvar name='msgList'>` code block from the following sample code.
4. Substitute the message key that identifies the message text to be displayed in the Alert box in the code sample string:

```
<message name='UI_USER_REQUESTS_ACCOUNTID_NOT_FOUND_ALERT_VALUE'>
```

5. Save and close the file.

### Code Example

```
<Display class='EditForm'>
  <Property name='componentTableWidth' value='100%' />
  <Property name='rowPolarity' value='false' />
  <Property name='requiredMarkerLocation' value='left' />
  <Property name='messages'>
    <ref>msgList</ref>
  </Property>
</Display>
<defvar name='msgList'>
  <cond>
    <and>
      <notnull>
        <ref>username</ref>
      </notnull>
      <isnull>
        <ref>userview</ref>
      </isnull>
    </and>
  </list>
  <new class='com.waveset.msgcat.ErrorMessage'>
    <invoke class='com.waveset.msgcat.Severity' name='fromString'>
      <s>warning</s>
    </invoke>
    <message name='UI_USER_REQUESTS_ACCOUNTID_NOT_FOUND_ALERT_VALUE'>
      <ref>username</ref>
    </message>
  </new>
</list>
</cond>
</defvar>
```

To display a severity level other than warning, replace the `<s>warning</s>` in the preceding example with either of the these two values:

- `error` -- Causes Identity Manager to render an InlineAlert with a red "error" icon.
- `ok` -- Results in an InlineAlert with a blue informational icon for messages that can indicate either success or another non-critical message.

Identity Manager renders this as an InlineAlert with a warning icon

```
<invoke class='com.waveset.msgcat.Severity' name='fromString'>
  <s>warning</s>
</invoke>
```

where `warning` can also be `error` or `ok`.

- This chapter now contains the following description of the Hidden display component:

The Hidden display class corresponds to the `<input type=hidden' />` HTML component. This component supports only single-valued data types because there is no way to reliably serialize and deserialize multi-valued data types. (ID-16904)

If you have a List that you want to render it as a string, you must explicitly convert it to a string. For example:

#### **Code Example 0-1**     Rendering Multi-Value Data Type with the Hidden Display Component

```
<Field name='testHiddenFieldList' >
  <Display class='Hidden' / >
  <Derivation>
    <invoke name='toString'> <List> <String>aaaa</String> <String>bbbb</String>
  </List> </invoke>
  </Derivation>
</Field>
```

- You can now set the `RequiresChallenge` property in the End User Interface Change Password Form to require users to reenter their current password before changing the password on their account. For an example of how to set this property, see the Basic Change Password Form in `enduser.xml`. (ID-17309)

## Chapter 4, Identity Manager Views

- The description of the Org view has been updated as follows: (ID-13584)  
Used to specify the type of organization created and options for processing it.

### *Common Attributes*

The high-level attributes of the Org view are listed in the following table.

<b>Name</b>	<b>Editable?</b>	<b>Data Type</b>	<b>Required?</b>
orgName	Read	String	System-Generated
orgDisplayName	Read/Write	String	Yes
orgType	Read/Write	String	No
orgId	Read	String	System-Generated
orgAction	Write	String	No
orgNewDisplayName	Write	String	No
orgParentName	Read/Write	String	No
orgChildOrgNames	Read	List	System-Generated
orgApprovers	Read/Write	List	No
allowsOrgApprovers	Read	List	System-Generated
allowedOrgApproverIds	Read	List	System-Generated
orgUserForm	Read/Write	String	No
orgViewUserForm	Read/Write	String	No
orgPolicies	Read/Write	List	No
orgAuditPolicies	Read/Write	List	No
renameCreate	Read/Write	String	No
renameSaveAs	Read/Write	String	No

### *orgName*

Identifies the UID for the organization. This value differs from most view object names because organizations can have the same short name, but different parent organizations.

### *orgDisplayName*

Specifies the short name of the organization. This value is used for display purposes only and does not need to be unique.

***orgType***

Defines the organization type where the allowed values are `junction` or `virtual`. Organizations that are not of types `junction` or `virtual` have no value.

***orgId***

Specifies the ID that is used to uniquely identify the organization within Identity Manager.

***orgAction***

Supported only for directory junctions, virtual organizations, and dynamic organizations. Allowed value is `refresh`. When an organization is a directory junction or virtual organization, the behavior of the refresh operation depends on the value of `orgRefreshAllOrgsUserMembers`.

***orgNewDisplayName***

Specifies the new short name when you are renaming the organization.

***orgParentName***

Identifies the full pathname of the parent organization.

***orgChildOrgNames***

Lists the Identity Manager interface names of all direct and indirect child organizations.

***orgApprovers***

Lists the Identity Manager administrators who are required to approve users added to or modified in this organization.

***allowedOrgApprovers***

Lists the potential user names who could be approvers for users added to or modified in this organization.

***allowedOrgApproverIds***

Lists the potential user IDs who could be approvers for users added to or modified in this organization.

***orgUserForm***

Specifies the `userForm` used by members users of this organization when creating or editing users.

***orgViewUserForm***

Specifies the view user form that is used by member users of this organization when viewing users.

### *orgPolicies*

Identifies policies that apply to all member users of this organization. This is a list of objects that are keyed by type string: Each policy object contains the following view attributes, which are prefixed by `orgPolicies[<type>]`. `<type>` represents policy type (for example, Lighthouse account).

- `policyName` -- Specifies name
- `id` -- Indicates ID
- `implementation` -- Identifies the class that implements this policy.

### *orgAuditPolicies*

Specifies the audit policies that apply to all member users of this organization.

### *renameCreate*

When set to true, clones this organization and creates a new one using the value of `orgNewDisplayName`.

### *renameSaveAs*

When set to true, renames this organization using the value of `orgNewDisplayName`.

### *Directory Junction and Virtual Organization Attributes*

<b>Name</b>	<b>Editable?</b>	<b>Data Type</b>	<b>Required?</b>
<code>orgContainerId</code>	Read	String	System-generated
<code>orgContainerTypes</code>	Read	List	System-generated
<code>orgContainers</code>	Read	List	System-generated
<code>orgParentContainerId</code>	Read	String	System-generated
<code>orgResource</code>	Read/Write	String	yes, if directory junction or virtual organization
<code>orgResourceType</code>	Read	String	System-generated
<code>orgResourceId</code>	Read	String	System-generated
<code>orgRefreshAllOrgsUserMembers</code>	Write	String	No

### *orgContainerId*

Specifies the dn of the associated LDAP directory container (for example, `cn=foo,ou=bar,o=foobar.com`).

### *orgContainerTypes*

Lists the allowed resource object types that can contain other resource objects.

### *orgContainers*

Lists the base containers for the resource used by the Identity Manager interface to display a list to choose from.

### *orgParentContainerId*

Specifies the dn of the associated parent LDAP directory container (for example, ou=bar,o=foobar.com).

### *orgResource*

Specifies the name of the Identity Manager resource used to synchronize directory junction and virtual organizations (for example, West Directory Server).

### *orgResourceType*

Indicates the type of Identity Manager Resource from which to synchronize directory junction and virtual organizations (for example, LDAP).

### *orgResourceId*

Specifies the ID of the Identity Manager resource that is used to synchronize directory junctions and virtual organizations.

### *orgRefreshAllOrgsUserMembers*

If `true` and if the value of `orgAction` is `refresh`, synchronizes Identity organization user membership with resource container user membership for the selected organization and all child organizations. If `false`, resource container user membership will not be synchronized, only the resource containers to Identity organizations for the selected organization and all child organizations.

### *Dynamic Organization Attributes*

<b>Name</b>	<b>Editable?</b>	<b>Data Type</b>	<b>Required?</b>
orgUserMembersRule	Read/Write	String	No
orgUserMembersRuleCacheTimeout	Read/Write	String	No

### *orgUserMembersRule*

Identifies (by name or UID) the rule whose `authType` is `UserMembersRule`, which is evaluated at run-time to determine user membership.

### *orgUserMembersCacheTimeout*

Specifies the amount of time (in milliseconds) before the cache times out if the user members returned by the `orgUserMembersRule` are to be cached. A value of 0 indicates no caching.

The discussion of the User view now includes the following discussion of the `accounts[Lighthouse].delegates` attributes: (ID-15468)

### *accounts[Lighthouse].delegates*

Lists delegate objects, indexed by `workItemType`, where each object specifies delegate information for a specific type of work item

- If `delegatedApproversRule` is the value of `delegateApproversTo`, identifies the selected rule.
- If `manager` is the value of `delegateApproversTo`, this attribute has no value.

### *accounts[Lighthouse].delegatesHistory*

Lists delegate objects, indexed from 0 to  $n$ , where  $n$  is the current number of delegate history objects up to the delegate history depth

This attribute has one unique attribute: `selected`, which is a Boolean that indicates the currently selected delegate history object.

### *accounts[Lighthouse].delegatesOriginal*

Original list of delegate objects, indexed by `workItemType`, following a get operation or checkout view operation.

All `accounts[Lighthouse].delegates*` attributes take the following attributes:

Attributes of <code>accounts[Lighthouse].delegate*</code> Attributes	Description
<code>workItemType</code>	Identifies the type of <code>workItem</code> being delegated. See the description of the Delegate Object Model in the <i>Identity Manager Technical Deployment Overview</i> section of this Documentation Addendum for a valid list of <code>workItem</code> types.
<code>workItemTypeObjects</code>	Lists the names of the specific roles, resources, or organizations on which the user is delegating future <code>workItem</code> approval requests. This attribute is valid when the value of <code>workItemType</code> is <code>roleApproval</code> , <code>resourceApproval</code> , or <code>organizationApproval</code> .  If not specified, this attribute by default specifies the delegation of future <code>workItem</code> requests on all roles, resources, or organizations on which this user is an approver.

Attributes of accounts[Lighthouse].delegate* Attributes	Description
toType	Type to delegate to. Valid values are: manager delegateWorkItemsRule selectedUsers
toUsers	Lists the names of the users to delegate to (if toType is selectedUsers) .
toRule	Specifies the name of the rule that will be evaluated to determine the set of users to delegate to (if toType is delegateWorkItemsRule).
startDate	Specifies the date when delegation will start.
endDate	Specifies the date when delegation will end.

### Referencing a DelegateWorkItems View Object from a Form

The following code sample illustrates how to reference a DelegateWorkItems view delegate object from a form:

```
<Field name='delegates[*].workItemType'>
<Field name='delegates[*].workItemTypeObjects'>
<Field name='delegates[*].toType'>
<Field name='delegates[*].toUsers'>
<Field name='delegates[*].toRule'>
<Field name='delegates[*].startDate'>
<Field name='delegates[*].endDate'>
```

where supported index values (\*) are workItemType values.

- This chapter now contains the following description of the User Entitlement view:

Use to create and modify UserEntitlement objects.

This view has the following top-level attributes:

Name	Editable?	Type	Required?
name		String	Yes
status		String	Yes

<b>Name</b>	<b>Editable?</b>	<b>Type</b>	<b>Required?</b>
user		String	Yes
userId		String	Yes
attestorHint		String	No
userView		GenericObject	Yes
reviewInstanceId		String	Yes
reviewStartDate		String	Yes
scanId		String	Yes
scanInstanceId		String	Yes
approvalWorkflowName		String	Yes
organizationId		String	Yes
attestorComments.name		String	No
attestorComments.attestor		String	No
attestorComments.time		String	No
attestorComments.timestamp		String	No
attestorComments.status			No

***name***

Identifies the User Entitlement (by a unique identifier).

***status***

Specifies the state of User Entitlement object. Valid states include PENDING, ACCEPTED, REJECTED, REMEDIATING, CANCELLED.

***user***

Identifies the name of the associated WSUser for this entitlement.

***userId***

Specifies the ID of the associated WSUser.

***attestorHint***

Displays the (String) hint to the attestor that is provided by the Review Determination Rule. This hints acts as "advice" from the rule to the attestor.

***userView***

Contains the User view that is captured by User Entitlement scanner. This view contains zero or more resource accounts depending on the configuration of the Access Scan object.

***reviewInstancelId***

Specifies the ID of the PAR Task instance.

***reviewStartDate***

Indicates the (String) start date of the PAR task (in canonical format).

***scanId***

Specifies the ID of AccessScan Task definition.

***scanInstancelId***

Specifies the ID of AccessScan Task instance.

***approvalWorkflowName***

Identifies the name of workflow to be run for approval. This value comes from the Access Scan Task definition.

***organizationId***

Specifies the ID of the WSUser's organization at the time of the scan.

***attestorComments***

Lists attestation records for the entitlement. Each attestation record indicates an action or statement made about the entitlement, including approval, rejection, and rescan.

***attestorComments[timestamp].name***

Timestamp used to identify this element in the list.

***attestorComments[timestamp].attestor***

Identifies the WSUser name of the attestor making the comment on the entitlement.

***attestorComments[timestamp].time***

Specifies the time at which the attestor attested this record. May differ from the timestamp.

***attestorComments[timestamp].status***

Indicates the status assigned by the attestor. This can be any string, but typically is a string that indicates the action taken by the attestor -- for example, approve, reject, rescan, remediate.

### *attestorComments[name].comment*

Contains comments added by attestor.

- The following User view attributes have been deprecated. (ID-15468)
- `accounts[Lighthouse].delegateApproversTo`
- `accounts[Lighthouse].delegateApproversSelected`
- `accounts[Lighthouse].delegateApproversStartDate`
- `accounts[Lighthouse].delegateApproversEndDate`
- The Delegate Approvers view has been deprecated, but still works for editing Delegate objects whose `workItemType` is `approval`.

The existing User View `accounts[Lighthouse].delegate*` attributes are deprecated and no longer available via the User View. Use the new `accounts[Lighthouse].delegates` view.

## Chapter 6, XPRESS Language

- This chapter has been substantially updated. See the pdf titled XPRESS in the same directory as these Release Notes.
- The description of the `isTrue` function should be revised as follows: (ID-17078)

Used when referencing Boolean values that are represented with the strings `true` and `false` rather than the numbers `0` and `1`. Takes one argument.

The following are considered true. Anything is considered false.

- The string `true`
- A Boolean `true`
- A non-zero integer

Return value is:

- `0` – the argument is logically false.
- `1` – the argument is logically true.

### Example

The following expression returns `0`.

```
<isTrue>  
  <s>false</s>  
</isTrue>
```

## Chapter 8, HTML Display Components

- The following discussion about an alternative to the MultiSelect component has been added to this chapter:

It can be unwieldy to display many admin roles using the MultiSelect component (either the applet or HTML version). Identity Manager provides a more scalable way of displaying and managing admin roles: the `objectSelector` field template. (ID-15433)

The Scalable Selection Library (in `sample/formlib.xml`) includes an example of using an `objectSelector` field template to search for admin role names that a user can select.

### Code Example Example of objectSelector Field Template

```
<Field name='scalableWaveset.adminRoles'>
  <FieldRef name='objectSelector'>
    <Property name='selectorTitle' value='_FM_ADMIN_ROLES' />
    <Property name='selectorFieldName' value='waveset.adminRoles' />
    <Property name='selectorObjectType' value='AdminRole' />
    <Property name='selectorMultiValued' value='true' />
    <Property name='selectorAllowManualEntry' value='true' />
    <Property name='selectorFixedConditions'>
      <appendAll>
        <new class='com.waveset.object.AttributeCondition'>
          <s>hidden</s>
          <s>notEquals</s>
          <s>true</s>
        </new>
        <map>
          <s>onlyAssignedToCurrentSubject</s>
          <Boolean>true</Boolean>
        </map>
      </appendAll>
    </Property>
    <Property name='selectorFixedInclusions'>
      <appendAll>
        <ref>waveset.original.adminRoles</ref>
      </appendAll>
    </Property>
  </FieldRef>
</Field>
```

### *How to Use the objectSelector Example Code*

1. From the Identity Manager IDE, open the Administrator Library UserForm object.
2. Add the following code to this form:

```
<Include>
    <ObjectRef type='UserForm' name='Scalable Selection Library' />
</Include>
```

3. Select the `accounts[Lighthouse].adminRoles` field within the `AdministratorFields` field.
4. Replace the entire `accounts[Lighthouse].adminRoles` with the following reference:
 

```
<FieldRef name='scalableWaveset.adminRoles' />
```
5. Save the object.

When you subsequently edit a user and select the Security tab, Identity Manager displays the customized form. Clicking ... opens the Selector component and exposes a search field. Use this field to search for admin roles that begin with a text string and set the value of the field to one or more values.

To restore the form, import `$WSHOME/sample/formlib.xml` from **Configure > Import Exchange File**.

See the Scalable Selection Library in `sample/formlib.xml` for other examples of using the `objectSelector` template to manage resources and roles in environments with many objects.

- The discussion of the `TabPanel` component now contains the following description of the `validatePerTab` property: (ID-15501)
 

`validatePerTab` -- When set to true, Identity Manager performs validation expressions as soon as the user switches to a different tab.
- The discussion of the `MultiSelect` component now contains the following description of the `displayCase` property: (ID-14854)
 

`displayCase` – Maps each of the allowedValues to their uppercase or lowercase equivalents. Takes one of these two values: upper and lower.

- The following discussion of the Menu component has been added to this chapter: (ID-13043)

Consists of three classes: `Menu`, `MenuBar`, and `MenuItem`.

- `Menu` refers to the entire component.
- `MenuItem` is a leaf, or node, that corresponds to a tab on the first or second level.
- `MenuBar` corresponds to a tab that contains `MenuBars`, or `MenuItems`.

`Menu` contains the following properties:

- `layout` - A String with value `horizontal` or `vertical`. A value of `horizontal` generates a horizontal navigation bar with tabs. A value of `vertical` causes the menu to be rendered as a vertical tree menu with typical node layout.
- `stylePrefix` - String prefix for the CSS class name. For the Identity Manager End User pages, this value is `User`.

`MenuBar` contains the following properties:

- `default` - A String URL path that corresponds to one of the `MenuBar`'s `MenuItem` URL properties. This controls which subtab is displayed as `selected` by default when the `MenuBar` tab is clicked.

`MenuItem` contains the following properties:

- `containedUrls` - A List of URL path(s) to JSPs that are "related" to the `MenuItem`. The current `MenuItem` will be rendered as "selected" if any of the `containedUrls` JSPs are rendered. An example is the request launch results page that is displayed after a workflow is launched from the request launch page.

You can set these properties on either a `MenuBar` or `MenuItem`:

- `title` - Specifies the text String displayed in the tab or tree leaf as a hyperlink
- `URL` - Specifies the String URL path for the title hyperlink

The following XPRESS example creates a menu with two tabs. The second tab contain two subtabs:

### Code Example Implementation of Menu, MenuItem, and MenuBar Components

```
<Display class='Menu'/>
<Field>
  <Display class='MenuItem'>
    <Property name='URL' value='user/main.jsp' />
    <Property name='title' value='Home' />
  </Display>
</Field>
<Field>
  <Display class='MenuBar' >
    <Property name='title' value='Work Items' />
    <Property name='URL' value='user/workItemListExt.jsp' />
  </Display>
  <Field>
    <Display class='MenuItem'>
      <Property name='URL' value='user/workItemListExt.jsp' />
      <Property name='title' value='Approvals' />
    </Display>
  </Field>
  <Field>
    <Display class='MenuItem'>
      <Property name='URL' value='user/otherWorkItems/listOtherWorkItems.jsp' />
      <Property name='title' value='Other' />
    </Display>
  </Field>
</Field>
```

- The following discussion of the ListEditor component has been added to this chapter: (ID-16518)

### ListEditor

Renders an editable list of strings.

**Table 3** Properties of the ListEditor Component

Property	Description
listTitle	(String) Specifies the label that Identity Manager places next to the ListEditor graphical representation.
pickListTitle	(String) Specifies the label to use on the picklist component.
valueMap	(Map) Specifies a map of display labels for the values in the list.
allowDuplicates	(Boolean) A value of true indicates that Identity Manager allows duplicates in the managed list

**Table 3** Properties of the ListEditor Component

Property	Description
allowTextEntry	(Boolean) A value of true indicates that Identity Manager displays a text entry box, along with an add button.
fixedWidth	(Boolean) A value of true indicates that the component should be of fixed width (same behavior as Multiselect component).
ordered	(Boolean) A value of true indicates that the order of values is important.
sorted	(Boolean) A value of true indicates that the values should be sorted in the pick list. If values are multi-valued and not ordered, Identity Manager also sorts the value list.
pickValueMap	(List or Map) Specifies a map of display labels for the values in the pick list.
pickValues	(List) Specifies the available values in the picklist component. If null, the picklist is not shown
height	(Integer) Specifies preferred height.
width	(Integer) Specifies the preferred width. Can be used by the Container as a property of the table cell in which this item is rendered

### Example

The following example from the Tabbed User Form shows a form field that uses the ListEditor display class:

```
<Field name='accounts[Sim1].Group'>
  <Display class='ListEditor' action='true'>
    <Property name='listTitle' value='stuff' />
    <Property name='allowTextEntry'>
      <Boolean>true</Boolean>
    </Property>
    <Property name='ordered'>
      <Boolean>true</Boolean>
    </Property>
  </Display>
  <Expansion>
    <ref>accounts[Sim1].Group</ref>
  </Expansion>
</Field>
```

This code snippet creates a field where the customer can add groups to or remove them from a user.

---

**NOTE** This display class typically requires a List of Strings as input. To coerce a single String into a List of Strings:

```
<Expansion>  
    <appendAll><ref>accounts[Sim1].Group</ref></appendAll>  
</Expansion>
```

---

- The Text display component contains the new `autocomplete` property. (ID-17310) Setting the `autocomplete` property to `off` prevents browsers from offering to store the user's credentials on their computer.

You can implement this feature in input fields in XPRESS by adding this display property. Any value other than `off` prevents Identity Manager from rendering the `autocomplete` attribute in the rendered HTML from (which is the same as not setting the property).

### *Enabling autocomplete for Identity Manager Login Pages*

You can enable this feature for the Identity Manager login pages by changing the `ui.web.disableAutocomplete` system configuration object to `true`. Identity Manager login pages include `login.jsp`, `continueLogin.jsp`, `user/login.jsp`, and `user/continueLogin.jsp`.

Identity Manager login forms other than the preceding ones are generated from XPRESS, and you must edit these forms to use the new display property. These forms, which reside in the `sample` directory, include this property commented out by default.

- Anonymous User Login
- Question Login Form
- End User Anonymous Enrollment Validation Form
- End User Anonymous Enrollment Completion Form
- Lookup Userid

## Appendix A, Form and Process Mappings

- An updated version of this appendix, titled Form and Process Mappings, is included in the same directory as these Release Notes.
- You can access compliance-specific tasks through the mapped names. (ID-15447)

Process Name	Mapped Name	Description
Access Review	accessReview	Performs an access review
Access Scan	accessReviewScan	Performs an access scan
Access Review Rescan	accessReviewRescan	Performs an access rescan
Audit Policy Rescan	auditPolicyRescan	Performs an audit policy rescan
Abort Access Review	abortAccessReview	Terminates an access review
Delete Access Review	deleteAccessReview	Deletes an access review
Recover Access Review	recoverAccessReview	Recovers missing access review status objects from audit logs

## Identity Manager Deployment Tools

This section provides corrections and additions to the *Identity Manager Deployment Tools* documentation:

- The “Using the Identity Manager IDE” chapter (provided in previous releases) has been removed from this book. Instructions for installing and configuring the Identity Manager Integrated Development Environment (Identity Manager IDE) are now provided on <https://identitymanageride.dev.java.net>. (ID-17700)

Instructions for using the Identity Manager’s Profiler and the Identity Manager FAQ are provided on the following pages for your convenience.

---

**NOTE** Identity Manager Profiler is only supported on version 7.1 Update 1 and later.

---

## Working with the Identity Manager Profiler

Identity Manager provides a Profiler utility to help you troubleshoot performance problems with forms, Java, rules, workflows, and XPRESS in your deployment.

Forms, Java, rules, workflows, and XPRESS can all cause performance and scale problems. The Profiler profiles how much time is spent in these different areas, enabling you to determine if these forms, Java, rules, workflows, or XPRESS objects are contributing to performance and scale problems and, if so, which parts of these objects are causing the problems.

This section explains how to use Identity Manager's Profiler and provides a tutorial to help you learn how to troubleshoot performance issues in your deployment. The information is organized as follows:

- [Overview](#)
- [Getting Started](#)
- [Using the Profiler](#)
- [Tutorial: Troubleshooting Performance Problems](#)

---

**NOTE** Identity Manager Profiler is only supported on version 7.1 Update 1 and later.

---

## Overview

The section provides an overview of the Identity Manager's Profiler's features and functionality. The information is organized as follows:

- [Major Features](#)
- [How the Profiler Locates and Manages Source](#)
- [Statistics Caveats](#)

### *Major Features*

You can use the Profiler utility to

- Create "snapshots" of profiling data.  
*A snapshot* is the cumulative result of profiling since the last time you reset all of your collected profile results.
- You can display snapshot results in four, different data views:
  - **Call Tree view** provides a tree table showing the call timing and invocations counts throughout the system.
  - **Hotspots view** provides a flattened list of nodes that shows the aggregate call timings regardless of parent.
  - **Back Traces view** provides an inverted call stack showing all the call chains from which that node (known as the *root node*) was called.
  - **Callees view** provides an aggregate call tree of the root node, regardless of its parent chain.
- Specify what kinds of information to include in your snapshot:

- You can include every element of form, workflow, and XPRESS or restrict the content to a set of specific elements.
- You can pick specific Java methods and constructors to include or exclude from the instrumentation. Instrumentation of Identity Manager classes and custom classes is supported.
- Manage your project snapshots as follows:
  - Save the snapshot in your project's `nbproject/private/idm-profiler` directory or to an arbitrary location outside of your project.

---

**NOTE** You can view a list of all saved snapshots in the Saved Snapshots section of the IDM Profiler view.

---

- Open snapshots from your project or load them from an arbitrary location outside your project.
- Delete snapshots.
- Search for specific nodes, by name.

### *How the Profiler Locates and Manages Source*

This section describes how the Profiler looks up and manages the source for the following Identity Manager objects:

- [For Forms, Rules, Workflows, and XPRESS Objects](#)
- [For Java Source](#)

---

**TIP** In Call Tree view or Hotspots view, you can double-click any node that corresponds to a Java method, workflow, form, rule, or XPRESS to view the source for that node.

---

**For Forms, Rules, Workflows, and XPRESS Objects** When you take a snapshot with the Profiler, the server evaluates all of the profiling data and discovers on which sources the data depends. The server then fetches all of these sources from the repository and includes them in the snapshot. Consequently, you can be sure that the Identity Manager objects displayed in the snapshot are accurately reflecting the point at which the snapshot was captured.

This process adds to the size of the snapshot, but the source size is actually a relatively small fraction of the total size. As a result, you can send a snapshot to Sun's Customer Support without having to send your source files separately.

**For Java Source** When you take a snapshot of Java source, the client downloads the snapshot and then goes through the snapshot to capture all referenced Java sources from the project. When you save the snapshot, the client zips the sources and attaches them to the end of the snapshot.

Then, when you view the snapshot and go to the Java source, the client first checks the content of the snapshot. If the client cannot find the content there, it checks the project's content. This process allows you to send a snapshot containing profiling data from both your custom Java code and Identity Manager code.

---

**NOTE** In a Java source snapshot, do not assume the source is up-to-date with the server or always available.

---

### *Statistics Caveats*

The following sections contain information to consider when you evaluate results provided by the Profiler:

- [Self Time Statistics](#)
- [Constructor Calls](#)
- [Daemon Threads](#)

**Self Time Statistics** To compute a root node's Self Time statistic, the Profiler subtracts the times of all children nodes from the root node's total time.

Consequently, an uninstrumented child node's time is reflected in the root node's self time. If a root node has a significant self time, you should certainly investigate why. You might not have the proper methods instrumented and so you are looking in the wrong place.

For example, assume method A calls method B.

Method A takes a total time of 10 seconds (where total time includes the call to B) and the call to B takes a total time of 10 seconds.

If both A and B are instrumented, the call stack reflects that information. You will see that A has a self-time of 0 seconds and that B has a self-time of 10 seconds (where 10 seconds was actually spent in B). If, however, B is not instrumented, you only see that the call to A takes 10 seconds and that A's self-time is 10 seconds. Consequently, you might assume the problem lies directly in A rather than in B.

In particular, you might notice large self times on JSPs during their initial compile. If you reset the collected results and then redisplay the page, the self time value will be much less.

**Constructor Calls** Because there are limitations in the Java instrumentation strategy, initial calls to `this()` or `super()` will appear as a sibling to the constructor call, rather than as a child. See the following example:

```

class A
{
    public A()
    {
        this(0);
    }
    public A(int i)
    {
    }
}

```

and:

```

class B
{
    public static void test()
    {
        new A();
    }
}

```

The call tree will look like this:

```

B.test()
  -A.<init>(int)
  -A.<init>()

```

Rather than this:

```

B.test()
  -A.<init>()
  -A.<init>(int)

```

**Daemon Threads** Do not be misled by the seemingly large amount of time spent in a number of Identity Manager’s daemon threads, such as `ReconTask.WorkerThread.run()` or `TaskThread.WorkerThread.run()`. Most of this time is spent sleeping, while waiting for events. You must explore these traces to see how much time is actually spent when they are processing an event.

## Getting Started

This section describes how to start the Profiler and how to work with various features of the Profiler’s graphical user interface. This information is organized as follows:

- [Before You Begin](#)
- [Starting the Profiler](#)

- [Specifying the Profiler Options](#)

### *Before You Begin*

Because the Profiler is very memory intensive, you should significantly increase the memory for both your server and the Netbeans Java Virtual Machine (JVM).

- To increase your server's memory,
  - a. Open the Netbeans window and select the Runtime tab.
  - b. Expand the Servers node, right-click Bundled Tomcat, and select Properties from the menu.
  - c. When the Server Manager dialog displays, clear the Enable HTTP Monitor box on the Connection tab.
  - d. Select the Platform tab, set VM Options to **-Xmx1024M**, and then click Close.
- To increase the Netbeans JVM memory,
  - a. Open the `netbeans-installation-dir\etc\netbeans.conf` file and locate the following line:  
`netbeans_default_options="-J-Xms32m -J-Xmx ...`
  - b. Change the `-J-Xmx` value to `-J-Xmx1024M`.
  - c. Save, and then close the file.

When you are finished, you can start the Profiler as described in the next section.

### *Starting the Profiler*

You can use any of the following methods to start the Profiler from the Identity Manager IDE window:

- Click the Start Identity Manager Profiler on Main Project icon  located on the menu bar.

---

**NOTE** The Start Identity Manager Profiler on Main Project icon is enabled when the main Identity Manager project is version 7.1 Update 1 or later.

---

- Select Window > IDM Profiler from the menu bar.

The Identity Manager Profiler window appears in the Explorer. From this window, select an Identity Manager project from Current Project drop-down menu, and then click the Start Identity Manager Profiler icon  located in the Controls section.

- Right-click a project in the Projects window, and then select Start Identity Manager Profiler from the pop-up menu.

- Select a project in the Projects window, and then select IdM > Start Identity Manager Profiler from the menu bar.

When you start the Profiler, the Profiler Options dialog displays so you can specify which profiling options you want to use. Instructions for setting these options are provided in [“Specifying the Profiler Options”](#) on page 143.

## Using the Profiler

This section describes the features of the Profiler graphical user interface, and how to use these features. The information is organized as follows:

- [Specifying the Profiler Options](#)
- [Working with the IDM Profiler View](#)
- [Working with the Snapshot View](#)
- [Using the Pop-Up Menu Options](#)
- [Searching a Snapshot](#)
- [Saving a Snapshot](#)

### *Specifying the Profiler Options*

The Profiler Options dialog consists of the following tabs:

- [Mode](#)
- [IDM Object Filters](#)
- [Java Filters](#)
- [Miscellaneous](#)

Use the options on these tabs to indicate which objects to profile and which elements to display in the profile.

After specifying the Profiler options, click OK to start the Profiler. Depending on your project configuration, the Profiler does one of two things:

- If you are using a regular Identity Manager project with an *Embedded* Identity Manager Instance, the Profiler performs a full build, deploys into the NetBean's application server, and starts the Profiler.
- If you are using a regular Identity Manager project with an *External* Identity Manager Instance or the remote Identity Manager project, the Profiler attaches to the Identity Manager instance configured for the project.

---

**NOTE** You can select IdM > Set Identity Manager Instance to control the Identity Manager Instance action for the project.

---

**Mode** The Mode tab provides the following options:

- **IDM Objects Only:** Select to profile form, rule, workflow, and XPRESS objects. Excludes Java objects from the profile.
- **Java and IDM Objects:** Select to profile form, Java, rule, workflow, and XPRESS objects.

---

**NOTE**

- The Java and IDM Objects option is not available if you are using a regular Identity Manager project with an *external* Identity Manager instance or using a remote Identity Manager project.
- You cannot change the Mode option while the Profiler is running. You must stop the Profiler to change the option.

---

**IDM Object Filters** The IDM Object Filters tab provides the following options:

- **Show IDM Object details:**
  - Select this box to include every executed form, workflow, and XPRESS element in the snapshot.
  - Clear this box to include only the following elements in the snapshot:
    - <invoke>
    - <new>
    - <Rule>
    - <Form>
    - <WFProcess>
    - <ExScript>
    - <ExDefun>
    - <FieldRef>
    - <Action> (for workflow application callouts)
- **Include Anonymous Sources:**

---

**NOTE** *Anonymous sources* are forms (or portions of a form) that are generated on the fly (such as Login forms and MissingFields forms) and do not correspond to a persistent form that resides in the Identity Manager repository.

---

- Select this box to include Anonymous sources in the snapshot.
- Clear this box to exclude Anonymous sources from the snapshot.

**Java Filters** Select the Java Filters tab to

- Include or exclude Java filters
- Create new filters
- Delete existing filters
- Restore the default filters

Java filters are given in terms of method patterns, and they are expressed in patterns that include or exclude based on *canonical method name*. Where a canonical method name is:

*fully-qualified-class-name.method-name (parameter-type-1, parameter-type-2, ...)*

---

**NOTE** For constructors, *method-name* is <init>.

---

Here are a few examples:

- To exclude all constructors, enable the Exclude box and add the following filter:  
\*.<init>(\*)
- To exclude all constructors with a single `org.w3c.dom.Element` parameter, enable the Exclude box and add the following filter:  
\*.<init>(org.w3c.dom.Element)
- To exclude all Identity Manager classes, enable the Exclude box and add the following filters:  
"com.waveset.\*"  
"com.sun.idm.\*"
- To instrument your custom code only, disable the Exclude box, remove the initial \* include filter, and then add the following filter:

```
"com.yourcompany.*"
```

---

**NOTE** The last two examples are currently equivalent because the filters are applied only to your custom classes and Identity Manager classes.

---

If necessary, you can instrument other jars by modifying the following lines in `build.xml` as appropriate. For example,

```
<instrument todir="${lighthouse-dir-profiler}/WEB-INF" verbose="${instrumentor.verbose}"
includeMethods="${profiler.includes}" excludeMethods="${profiler.excludes}">
  <fileset dir="${lighthouse-dir}/WEB-INF">
    <include name="lib/idm*.jar"/>
    <include name="classes/**/*.class"/>
  </fileset>
</instrument>
```

By default, the configuration includes all your custom classes and most Identity Manager classes. A number of Identity Manager classes are forcibly excluded — because enabling them would break the Profiler.

For example, classes from the workflow, forms, and XPRESS engines are excluded or the Profiler would produce an unintelligible snapshot when profiling Java and Identity Manager objects.

Note that Java filters provide much more filtering granularity than IDM Object Filters. Java instrumentation adds *significant* overhead to the execution time, which can drastically skew the profiling results. Because Identity Manager objects are interpreted rather than compiled, the instrumentation overhead is negligible. So for example, there is basically no reason to exclude workflow A and include workflow B, and so forth.

---

**NOTE** You cannot modify Java filters while the Profiler is running. You must stop the Profiler before changing Java filters.

---

**Miscellaneous** The Miscellaneous tab provides the following options:

- **Prune snapshot nodes where execution time is 0:**
  - Disable this option (default) if you want the snapshot to include invocation information for all executed entities — even those whose execution time is zero.

It might be useful to have the number of invocations, even for nodes where there is no execution time.

- Enable this option to remove these nodes, which allows you to focus on the most relevant profiling data. In addition, enabling this option can provide a large savings in Profiler snapshot size.
- **Automatically Open Browser Upon Profiler Start:**
  - Enable this option (default) when you launch the Profiler to automatically open a browser that points to the Identity Manager instance being profiled.
  - Disable this option if you do not want to open a browser.
- **Include Java Sources in Snapshot:**
  - Enable this option (default) to include Java sources for any Java methods referenced by the profiling data in the Snapshot. You should always use this setting for snapshots in the field. Custom Java is relatively small and it is very valuable to have for support.
  - Disable this option only if you are profiling Identity Manager and have the complete Identity Manager source available.

In this situation, you do not want to include the Identity Manager source because it can create extremely large snapshots. (See [“How the Profiler Locates and Manages Source” on page 139](#) for more information.)

### *Working with the IDM Profiler View*

The IDM Profiler view consists of the following areas:

- [Current Project Area](#)
- [Controls Area](#)
- [Status Area](#)
- [Saved Snapshots Area](#)

**Current Project Area** The Current Project area consists of a drop-down menu that lists all of your current projects. Use this menu to select the project you want to profile.

**Controls Area** The Controls area contains four icons, as described in the following table:

Icon		Purpose
	Start Identity Manager Profiler	Starts the Profiler and opens the Profiler Options dialog.
	Stop Identity Manager Profiler	Stops the Profiler.
	Reset Collected Results	Resets all of the profile results you collected to this point.

Icon	Purpose
 Modify Profiling	Re-opens the Profiler Options dialog so you can change any of the settings to modify your current profile results.

**Status Area** The Status area reports whether you are connected to the Host and provides Status information as the Profiler is starting up, running, and stopping.

**Profiling Results Area** The Profiling Results area contains two icons, which are described in the following table:

Icon	Purpose
 Start Identity Manager Profiler	Starts the Profiler and opens the Profiler Options dialog.
 Reset Collected Results	Resets all of the profile results you collected to this point.

**Saved Snapshots Area** The Saved Snapshots area provides a list of all saved snapshots.

**NOTE** Instructions for saving snapshots are provided in [“Saving a Snapshot” on page 151](#).

In addition, you can use the following buttons to manage these snapshots:

- **Open:** Click to open saved snapshots in the Snapshot View window.

---

**TIP** You can also double-click a snapshot in the Saved Snapshots list to open that snapshot.

---

- **Delete:** Select a snapshot in the Saved Snapshots list, and then click this button to delete the selected snapshot.
- **Save As:** Select a snapshot in the list and then click this button to save that snapshot externally to an arbitrary location.
- **Load:** Click to open a snapshot from an arbitrary location into the Snapshot View window.

## Working with the Snapshot View

When you open a snapshot, the results display in the Snapshot View window, located on the upper right side of Identity Manager IDE.

A snapshot provides several views of your data, which are described in the following sections:

- [Call Tree View](#)
- [Hotspots View](#)
- [Back Traces View](#)
- [Callees View](#)

**Call Tree View** Call Tree view consists of a tree table showing the call timing and invocation counts throughout your system.

This tree table contains three columns:

- **Call Tree column:** Lists all nodes.

Top-level nodes are one of the following:

- `Thread.run()` methods for various background threads in the system

For example, if you enabled Java profiling, you will see the `ReconTask.WorkerThread.run()` method.

- Request timings

For example, if you viewed the `idm/login.jsp` URL, you will see a top-level entry for `idm/login.jsp`. The data displayed in the Time column for this entry represents the total time for that request (or requests). The data displayed in the Invocations column represents the total number of invocations to that page. You can then explore further into that data to see what calls contributed to its time.

---

**NOTE** The Call Tree also contains Self Time nodes. Self Time values represent how much time was spent in the node itself. (For more information, see [“Self Time Statistics” on page 140.](#))

---

- **Time column:** Lists the time spent in each node when that node was called from its parent. The percentages are given relative to parent time.
- **Invocations column:** Lists how many times each node was invoked from its parent.

**Hotspots View** Hotspots view provides a flattened list of nodes that shows aggregate call timings regardless of parent.

This view contains the following columns:

- **Self Time:** Lists the total amount of time spent in each node.
- **Invocations:** Lists the total number of times each node was invoked from its parent.
- **Time:** Lists the total amount of time spent in each node and in all of its children.

**Back Traces View** Back Traces view provides an inverted call stack showing all the call chains from where each node was called.

You can use these statistics to answer the question — How much time would I save if I eliminated this particular call chain from this node?

You can access the Back Traces view from any of the other snapshot views by right-clicking a node (known as the *root node*) and selecting Show Back Traces from the pop-up menu.

---

**NOTE** The Time and Invocations data values mean something different in Back Traces view:

- **Time:** The values in this column represent the time spent in the root node when it is called from a given call chain.
  - **Invocations:** The values in this column represent how many times the root node was invoked from a given call chain.
- 

**Callees View** Callees view provides an aggregate call tree for a node (known as the *root node*), regardless of its parent chain.

These statistics are helpful if you have a problem area that is called from many places throughout the master call tree and you want to see the overall profile for that node.

You can access the Callees view from any of the other snapshot views by right-clicking a node (known as the *root node*) and selecting Show Callees from the pop-up menu.

---

**NOTE** The Time and Invocations data values used in Callees view have the same meaning as those used in Call Tree view.

---

### *Using the Pop-Up Menu Options*

Right-click any node in Call Tree view or in Hotspots view and a pop-up menu displays with the options described the following table:

Menu Options	Description
GoTo Source	Select this option to view the XML source for a node that corresponds to a Java method, workflow, form, rule, or XPRESS. For detailed information about this view, see <a href="#">“How the Profiler Locates and Manages Source” on page 139</a> .
Show Back Traces	Select this option to access the Back Traces view. For detailed information about this view, see <a href="#">“Back Traces View” on page 150</a> .
Show Callees	Select this option to access the Callees view. For detailed information about this view, see <a href="#">“Callees View” on page 150</a> .
Find In Hotspots	Select this option to find a node in the Hotspots view. For detailed information about this view, see <a href="#">“Hotspots View” on page 149</a> .
List Options > Sort >	Select this option to <ul style="list-style-type: none"> <li>• None</li> <li>• Call Tree</li> <li>• Time</li> <li>• Invocations</li> <li>• Ascending</li> <li>• Descending</li> </ul>
List Options > Change Visible Columns	Select this option to change the columns displayed in the Call Tree or Hotspots list.  When the Change Visible Columns dialog displays, you can select one or more of the following options: <ul style="list-style-type: none"> <li>• Call Tree: Call Tree</li> <li>• Invocations: Invocations</li> <li>• Time: Time</li> </ul>

### *Searching a Snapshot*

Use the Search icon , located at the top of the Snapshot View window to search for nodes by name the Call Tree view or Hotspots tree.

Alternatively, right-click any node in Call Tree view or Hotspots view and select Find in Call Tree or Find in Hotspots (respectively) from the pop-up menu to search for a node.

### *Saving a Snapshot*

The Profiler provides several options for saving a snapshot. See the following table for a description of these options:

Icon		Purpose
	Save the Snapshot in the Project icon (located at the top of the Snapshot View window)	Saves the snapshot in the <code>nbproject/private/idm-profiler</code> directory of your project. Snapshots saved in your project are listed in the Saved Snapshots section of the Profiler view.
	Save the Snapshot Externally icon (located at the top of the Snapshot View window)	Saves a snapshot to an external, arbitrary location.
	Save As button (located in the Saved Snapshots area)	Saves a snapshot to an external, arbitrary location.

## Tutorial: Troubleshooting Performance Problems

Identity Manager provides a tutorial (`profiler-tutorial.zip`) to help you learn how to use the Profiler to troubleshoot forms, Java rules, workflows, and XPRESS.

### *Step 1: Create an Identity Manager Project*

Follow these steps to create an Identity Manager project:

1. Select File > New Project.
2. When the New Project wizard displays, specify the following, and then click Next:
  - a. In the Categories list, select Web to indicate what type of project you are creating.
  - b. In the Projects list, select Identity Manager Project.

---

**NOTE** You must create a regular Identity Manager project for a fully featured development environment. Do not select the Identity Manager Project (Remote) option.

---

3. Complete the following fields on the Name and Location panel, and then click Next:
  - **Project Name:** Enter `Idm80` as the project name.
  - **Project Location:** Use the default location or specify a different location.
  - **Project Folder:** Use the default folder or specify a different folder.
4. When the Identity Manager WAR File Location panel displays, enter the location of the Identity Manager 8.0 war file. Typically, unzipping this file creates an `idm.war` file in the same directory.

5. Click Next to continue to the Repository Setup panel.

You should not have to change the default settings on this panel, just click Finish. When you see the BUILD SUCCESSFUL message in the Identity Manager IDE Output window, you can extract the Profiler tutorial files. See [“Step 2: Unzip the Profiler Tutorial”](#) for instructions.

### *Step 2: Unzip the Profiler Tutorial*

Unzip `profiler-tutorial.zip` in the project root. The extracted files include:

```
<project root>/custom/WEB-INF/config/ProfilerTutorial1.xml
<project root>/custom/WEB-INF/config/ProfilerTutorial2.xml
<project root>/src/org/example/ProfilerTutorialExample.java
<project root>/PROFILER_TUTORIAL_README.txt
```

You are now ready to start the Profiler.

### *Step 3: Starting the Profiler*

To start the Profiler,

1. Use the instructions provided in [“Before You Begin”](#) on page 142 to increase the memory for your server and Netbeans JVM.
2. Use any of the methods described in [“Overview”](#) on page 138 to start the Profiler.
3. When the Profiler Options dialog displays, you can specify profiling options.
4. Continue to [“Step 4: Setting the Profiler Options.”](#)

### *Step 4: Setting the Profiler Options*

---

**NOTE** For detailed information about all of the different Profiler options, see [“Specifying the Profiler Options”](#) on page 143.

---

For the purposes of this tutorial, specify the following Profiler options:

1. On the Mode tab, select Java and IDM Objects to profile form, Java, rule, workflow, and XPRESS objects.
2. Select the Java Filters tab.

Use the following steps to disable all Identity Manager Java classes *except* your custom Java classes (in this case, `org.example.ProfilerTutorialExample`):

- a. Click New and a new, blank field appears at the bottom of the Filter column.

- b. Enter **com.waveset.\*** into the new field, and then select the Exclude box.
  - c. Click New again.
  - d. Enter **com.sun.idm.\*** into the new field, and then select the Exclude box.
3. Click OK to run the Profiler.

---

**NOTE** The Profiler takes a few minutes to complete the first time you run it on a project or if you have recently performed a `Clean Project` action.

---

When the Profiler finishes processing, you are prompted to Log In.

4. Enter the password **configurator**, select the Remember Password box, and then click OK to continue.
5. When the Identity Manager window displays, log in.

---

**NOTE** Typically, you should log in to Identity Manager as a different user instead of logging in as `configurator` again. You are already logged into the Profiler as `configurator`, and the Identity Manager session pool only allows one entry per user. Using multiple entries can result in the appearance of a broken session pool and might skew your profiling results for finer-grained performance problems.

However, for this simple example the session pool is of no consequence so you can login as `configurator/configurator`.

---

6. In Identity Manager, select Server Tasks > Run Tasks, and then click `ProfilerTutorialWorkflow1`.

The tutorial might take a few moments to respond.

7. Although you could take a snapshot now; you are going to reset your results instead, run the Profiler, run it again, and then take a snapshot.

---

**NOTE** It is a best practice to run the Profiler a couple of times before taking a snapshot to be sure all the caches are primed, all the JSPs are compiled, and so forth.

Running the Profiler several times enables you to focus on actual performance problems. The only exception to this practice is if you are having a problem populating the caches themselves.

---

- a. Return to the IDM Profiler view in the Identity Manager IDE. Click the Reset Collected Results icon  in the Profiling Results section (or in the Controls section) to reset all of the results collected so far.
  - b. In Identity Manager, select Server Tasks > Run Tasks again, and click ProfilerTutorialWorkflow1.
  - c. When the Process Diagram displays, return to the Identity Manager IDE and click Take Snapshot in the Profiling Results section.
8. The Identity Manager IDE downloads your snapshot and displays the results on the right side of the window.

This area is the *Call Tree* view. At the top of the Call Tree, you should see a `/idm/task/taskLaunch.jsp` with a time listed in the Time column. The time should indicate that the entire request took six+ seconds.

9. Expand the `/idm/task/taskLaunch.jsp` node, and you can see that ProfilerTutorialWorkflow1 took six seconds.
10. Expand the ProfilerTutorialWorkflow1 node. Note that activity2 took four seconds and activity1 took two seconds.
11. Expand activity2.  
Note that action1 took two seconds and action2 took two seconds.

12. Expand action1 and note that the `<invoke>` also took two seconds.
13. Double-click the `<invoke>` to open ProfilerTutorialWorkflow1.xml and highlight the following line:

```
<invoke name='example' class='org.example.ProfilerTutorialExample' />
```

You should see that a call to the ProfilerTutorialExample method took two seconds.

---

**NOTE** You are actually browsing XML source that was captured in the snapshot, rather than source in the project. Snapshots are completely self-contained. (For more information, see [“How the Profiler Locates and Manages Source” on page 139.](#))

---

14. Select the CPU:<date><time> tab to return to your snapshot.
15. Expand the `<invoke>` node, and note that the Profiler spent two seconds in the Java ProfilerTutorialExample.example() method.
16. Double-click the method name to open the ProfilerTutorialExample.java source and highlight the following line:

```
Thread.sleep(2000);
```

There's the problem! This method contains a two-second thread sleep.

17. If you return to the Call Tree, you can see that all of the two second paths lead to this method. (You should see three paths; for a total of six seconds.)
18. Select the Hotspots tab (located at the bottom of the Call Tree area) to open the Hotspots view. Notice that `ProfilerTutorialExample.example()` has a total self time of six seconds. (For more information about Hotspots, see [“Hotspots View” on page 149.](#))
19. Right-click `ProfilerTutorialExample.example()` and select Show Back Traces from the pop-up menu.
 

A new Back Traces tab displays at the bottom of the area.
20. Expand the `ProfilerTutorialExample.example()` node on the Back Traces tab to see that this method was called from three places, and that the method took two seconds when it was called from each place.
 

(For more information about Back Traces, see [“Back Traces View” on page 150.](#))
21. Click the Save the snapshot in the project icon  to save your snapshot and close it.
 

If you check the Saved Snapshots section on the IDM Profiler tab, you should see your snapshot. (You might have to scroll down.)
22. Select the saved snapshot, and then click Open to re-open it.

---

**NOTE** You can use the Save As button to save your snapshots externally and use the Load button to load a snapshot from outside your project.

---

23. Close the snapshot again.

### *Using the Profiler on a Workflow ManualAction*

The next part of this tutorial illustrates how to profile a workflow ManualAction.

1. In Identity Manager, select Server Tasks > Run Tasks, and then click `ProfilerTutorialWorkflow2`.
 

After a few moments, an empty form displays.
2. Click Save and the process diagram displays.
3. Select Server Tasks > Run Tasks again.

4. Return to the Identity Manager IDE IDM Profiler view and click the Reset Collected Results icon in the Profiling Results section.
5. Now click ProfilerTutorialWorkflow2 in Identity Manager.
6. When the blank form displays again, click Save.
7. In the IDM Profiler view, click Take Snapshot.

After a few seconds, a snapshot should display in the Call Tree area. You should see that `/idm/task/workItemEdit.jsp` took six+seconds. (This result corresponds to the manual action in the workflow.)

8. Expand the `/idm/task/workItemEdit.jsp` node and note that running all Derivations in the ManualAction form took a total of six seconds.
9. Expand the `Derivation`, `displayNameForm`, `variables.dummy`, and `<block>` nodes.  
You should see that the `<block>` took six seconds and, of that time, the Profiler spent two seconds in each of the three invokes to the `ProfilerTutorialExample.example().method`.
10. You can double-click `<block>` to view the source.

## Identity Manager IDE Frequently Asked Questions (FAQ)

This FAQ answers some commonly asked questions related to using the Identity Manager Integrated Development Environment (Identity Manager IDE). The information is organized into these categories:

- [Using NetBeans](#)
- [Working with Projects](#)
- [Working with the Repository](#)
- [Using the Identity Manager IDE Debugger](#)

### Using NetBeans

#### **Q: Which version of Netbeans should I use?**

**A:** Use the Netbeans version referenced in the Identity Manager product documentation provided for the Netbeans plugin version you are using.

---

**NOTE** Always use the *exact* version referenced because even patch releases can cause major functionality to break.

---

**Q: The Netbeans plugin was working, I did something, and now it is no longer working. What could be causing this problem?**

**A:** This problem is commonly caused by a corrupt file in your `.netbeans` directory. Generally, deleting your `.netbeans` directory and re-installing the NetBeans plugin resolves the problem. (Deleting the `.netbeans` directory effectively uninstalls the NetBeans plugin. You lose all of your user settings, but the contents of your project will be safe.)

The steps are as follows:

1. Shutdown NetBeans.
2. Delete the `.netbeans` directory.
3. Start NetBeans.
4. Install the NetBeans plugin.
5. Restart NetBeans.

## Working with Projects

**Q: Building and running a project is taking a very long time, and the Identity Manager IDE seems to be copying a lot of files. What could be causing this problem?**

**A:** This problem can occur for the following reasons:

- You are using the Identity Manager IDE 7.0 or 7.1 plugin.

Use the Identity Manager IDE 8.0 plugin.

Several adjustments were made to the Identity Manager IDE 8.0 Configuration Build Environment (CBE) to improve performance.

- You might be using the `Clean` commands unnecessarily.

When you use `Clean Project` or `Clean And Build Project`, the Identity Manager IDE deletes the entire `image` directory, which contains several thousand files. Identity Manager IDE must copy all of these files from `idm-staging` during the next build.

To use the Identity Manager IDE efficiently, you must understand when to use the `Clean` commands. Refer to the “When to Use Clean” section in the Identity Manager IDE `README.txt` file for more information.

**Q: Now that I have created an Identity Manager project, what files should be checked into source control?**

**A:** See the “CVS Best Practices” section in the Identity Manager IDE `README.txt` for information.

**Q: What are the best practices for using project management in CVS?**

A: See the “CVS Best Practices” section in the Identity Manager IDE `README.txt` for information.

**Q: When are objects imported into the repository?**

A: See “[Working with the Repository](#)” on page 159 for information.

**Q: How do I add a new JAR to the project?**

A: See the “How to add a new JAR dependency” section in the Identity Manager IDE `README.txt`.

## Working with the Repository

**Q: Which repository should I use for my sandbox repository?**

A: Use the embedded repository for your sandbox — particularly if you are using Identity Manager 7.1 (or higher), which has an HsSQL repository available. You lose functionality if you do not use the embedded repository.

Refer to the “Working with the Repository” section in the Identity Manager IDE `README.txt` for more information.

**Q: When are objects imported automatically?**

A: You have to configure Identity Manager IDE to import objects automatically.

The steps are as follows:

1. Select Repository > Manage Embedded Repository from the IdM menu.
2. Enable the Automatically Publish Identity Manager Objects option on the Manage Embedded Repository dialog.

---

**NOTE** This option is not available for Identity Manager Project (Remote) or if you specify your own repository.

---

3. Select Project > Run Project or Project > Debug Project.

The Identity Manager IDE automatically imports all objects that have changed since the last time you ran the project.

---

**NOTE** Automatically publishing Identity Manager objects increases the time needed to start the server. To minimize server start time, disable this option and explicitly upload objects to the repository.

---

**Q: What is the most effective way to upload objects?**

A: Use one of the following methods to upload modified objects:

- Right-click one or more edited objects in the project tree and select Upload Object from the pop-up menu.

---

**TIP** To upload multiple objects, press and hold the Control key as you select objects from the list.

---

- Select one or more edited objects, and then select Repository > Upload Objects from the IdM menu. A dialog is displayed so you can select the objects to upload.

Either method uploads the object(s) directly to the server, so there is no cache latency issue and it is much faster than using Run Project or Debug Project. The Upload Objects feature is available regardless of which repository you are using.

## Using the Identity Manager IDE Debugger

**Q: The Identity Manager IDE Debugger is sluggish. What could be causing this problem?**

A: To improve the Debugger's performance:

- Always disable Tomcat's HTTP Monitor, as follows:
  - a. Select the Identity Manager IDE Runtime Tab.
  - b. Expand the Servers node and right-click Bundled Tomcat > Properties.
  - c. Disable the Enable HTTP Monitor option, and then close the dialog.

The next time you start Tomcat, the HTTP Monitor will be disabled.

- If you are not debugging Java, select Project > Run Project, and then select Attach Debugger > Identity Manager XML Object Debugger to use just the XPRESS Debugger.

Selecting Project > Debug Project for a non-remote Identity Manager IDE project starts both the XPRESS Debugger *and* Java Debugger, and the Java Debugger adds substantial overhead.

**Q: I cannot set a breakpoint in the Debugger. What could be causing this problem?**

A: The following conditions might prevent you from setting a breakpoint:

- You just installed the NBM, but did not restart Netbeans.
- Your XML contains a `<Waveset>` wrapper element.

The Identity Manager IDE basically ignores any file that starts with a <Waveset> wrapper element because the Identity Manager IDE parses that element as a multi-object file.

The following features do not work on multi-object files:

- Debugger
- Rule Tester
- Form Previewer
- Any of the editors
- Import file generator
- Upload Object
- Diff Object

Basically, all you can do with multi-object files is import them. The only files that should contain <Waveset> wrapper elements are your project's top-level import files.

**Q: I set a breakpoint in the Debugger and it is not suspending on the breakpoint. What could be causing this problem?**

**A:** There are two things to check:

- Be sure the object name does not contain a CBE replacement string (%%). CBE replacement strings are not allowed in object names.
- Verify that the code you think is being executed is actually being executed. Try adding a trace and see if anything prints out.

## Working with Rules

**Q: When developing rules in Netbeans, why is design mode not available for a Rule Library?**

**A:** The design mode functionality is available from the explorer tree in Projects view. Use the following steps:

1. Expand the library node and right-click a rule.
2. When the pop-up menu displays, select Properties and then click Body.

---

# Identity Manager Tuning, Troubleshooting, and Error Messages

This section provides new information and documentation corrections for *Sun Identity Manager Tuning, Troubleshooting, and Error Messages*.

- Some tasks have been moved from the adapter to the task package. Update these paths if you have tracing enabled for any of the following tasks, or if you have customized task definitions referencing these packages.

---

Old Package Name	New Package Name
com.waveset.adapter.ADSyncFailoverTask	com.waveset.task.ADSyncFailoverTask
com.waveset.adapter.ADSyncRecoveryCollectorTask	com.waveset.task.ADSyncRecoveryCollectorTask
com.waveset.adapter.SARunner	com.waveset.task.SARunner
com.waveset.adapter.SourceAdapterTask	com.waveset.task.SourceAdapterTask

---

- The “Unable to Delete Errors” troubleshooting information previously provided in the “Troubleshooting Identity Manager IDE” section is no longer applicable and has been removed from the book. Now, the Netbeans embedded application server automatically shuts down whenever you perform any of the following project operations: (ID-16851)
  - Clean Project
  - Create Delta Distribution
  - Create Jar
  - Debug Project
  - Manage Embedded Repository
  - Profile Project
  - Run Project
- The “Debugging PasswordSync” section has moved from the “PasswordSync” chapter in *Identity Manager Administration* into the “Tracing and Troubleshooting Identity Manager” chapter in *Identity Manager Tuning, Troubleshooting, and Error Messages*. (ID-17340)

---

# Localization Scope

Historically, Identity Manager does not localize resource objects and functions, primarily because they are mostly samples that get loaded (through `init.xml`) during initialization of Identity Manager, and because the attributes of object types can vary between actual customer deployments, depending on the level of customizations. Following is a list of areas where users might encounter English: (ID-16349)

- Default user forms and process mapping
  - **Example:** Edit User > Security > User Form pull-down menus
  - **Example:** Configure > Form and Process Mappings
- Configuration object attribute names

**Example:** Configure > User Interface, concatenated names such as `displayPasswordExpirationWarning`
- Default tasks
  - Task templates

**Example:** Server Tasks > Configure Tasks > available task template names in table
  - Task type labels

**Example:** Server Tasks > Run Tasks > second column items from Available Tasks table
  - Task definitions

**Example:** Server Tasks > Find Tasks > second pull-down menu to select Task Definition
- Default report names

**Example:** Report names found under Reports > Run Reports > Report Table
- Default policy names

**Example:** Compliance > Manage Policies > audit policy names and descriptions
- Default capability names

**Example:** Edit User > Security > Available Capabilities
- Default report & graph names
- Process/workflow diagram applets

# Online Help

This section contains documentation corrections for online help.

- The “Configure Reports” help page contains the following sentence, which should be disregarded:

*Fonts should also be added to the JVM in order for graphs to display properly.*

The sentence is incorrect. Adding fonts to the JVM is not necessary in order to properly render text in the PDF report.