IBM InfoSphere Information Server
Version 8 Release 7

Administration Guide

IBM

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Note

Before using this information and the product that it supports, read the information in "Notices and trademarks" on page 289.

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Chapter 1. Administration overview

With IBM® InfoSphere® Information Server, you can administer security, entitlements, clusters and high availability configurations, logs, schedules, and services, and back up data. Both the IBM InfoSphere Information Server console and the IBM InfoSphere Information Server Web console provide administration capabilities.

Security administration

As part of InfoSphere Information Server administration, you set up and manage suite security. Security administration includes the following tasks:

- Configuring and administering the user registry

  The user registry holds user account information, such as user names and passwords, that can be accessed during authentication. You choose a user registry for the suite to use. You can choose the internal InfoSphere Information Server user registry, or an external local operating system or lightweight directory access protocol (LDAP) user registry. Depending on the registry you choose and the topology of your installation, you might also have to map credentials from one user registry to another.
- Controlling access

  You create user accounts and groups. You assign roles to users and groups to specify which features users can use and which projects a user can access. User roles can be defined at several levels that build on one another.
- Auditing security-related events

  Security-related events include all activities that set or modify security-related settings and all user authentications and application access attempts. You configure which events to log and how much information to include. You monitor and analyze the log information to help prevent unauthorized access to sensitive data.
- Administering account passwords

  You periodically change administrator account passwords to comply with your security policies.
- Managing active user sessions

  You view current active sessions, and manage session limits. If necessary, you can force one user or all users to disconnect.

Entitled IBM InfoSphere DataStage® edition and feature pack administration

As part of InfoSphere Information Server administrator, you control activation of InfoSphere DataStage editions and feature packs to comply with your Proof of Entitlement from IBM. Administration includes the following tasks:

- Initial edition and feature pack activation

  When you install InfoSphere DataStage, the InfoSphere Information Server installation program prompts you to select the InfoSphere DataStage editions and feature packs to install and activate. Select the items for which you have a valid Proof of Entitlement from IBM. The installation program activates the features that are associated with the items that you select. Any other editions or feature packs are deactivated and cannot be used.

- Maintaining the list of activated items

  If you later acquire entitlements for an additional InfoSphere DataStage edition or feature pack, you must activate the item within InfoSphere Information Server. If you no longer have entitlement for an item, you must deactivate it. When you deactivate the edition or feature pack, the features within the item are no longer available for use.

Clusters and high availability configuration and administration

If a portion of your installation is set up in a clustered or high availability configuration, you administer the cluster. Administration includes the following tasks:

- Administering an active-passive configuration administration

  If one or more software tiers in your installation is set up in an active-passive configuration, you monitor and manage the server pair. If a hardware or network error causes a failover to the passive server, you recover projects and restart any interrupted jobs. You can also force a failover to free the active server for maintenance or upgrade tasks.
- Administering an application server cluster

  If the InfoSphere Information Server services tier is implemented in an IBM WebSphere® Application Server cluster, you administer and maintain the cluster. Tasks include adding cluster members, adding managed nodes, synchronizing information between nodes, and restarting processes.
- Administering an IBM DB2® high availability configuration

  If the metadata repository tier is implemented in a DB2 cluster or high availability disaster recovery (HADR) configuration, you monitor the cluster. If a failover occurs, you recover from a failover and restore service.

Log administration

You can manage logs across all of the InfoSphere Information Server product modules. Logs are stored in the metadata repository. Log administration includes the following tasks:

- Configuring logging

  You specify which logging categories and severity levels of logging events are stored in the metadata repository.
- Querying logs

  You create log views in the IBM InfoSphere Information Server console and IBM InfoSphere Information Server Web console. You use the views to retrieve and query the logged events that are stored in the metadata repository.

Scheduling administration

Many of the product modules use scheduling capabilities. For example, a report run and an analysis job in IBM InfoSphere Information Analyzer are scheduled tasks. Scheduling administration includes the following tasks:

- Creating, updating, and managing schedules

  Schedule management is done within the product module. For example, you create a schedule for a column analysis job to run weekly in an InfoSphere Information Analyzer project in the console.
- Viewing schedules

You can obtain a global view of all the scheduled activities for all product modules. With this data, you can ensure that enough resources are available to process the schedules. You can monitor who schedules tasks and how often.

- Querying schedules

  You can query all the schedules that are defined across all product modules. You can check their status, history, and forecast. You can also do maintenance tasks such as purging the scheduled execution history. You can stop or start existing schedules to prevent system overload.

Backup administration

To prevent the loss of data and to prepare for disaster recovery, you administer regular backups. Backup administration includes the following tasks:

- Backing up InfoSphere Information Server components

  You schedule and perform regular backups of all databases, profiles, libraries, and other data.

- Restoring components

  To recover your data in the event of a hardware failure or other disaster, you can restore the data that you have backed up.

Service administration

You administer InfoSphere Information Server services and WebSphere Application Server services. Administration includes the following tasks:

- Placing InfoSphere Information Server in and out of maintenance mode

  You can place InfoSphere Information Server in maintenance mode to prevent non-administrator users from logging in while you run maintenance tasks.

- Stopping and restarting services

  Many maintenance and administration tasks require that you stop and restart various InfoSphere Information Server services or WebSphere Application Server services.

- Checking the status of services

  You can determine the status of services for troubleshooting or other maintenance tasks.

Asset administration

Assets include projects, templates, configuration specifications, parameter sets, and all other information that is produced within the InfoSphere Information Server product modules. The assets are stored in the metadata repository. Administration includes the following tasks:

- Importing and exporting assets

  To move assets from one InfoSphere Information Server installation to another, you export the assets from one installation and import them into another. For example, if you have a development system, a test system, and a production system, you move assets between the systems.

- Querying and deleting assets

  You can query certain assets and delete them as necessary.

Administration tools

To administer InfoSphere Information Server, you use the following software tools:

- IBM InfoSphere Information Server console

  The IBM InfoSphere Information Server console ("the console") is a rich client-based interface for activities such as profiling data and developing service-oriented applications. In the console, you can complete administration tasks, reporting tasks, and the tasks that are associated with IBM InfoSphere Information Analyzer and IBM InfoSphere Information Services Director.
- IBM InfoSphere Information Server Web console

  The IBM InfoSphere Information Server Web console ("the Web console") is a browser-based interface for administrative activities such as managing security and creating views of scheduled tasks. In the Web console, you can perform administration tasks, reporting tasks, and the tasks that are associated with IBM InfoSphere Business Glossary and the Information Services catalog.

For certain tasks, you also use the WebSphere Application Server administrative console.

To administer assets, you use the **`istool`** command line.

IBM InfoSphere DataStage administration

For detailed IBM InfoSphere DataStage administration information, refer to InfoSphere DataStage administration guides.

Table 1. InfoSphere DataStage administration guides

Title	**Description**
Administrator Client Guide	Describes the IBM InfoSphere DataStage and QualityStage™ Administrator client and provides instructions about performing setup, routine maintenance operations, and administration on the IBM InfoSphere Information Server engine.
Designer Client Guide	Describes the IBM InfoSphere DataStage and QualityStage Designer client and gives a general description of how to create, design, and develop an InfoSphere DataStage and QualityStage application.
Director Client Guide	Describes the IBM InfoSphere DataStage and QualityStage Director client and explains how to validate, schedule, run, and monitor parallel jobs and server jobs.
Globalization Guide	Contains information about using the national language support (NLS) features that are available in InfoSphere DataStage and QualityStage when NLS is installed.

By default, the documentation is installed on your system:

- Windows To access a list of the documentation on your system, click **Start** > **All Programs** > **IBM InfoSphere Information Server** > **Documentation**.
- Linux UNIX The PDF documentation for the suite is installed in `\IBM\InformationServer\Documentation`.

A complete set of the PDF documentation for the suite is on the IBM InfoSphere Information Server PDF CD that is included with the installation software.

IBM WebSphere Application Server administration

While you can perform most administration tasks in the IBM InfoSphere Information Server console or IBM InfoSphere Information Server Web console, you might need to change the user registry configuration, troubleshoot the application, tune the performance, and perform other configuration tasks directly in IBM WebSphere Application Server.

You can find information about WebSphere Application Server at the following locations:

- Version 7.0: publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp
- Version 8.0: publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp

For detailed WebSphere Application Server administration information, refer to the following administration topics.

Table 2. WebSphere Application Server administration topics

Task	Link
Configuring WebSphere Application Server user registries	Version 7.0: publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.base.doc/info/aes/ae/tsec_useregistry.html Version 8.0: publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.base.doc/info/aes/ae/tsec_useregistry.html
WebSphere Application Server troubleshooting	Version 7.0: publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.base.doc/info/aes/ae/welc6toptroubleshooting.html Version 8.0: publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.base.doc/info/aes/ae/welc6toptroubleshooting.html
WebSphere Application Server log files	Version 7.0: publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.base.doc/info/aes/ae/ttrb_mglogs.html Version 8.0: publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.base.doc/info/aes/ae/ttrb_mglogs.html
Performance tuning	Version 7.0: publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.base.doc/info/aes/ae/tprf_tuneprf.html Version 8.0: publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.base.doc/info/aes/ae/tprf_tuneprf.html

Table 2. WebSphere Application Server administration topics (continued)

Task	**Link**
Configuring bidirectional language support for IBM InfoSphere Business Glossary	See the topic about bidirectional language support in the *IBM InfoSphere Business Glossary Administrator's and Author's Guide*

Chapter 2. Opening the consoles

To administer IBM InfoSphere Information Server, you can use the IBM InfoSphere Information Server console, IBM InfoSphere Information Server Web console, and the IBM WebSphere Application Server administrative console.

Opening the IBM InfoSphere Information Server console

To set up security, manage projects, analyze data, enable information services, or run reports, use the IBM InfoSphere Information Server console. The console is a rich-client-based interface.

About this task

Use the console for the following administrative activities:

- Create and manage projects.
- Set project-level security.
- Analyze data with IBM InfoSphere Information Analyzer.
- Enable information services with IBM InfoSphere Information Services Director.
- Run reports.

Procedure

1. From the Microsoft Windows start menu, select **Start** > **All Programs** > **IBM InfoSphere Information Server** > **IBM InfoSphere Information Server Console**.
2. In the **User Name** field, type your user name.
3. In the **Password** field, type your password.
4. In the **Server** menu, type or select a host name and port. The host name and port depend on whether WebSphere Application Server clustering is set up for your services tier configuration and whether secure HTTP (HTTPS) is set up.

Table 3. Host and port values for different configurations

IBM WebSphere Application Server configuration	Host value	Port value (HTTP protocol)	Port value (HTTPS protocol)
WebSphere Application Server clustering is set up	The host name or IP address of the front-end dispatcher (either the Web server or the load balancer). Do not use the host name of a particular cluster member.	HTTP port of the front-end dispatcher (for example, 80). Do not use the port number of a particular cluster member.	HTTPS secure port of the front-end dispatcher (for example, 443). Do not use the port number of a particular cluster member.
Clustering is not set up	The host name or IP address of the computer where WebSphere Application Server is installed.	HTTP transport port (configured as WC_defaulthost in WebSphere Application Server). Default: 9080	HTTPS transport secure port (configured as WC_defaulthost_secure in WebSphere Application Server). Default: 9443

5. Click **Login**.

Opening the IBM InfoSphere Information Server web console

To manage security, view scheduled tasks, work with reports, or perform tasks that are related to IBM InfoSphere Business Glossary or the Information Services catalog, use the InfoSphere Information Server Web console.

Use the web console for the following administrative activities:

- Managing security.
- Creating views of scheduled tasks.
- Reporting.
- Tasks that are associated with IBM InfoSphere Business Glossary.
- Tasks that are associated with the Information Services catalog.

To access the web console, determine the URL to use, configure your browser, and navigate to the console window.

Determining the URL for the IBM InfoSphere Information Server Web console

The URL for the IBM InfoSphere Information Server Web console differs depending upon the IBM WebSphere Application Server communication protocol and configuration.

Procedure

The syntax of the URL is as follows:

```
protocol://host:port/ibm/iis/console
```

protocol is the communication protocol: either `http` or `https`.
host and *port* differ depending upon the communication protocol and WebSphere Application Server configuration (clustered or non-clustered):

Table 4. Host and port values for different configurations

IBM WebSphere Application Server configuration	Host value	Port value (HTTP protocol)	Port value (HTTPS protocol)
WebSphere Application Server clustering is set up	The host name or IP address of the front-end dispatcher (either the Web server or the load balancer). Do not use the host name of a particular cluster member.	HTTP port of the front-end dispatcher (for example, 80). Do not use the port number of a particular cluster member.	HTTPS secure port of the front-end dispatcher (for example, 443). Do not use the port number of a particular cluster member.
Clustering is not set up	The host name or IP address of the computer where WebSphere Application Server is installed.	HTTP transport port (configured as WC_defaulthost in WebSphere Application Server). Default: 9080	HTTPS transport secure port (configured as WC_defaulthost_secure in WebSphere Application Server). Default: 9443

For example, in a configuration where clustering is not set up, the HTTPS URL might be:

```
https://myhost.example.com:9443/ibm/iis/console
```

Configuring your Web browser to work with the IBM InfoSphere Information Server Web console

The IBM InfoSphere Information Server Web console is supported with both Microsoft Internet Explorer and Mozilla Firefox. You must do these steps in your preferred Web browser before you use the IBM InfoSphere Information Server Web console.

Before you begin

- Make sure that your browser is supported by InfoSphere Information Server. For information about supported browsers, see the InfoSphere Information Server system requirements at www.ibm.com/software/data/integration/info_server/overview/requirements.html.
- Determine the URL to use to access the web console. See "Determining the URL for the IBM InfoSphere Information Server Web console" on page 8. The host name and port differ depending upon the IBM WebSphere Application Server communication protocol and configuration in use.
- If HTTPS is enabled, then the first time that you access the Web console, a message about a security certificate is displayed if the certificate from the server is not trusted. If you receive such a message, follow the browser prompts to accept the certificate and proceed to the login page.

Configuring Microsoft Internet Explorer to work with the IBM InfoSphere Information Server Web console

You can enable Microsoft Internet Explorer to work with the IBM InfoSphere Information Server Web console.

Procedure

1. Enable JavaScript:
   a. Click **Tools** > **Internet Options**. On the **Security** tab, click **Custom Level**.
   b. In the Security Settings window, select **Scripting** > **Active Scripting** > **Enable**.
2. Set the browser to accept cookies for the InfoSphere Information Server host site.
   a. Click **Tools** > **Internet Options**.
   b. On the **Privacy** tab, click **Sites**.
   c. In the **Address of Web site** field, enter the InfoSphere Information Server host name.
   d. Click **Allow**.
   e. Click **OK**.
3. Enable pop-up windows for the URL of the IBM InfoSphere Information Server Web console:
   a. Click **Tools** > **Pop-up Blocker** > **Pop-up Blocker Settings** or turn off the pop-up window blocker.
   b. If you selected the settings, type the URL and click **Add**.

   Note: To enable pop-up windows for the site, you might also need to disable or configure pop-up blockers.
4. Specify that the pages are refreshed every time you visit the site:
   a. Click **Tools** > **Internet Options** and on the General tab, click **Settings**. Select **Settings** in the Browsing history section.
   b. Select **Every time I visit to the webpage** or **Automatically** and click **OK**.

5. Optional: Disable the display of friendly HTTP error messages:
   a. Click **Tools** > **Internet Options**.
   b. On the **Advanced** tab, clear **Browsing** > **Show friendly HTTP error messages**.

Configuring Internet Explorer to work with the IBM InfoSphere Information Server Web console on Microsoft Windows Server 2008

In Microsoft Windows Server 2008, you might need to add the InfoSphere Information Server web console URL to the trusted sites zones in Internet Explorer.

About this task

If you are browsing to an IBM InfoSphere Information Server Web console by using its host name, such as http://*hostname*:9080/ibm/iis/console, you must add the URL (http://*hostname*) to the trusted site zones in Internet Explorer.

You do not have to add the URL to the trusted sites zones if your client computer is also your server and you are browsing to the server by using the URL http://localhost:9080/ibm/iis/console, or if you are using Mozilla Firefox.

Procedure

1. In Microsoft Internet Explorer, choose **Tools** > **Internet Options**.
2. In the **Security** tab, select the **Trusted Sites zone**.
3. Click **Sites**.
4. In the Trusted Sites window, enter the URL and click **Add**.

Configuring Mozilla Firefox to work with the IBM InfoSphere Information Server Web console

You can configure Mozilla Firefox to work with the IBM InfoSphere Information Server Web console.

Procedure

1. Enable JavaScript:
   a. Click **Tools** > **Options**, and on the Content tab, click **Enable JavaScript**.
2. Set the browser to accept cookies for the InfoSphere Information Server host site.
   a. Click **Tools** > **Options**.
   b. On the **Privacy** tab, click the **Accept cookies from sites** option or click **Exceptions** and add the site to the allowed site list by entering the host name and clicking **Allow**.
3. Enable pop-up windows for the URL of the web console:
   a. Click **Tools** > **Options**.
   b. Select the **Contents** tab and either clear the **Block pop-up windows** option or click **Exceptions** and add the site to the allowed list by entering the host name and clicking **Allow**.

Viewing report results in a Web browser

Set additional security options to ensure that report results open correctly in Microsoft Internet Explorer.

Procedure

1. In the Internet Explorer toolbar, click **Tools** > **Internet Options**.
2. On the **Security** tab, click the zone in which the services tier is located, such as **Local intranet**.
3. On the **Security** tab, click **Custom Level**.
4. In the Security Settings window, scroll to **Automatic prompting for file downloads** under **Downloads** and select **Enable**.
5. Click **OK**.
6. Click **OK**.

Navigating to the IBM InfoSphere Information Server Web console

The IBM InfoSphere Information Server Web console ("the web console") is a browser-based interface for administrative activities.

Before you begin

- Make sure that your browser is supported by IBM InfoSphere Information Server. For information about supported browsers, see the InfoSphere Information Server system requirements at www.ibm.com/software/data/integration/info_server/overview/requirements.html.
- Determine the URL to use to access the web console. See “Determining the URL for the IBM InfoSphere Information Server Web console” on page 8.
- Configure your browser as described in “Configuring your Web browser to work with the IBM InfoSphere Information Server Web console” on page 9.

Procedure

1. Open a web browser, and navigate to the console. The URL to use depends upon the IBM WebSphere Application Server communication protocol and configuration in use. See “Determining the URL for the IBM InfoSphere Information Server Web console” on page 8.
2. If HTTPS is enabled, then the first time that you access the web console, a message about a security certificate is displayed if the certificate from the server is not trusted. Follow the browser prompts to accept the certificate and proceed to the login page.
3. Type your user name and password.
4. Click **OK** to open the Home tab.

Logging in to the IBM WebSphere Application Server administrative console

Because IBM InfoSphere Information Server server-side processes run on WebSphere Application Server, you do certain administrative tasks by using the WebSphere Application Server administrative console.

Before you begin

To perform various tasks in the WebSphere Application Server administrative console, you must have sufficient authority. The authority level that you require differs from task to task.

Procedure

1. Open a Web browser, and navigate to the WebSphere Application Server administrative console. The URL is in the following form:

   `https://`*`hostname`*`:`*`port`*`/ibm/console`

   Specify *hostname* and *port* in the following manner:

   - If WebSphere Application Server clustering is set up for your services tier configuration, specify the host name (or IP address) and port of the computer that hosts the Deployment Manager. The default port number is 9043.
   - If clustering is not set up, specify the host name or IP address of the computer where WebSphere Application Server is installed. Specify the port number that is assigned to the WebSphere Application Server administrative console. The default port number is 9043.
2. Log in to the WebSphere Application Server administrative console.

Chapter 3. IBM InfoSphere Information Server console overview

The IBM InfoSphere Information Server console is a rich-client-based interface for activities such as creating and managing projects, setting project-level security, analyzing data with IBM InfoSphere Information Analyzer, enabling information services with IBM InfoSphere Information Services Director, and running reports.

From the IBM InfoSphere Information Server console, you can complete the following tasks:

- Create a project
- Set up project-level security
- Analyze information
  - Columns
  - Primary keys and foreign keys
  - Across multiple data sources
- Enable information services
  - Connect to providers
  - Develop projects, applications, services, and operations
  - Deploy services
- Run reports
- Create views of scheduled tasks and logged messages
- Troubleshoot jobs

Main areas of the console

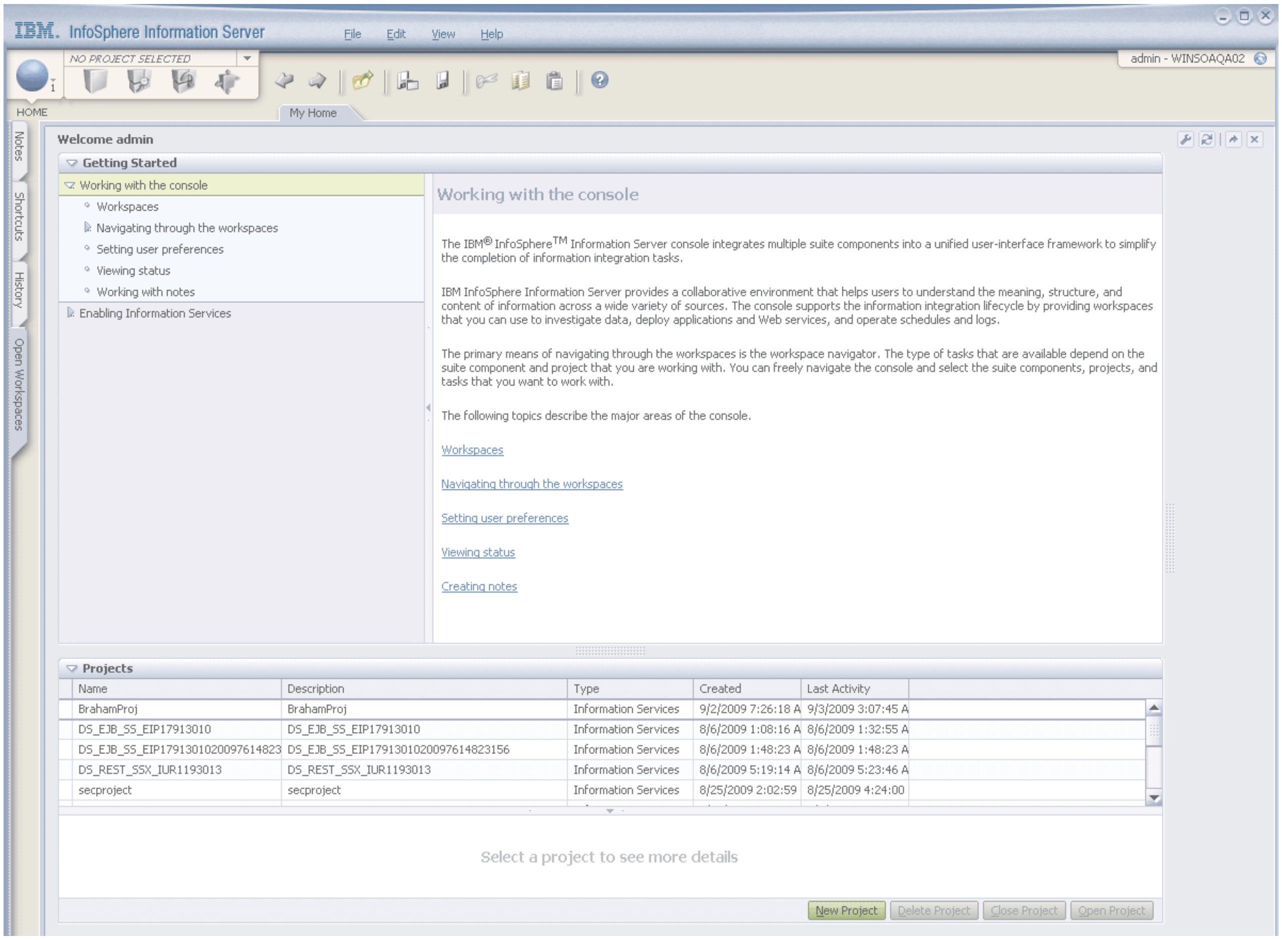
The IBM InfoSphere Information Server console provides workspaces that you use to investigate data, deploy applications and Web services, and monitor schedules and logs.

In the following topics, both IBM InfoSphere Information Analyzer and IBM InfoSphere Information Services Director were installed. Some features might not be available if you have only one product module installed.

My Home workspace

When you open the IBM InfoSphere Information Server console, the My Home workspace is shown. In this workspace, you can access getting started information and you can access projects.

The following figure shows the My Home workspace. You can customize the sections that appear in the workspace.



Working with the console

The IBM® InfoSphere™ Information Server console integrates multiple suite components into a unified user-interface framework to simplify the completion of information integration tasks.

IBM InfoSphere Information Server provides a collaborative environment that helps users to understand the meaning, structure, and content of information across a wide variety of sources. The console supports the information integration lifecycle by providing workspaces that you can use to investigate data, deploy applications and Web services, and operate schedules and logs.

The primary means of navigating through the workspaces is the workspace navigator. The type of tasks that are available depend on the suite component and project that you are working with. You can freely navigate the console and select the suite components, projects, and tasks that you want to work with.

The following topics describe the major areas of the console.

Workspaces

Navigating through the workspaces

Setting user preferences

Viewing status

Creating notes

Name	Description	Type	Created	Last Activity
BrahamProj	BrahamProj	Information Services	9/2/2009 7:26:18 A	9/3/2009 3:07:45 A
DS_EJB_SS_EIP17913010	DS_EJB_SS_EIP17913010	Information Services	8/6/2009 1:08:16 A	8/6/2009 1:32:55 A
DS_EJB_SS_EIP1791301020097614823	DS_EJB_SS_EIP1791301020097614823156	Information Services	8/6/2009 1:48:23 A	8/6/2009 1:48:23 A
DS_REST_SSX_IUR1193013	DS_REST_SSX_IUR1193013	Information Services	8/6/2009 5:19:14 A	8/6/2009 5:23:46 A
secproject	secproject	Information Services	8/25/2009 2:02:59	8/25/2009 4:24:00

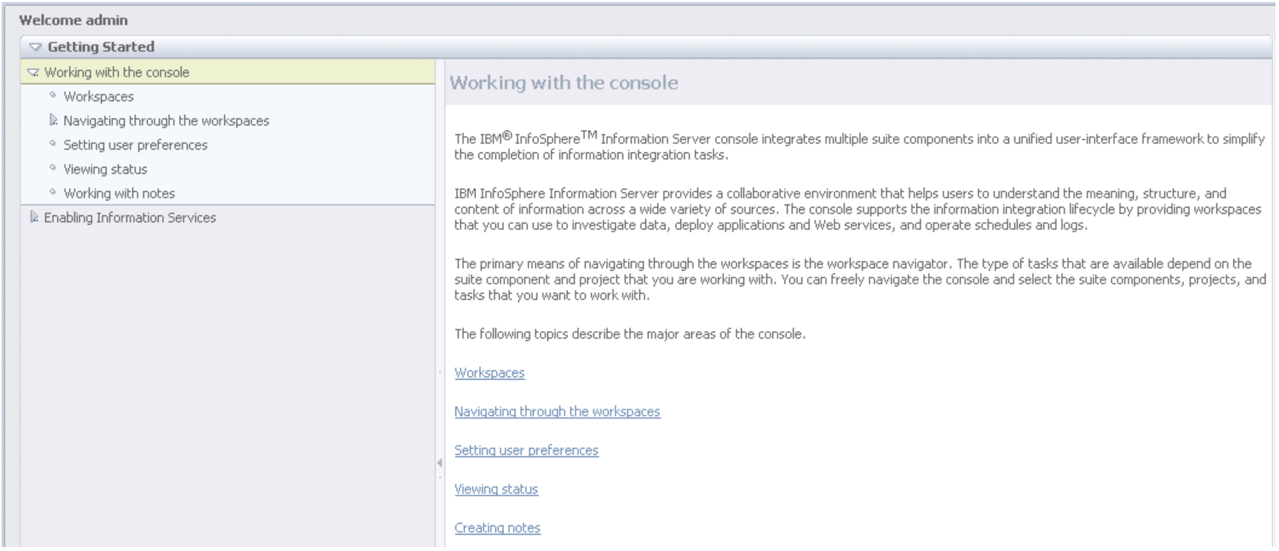
Select a project to see more details

Figure 1. The My Home workspace in the IBM InfoSphere Information Server console

This workspace contains the following sections:

Getting Started pane

The Getting Started pane describes how to work in a product module, such as how to work in IBM InfoSphere Information Analyzer. The information that is displayed corresponds to the product modules that you have installed.



Welcome admin

Getting Started

- Working with the console
  - Workspaces
  - Navigating through the workspaces
  - Setting user preferences
  - Viewing status
  - Working with notes
- Enabling Information Services

Working with the console

The IBM® InfoSphere™ Information Server console integrates multiple suite components into a unified user-interface framework to simplify the completion of information integration tasks.

IBM InfoSphere Information Server provides a collaborative environment that helps users to understand the meaning, structure, and content of information across a wide variety of sources. The console supports the information integration lifecycle by providing workspaces that you can use to investigate data, deploy applications and Web services, and operate schedules and logs.

The primary means of navigating through the workspaces is the workspace navigator. The type of tasks that are available depend on the suite component and project that you are working with. You can freely navigate the console and select the suite components, projects, and tasks that you want to work with.

The following topics describe the major areas of the console.

Workspaces

Navigating through the workspaces

Setting user preferences

Viewing status

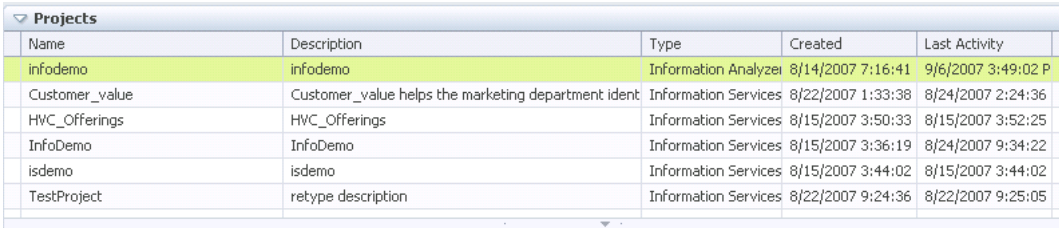
Creating notes

Figure 2. The Getting Started pane

Many topics in the Getting Started pane have a link that opens the related task and a link that opens the information center for more information (the "Learn more" link).

Projects pane

In the Projects pane, you can select a project to open. Multiple users can contribute to and work on a project in the console. This pane shows a list of all of the projects that you have access to.



Projects

Name	Description	Type	Created	Last Activity
infodemo	infodemo	Information Analyzei	8/14/2007 7:16:41	9/6/2007 3:49:02 P
Customer_value	Customer_value helps the marketing department ident	Information Services	8/22/2007 1:33:38	8/24/2007 2:24:36
HVC_Offerings	HVC_Offerings	Information Services	8/15/2007 3:50:33	8/15/2007 3:52:25
InfoDemo	InfoDemo	Information Services	8/15/2007 3:36:19	8/24/2007 9:34:22
isdemo	isdemo	Information Services	8/15/2007 3:44:02	8/15/2007 3:44:02
TestProject	retype description	Information Services	8/22/2007 9:24:36	8/22/2007 9:25:05

Figure 3. The Projects pane

If you select an InfoSphere Information Analyzer project from the Projects pane, you can see the status of that project in the project details section.

Workspace Navigator

The primary means of navigating through the workspaces is the Workspace Navigator. The Workspace Navigator is a series of menus that you use to move through workspaces.

The Workspace Navigator consists of five navigation menus. Each navigation menu contains links to workspaces that you use to complete tasks. The workspaces that are available depend on the product module that you are working in. Some navigation menus might be empty if a particular component has not been installed.

Each workspace corresponds to a navigation menu. For example, if you open the project properties workspace, the Overview navigation menu is highlighted. You can view all open workspaces that are associated with the current navigation menu that is selected. You cannot view any open workspaces that are associated with a navigation menu that is not selected.

When you select a link and open a workspace, the number on the navigation menu indicates how many workspaces are open per menu. For example, if the dashboard workspace and the project properties workspace are open, the number 2 is displayed on the Overview navigation menu.

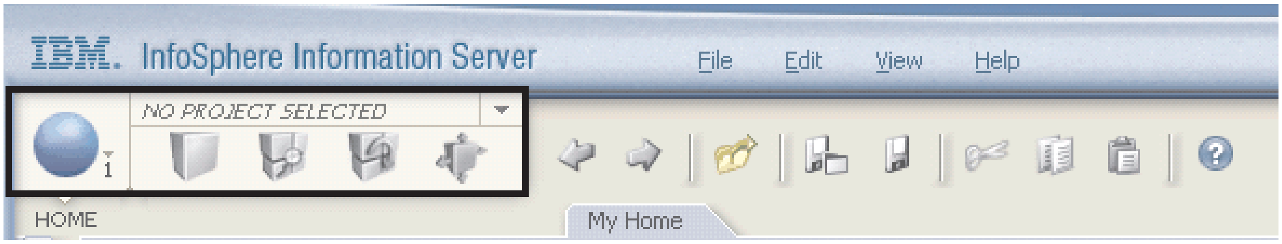


Figure 4. The Workspace Navigator on the IBM InfoSphere Information Server console toolbar

The types of tasks that are available depend on the product module and project that you are working with. The following list describes the type of tasks that are available in each of the menus.

Home navigation menu
Contains configuration and metadata tasks. For example, if you have IBM InfoSphere Information Services Director installed, you can set up connections to available information providers in the Information Services Connection workspace.

Overview navigation menu
Contains the project dashboard and Project Properties workspace. For example, you specify project details in the Project Properties workspace.

Investigate navigation menu
Contains information discovery and data profiling tasks. For example, if you have IBM InfoSphere Information Analyzer installed, you can run a column analysis job in the Column Analysis workspace.

Develop navigation menu
Contains data transformation and information services enablement tasks. For example, if you have InfoSphere Information Services Director installed, you design, create, and develop applications in the Information Services Application workspace.

Operate navigation menu
Contains job scheduling tasks, logging tasks, and information services application tasks. For example, you create views of logged messages in the Log View workspace.

Project menu

Above the Workspace Navigator, you can access the project menu to open a project, move between open projects, and create projects.

To open the project menu, click the drop-down menu.

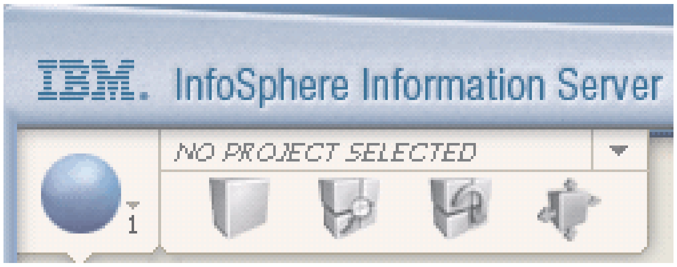


Figure 5. The Project menu above the Workspace Navigator

You can perform configuration and administrative tasks, such as logging, scheduling, and reporting, outside of the context of a project in the console.

To perform product module tasks, such as information analysis or services enablement, you must first open a project. A project is a logical container for all of the tasks that can be performed in a product module.

Palettes

You can use the palettes to view a history of your activities and to open workspaces, access shortcuts, and manage notes. You can dock, float, or anchor the palettes. By default, the palettes are located on the left side of the console.

To open the palettes, click one of the tabs.

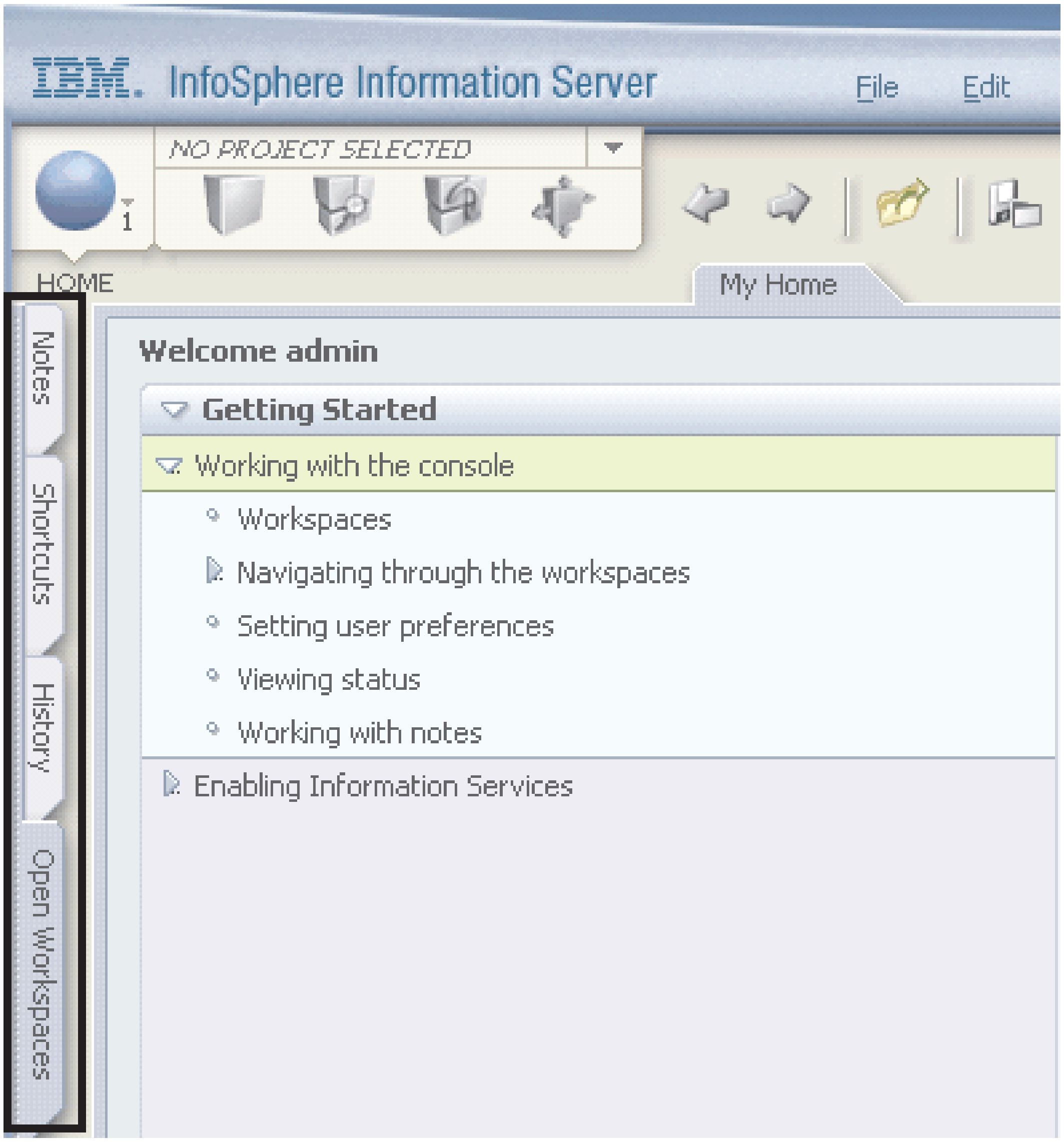


Figure 6. The Palettes tabs

Notes Use this palette to view the notes that are associated with an object. Notes are only available for some product modules.

Shortcuts
Use this palette to go to workspaces or panes for which you previously created shortcuts.

History
Use this palette to view a list of the workspaces you visited. The current or most recently visited workspace is at the top of the list.

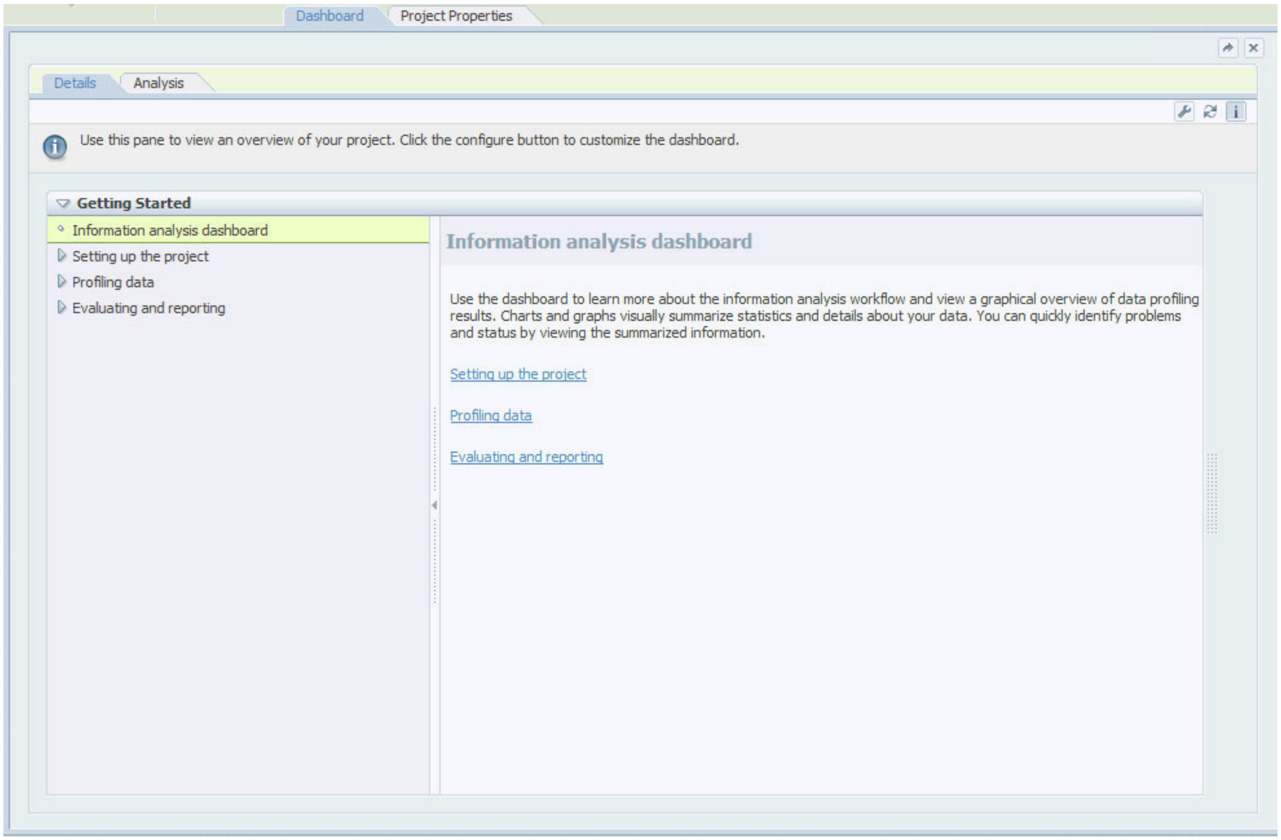
Open Workspaces
This palette shows all open workspaces. Project-specific workspaces are grouped by project.

To hide the palettes, click outside of the pane.

Project dashboard

When you open a project, the project dashboard is displayed.

IBM InfoSphere Information Analyzer and IBM InfoSphere Information Services Director projects both contain a dashboard. The following figure shows an example of the InfoSphere Information Analyzer dashboard.



Use this pane to view an overview of your project. Click the configure button to customize the dashboard.

Information analysis dashboard

Use the dashboard to learn more about the information analysis workflow and view a graphical overview of data profiling results. Charts and graphs visually summarize statistics and details about your data. You can quickly identify problems and status by viewing the summarized information.

Setting up the project

Profiling data

Evaluating and reporting

Figure 7. The Project dashboard for InfoSphere Information Analyzer

Use the **Dashboard** tab to learn more about the task workflow and, for some product modules, to view the current status of the project. You can customize the dashboard in the console to add or remove content panes. For some product modules, you can also configure the dashboard to show a set of charts and graphs that are based on underlying project information.

Status bar

After you submit a job that requires processing, the status bar is displayed at the bottom of the workspace.

The status bar shows the progress of activities, error messages, and warnings. You use the status bar to monitor any jobs or activities that you initiated.

The status bar can be in one of the following states:

Closed
: When no activities are running, the status bar is closed.

Activity in progress
: When an activity or job is running, the status bar remains closed and displays a green status indicator that moves across the length of the bar.

Notification

When you initiate an activity or when an activity is completed, the status bar opens briefly and shows details about the status of the activity. When an activity is running, you can view more information about the status of the activity by rolling your cursor over the status bar to open the status pane. The status pane contains a larger progress bar, summary information about the activity, and a **Details** button. You can roll over the status bar at any time to view the status of the jobs or activities that you initiated.

Details

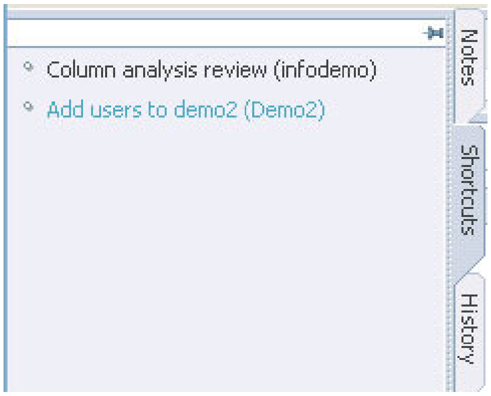
To view information about the status of an activity, click the **Details** button in the status pane. You can view details such as the time that the activity started running and whether there are any system warnings or errors. The Details state lists all the activities and jobs that you initiated.

Shortcuts

To quickly return to a task at a later time, you can create a shortcut.

To create a shortcut to the open task, click the **Shortcut** button .

After you create the shortcut, you can click the **Shortcuts** tab to return to the task.



- Column analysis review (infodemo)
- Add users to demo2 (Demo2)

Figure 8. The Shortcuts tab

Notes

You can use notes to comment on objects, provide information to other users, and identify issues for further investigation. Notes are available depending on the suite component that you are working in.

You can create or view notes by using the notes palette or clicking on a note icon. Note icons are located at the top of task panes.

Basic task flow in the workspaces

Even though you perform different types of tasks in an IBM InfoSphere Information Analyzer project and an IBM InfoSphere Information Services Director project, the basic task flow is the same.

The following topics describe the basic task flow in the workspaces. This example shows the task flow in the context of creating a column analysis job with

InfoSphere Information Analyzer. The types of tasks and options that are available will vary between InfoSphere Information Analyzer projects and InfoSphere Information Services Director projects.

Select a task menu from the Workspace Navigator

After you open a project, the first step is to select a task menu from the Workspace Navigator.

About this task

The Workspace Navigator consists of five navigation menus. Each navigation menu contains links to workspaces that you use to complete tasks. The workspaces that are available depend on the suite component that you are working in. Some navigation menus might be empty if a particular component has not been installed.

Select the menu that corresponds with the type of task you want to perform.

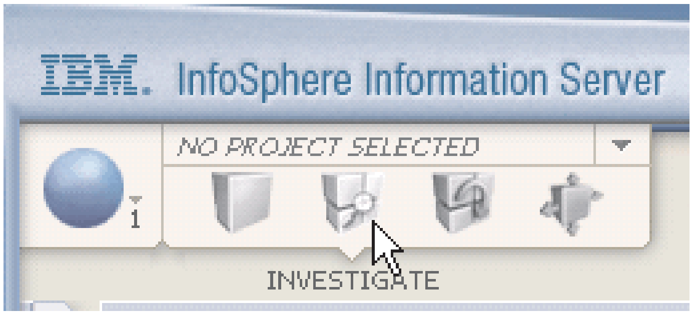


Figure 9. In this example, the user selects the Investigate task menu

Select the task that you want to perform from that menu

Next, you select the task that you want to perform from the task menu.

About this task

Each navigation menu contains a list of high-level tasks that you can perform. Select the task to open the workspace that is associated with that high-level task.

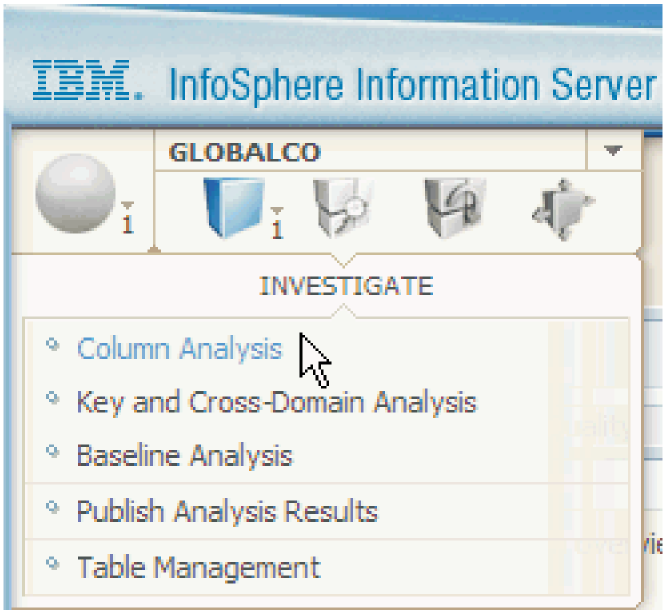


Figure 10. In this example, the user selects Column Analysis to open the Column Analysis workspace

Select objects and a task in the workspace

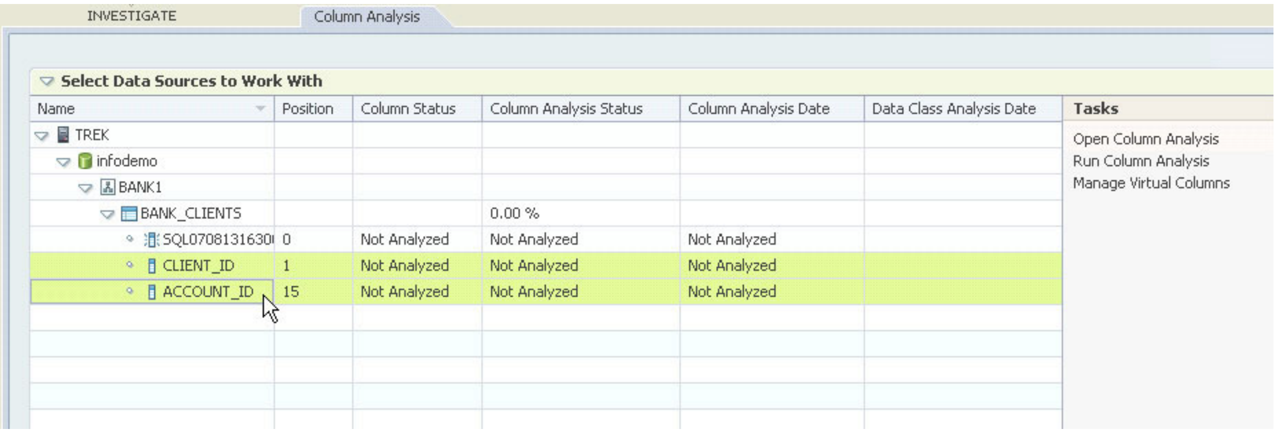
In the workspace, you select an item to work with from the objects lists and then select a task to perform from the Tasks list.

About this task

The object list contains the items that you perform the tasks on, such as data sources, applications and services, or log views. The object list can also contains status information, such as the completion of analysis or the creation date of a log view.

The Tasks list contains the tasks that you can perform on the selected objects.

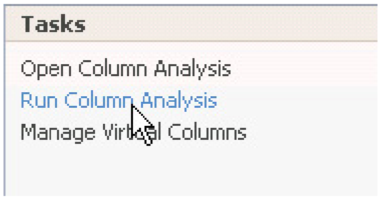
Select an object to work with in the objects list, as shown in the following figure.



Name	Position	Column Status	Column Analysis Status	Column Analysis Date	Data Class Analysis Date
TREK					
infodemo					
BANK1					
BANK_CLIENTS			0.00 %		
SQL07081316301	0	Not Analyzed	Not Analyzed	Not Analyzed	
CLIENT_ID	1	Not Analyzed	Not Analyzed	Not Analyzed	
ACCOUNT_ID	15	Not Analyzed	Not Analyzed	Not Analyzed	

Figure 11. Example of data sources selected in the Column Analysis workspace's object list

And then, select the task that you want to perform from the Tasks list.



Tasks

Open Column Analysis
Run Column Analysis
Manage Virtual Columns

Figure 12. Example of selecting task from the Tasks list in the Column Analysis workspace.

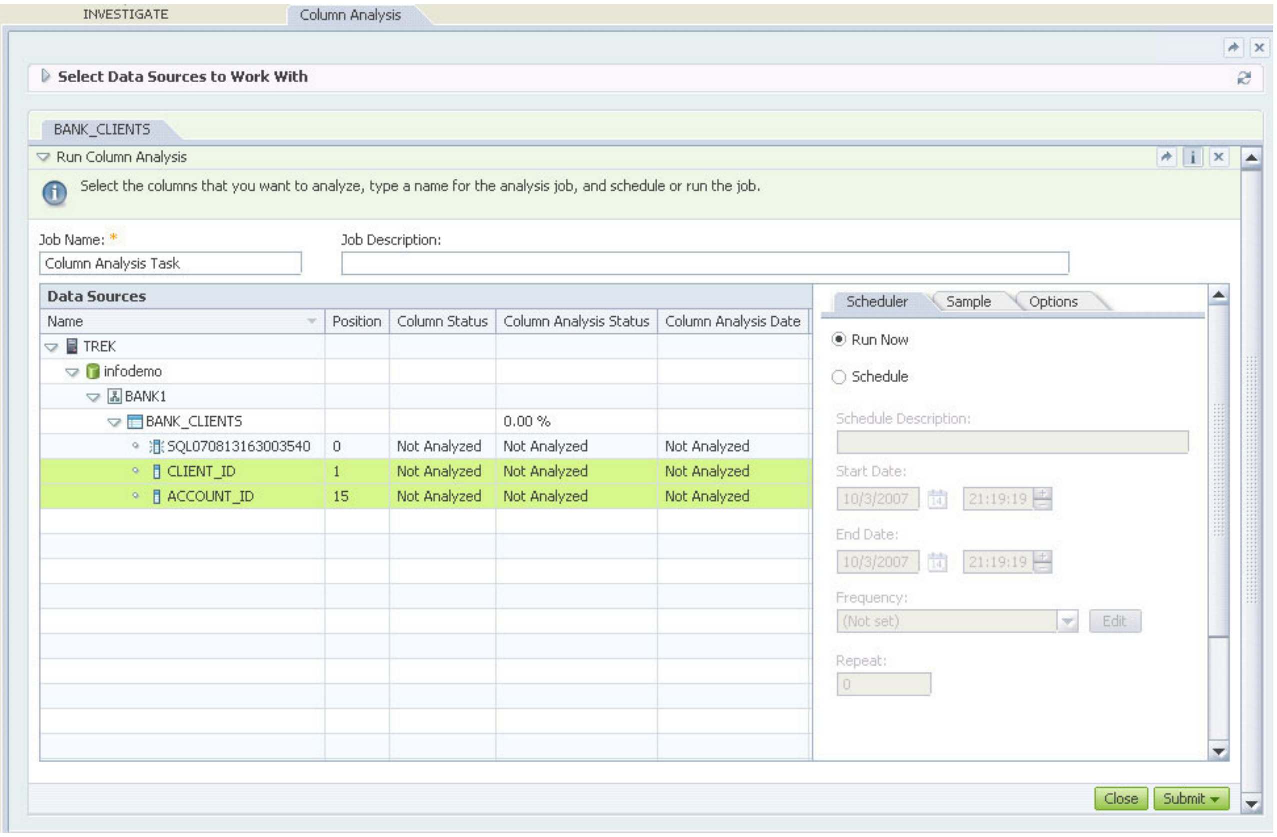
Tasks might be unavailable if you have not yet selected an object, or if there is a prerequisite task.

Work in a task pane

After you select a task from the Tasks lists, a task pane opens. In the task pane, you can select options and provide details to complete the task.

About this task

Note that when the task pane opens, the object list and Tasks list are collapsed at the top of the workspace. The following figure shows the Run Column Analysis task pane.



Select the columns that you want to analyze, type a name for the analysis job, and schedule or run the job.

Job Name: * Column Analysis Task

Job Description:

Data Sources

Name	Position	Column Status	Column Analysis Status	Column Analysis Date
TREK				
infodemo				
BANK1				
BANK_CLIENTS			0.00 %	
SQL070813163003540	0	Not Analyzed	Not Analyzed	Not Analyzed
CLIENT_ID	1	Not Analyzed	Not Analyzed	Not Analyzed
ACCOUNT_ID	15	Not Analyzed	Not Analyzed	Not Analyzed

● Run Now

○ Schedule

Schedule Description:

Start Date: 10/3/2007 21:19:19

End Date: 10/3/2007 21:19:19

Frequency: (Not set) Edit

Repeat: 0

Figure 13. The Run Column Analysis task pane

The content of each task pane differs. Many task panes require that you select options and provide additional details. You can also schedule certain tasks to run at specified times or intervals. The asterisk (*) indicates a required field.

When you have completed the task, click **Save** or **Submit**.

After you submit a job that requires processing, the status bar is displayed at the bottom of the workspace.

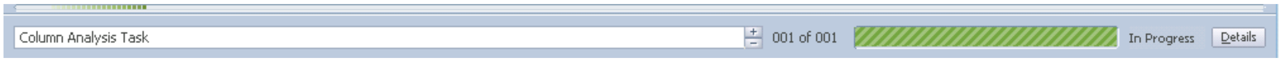


Figure 14. Status bar showing the progress of the column analysis job

Reporting, scheduling, and logging in the console

The IBM InfoSphere Information Server console also gives you access to common administrative tasks, such as reporting, scheduling, and logging.

Reporting

You can use the reports workspace to create, edit, or view a report. A report shows the details of an activity that has been completed in the suite.

To create a report, you select a report template and then specify the project that you want to associate with the report. You then type parameters for the report and choose the format that you want the report to be created in such as PDF, XML, or DHTML. The report templates that are available correspond to the components in the suite.

To edit a report, you select the report that you want to modify and then create a copy of it. You make any changes in the copy.

Reports can be saved in the metadata repository and can be accessed by you or by other authorized users. You or other users can use the information in the reports to complete other tasks in the product modules.

You can also use the reports workspace to view saved reports that were generated in the suite and to select certain reports as your favorites. To find a report, you can filter the list of available reports by the names of the projects that they are associated with or by the dates on which the reports were created. If you select a report as a favorite, the report is accessible in the report favorites pane in the My Home workspace.

Scheduling

You create schedule views to query the schedules that you created elsewhere in the suite.

You create a schedule to define when an activity will run in the suite component that you are working in. A schedule contains details about when the activity will run, such as a specific time or day. Schedules can be configured to run at any time or on any date that you specify. You can also configure schedules to run repeatedly or at different intervals.

A schedule view shows information such as a list of available schedules in the suite, a history of the scheduled tasks that have completed, and a forecast of the schedules that will run at a specific time. You can create a query in multiple ways: by selecting the name of a schedule that you want to view, the user who created the schedule, the date on which the schedule will run, or the date on which the schedule was created or updated. You can also query schedules by the suite component that they were created in. You can view only the schedules that you created. A suite administrator can view all schedules in the suite.

You can make a schedule view private to restrict users from accessing it. Schedule views that are marked as private are available only to the user who created them. If you want to make a schedule view available to all users, you can mark it as shared. A shared schedule view can only be edited by the user who created the schedule view or by the suite administrator.

Logging

You can configure log views to manage the log messages that are generated when activities run in the suite.

You create log views to query log messages. Log messages show details about the activities that run in the suite. After you create a log view, you use filters to restrict the information in the log view. Only a suite administrator can delete log messages. If you want to delete log messages, you select the log view that contains the information that you want to remove.

You can restrict access to a log view by making the log view private. Private log views are available only to the user who created the log view. If you want a log view to be available to all users, you can share the log view. Shared log views can be edited only by the user who created the shared log view or by a suite administrator.

Online help

If you need help when you are working on a task, press F1 to access context-sensitive help, open the information center, or find specific information about the task in the instruction pane.

Context-sensitive help

When you need assistance while you work, press F1 to open context-sensitive help. For example, from the project properties workspace, press F1 to open the project properties documentation in the information center.

Information center

The information center is this Web-based help system and knowledge base, in which you can find conceptual and task-based information about the suite, the console, and the tasks that you can complete in the IBM InfoSphere Information Server console. You can also access information about all the products that you have installed.

Instruction panes

You can find information about the task in the instruction pane. An instruction pane button appears at the top of most panes and tabs. Most panes contain instructional text.

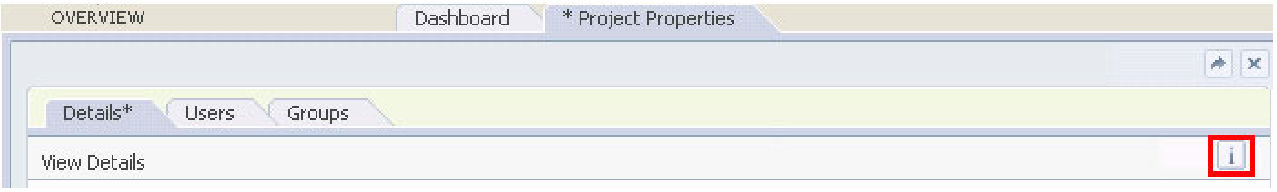
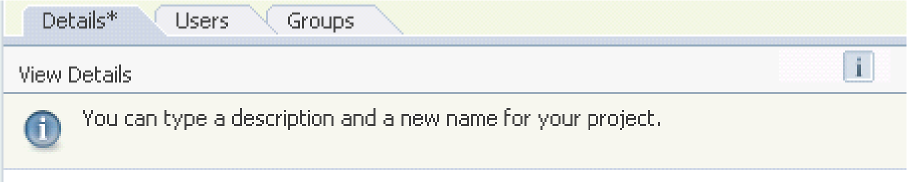


Figure 15. The instruction icon highlighted

To show the instructional text, click ℹ (instruction pane).



You can type a description and a new name for your project.

To hide the instructional text, click the instruction icon again.

Chapter 4. Working with projects in the IBM InfoSphere Information Server console

In the IBM InfoSphere Information Server console, a project is a logical container for all of the tasks that can be performed in a product module. Multiple users can contribute to a project and view the status of a project over time.

Setting up a project in the IBM InfoSphere Information Server console

To set up a project, you first create a project and provide basic project details.

Creating a project

You must first create a project. A project is a logical container for all of the tasks that can be performed in a product module.

Before you begin

You must have permissions to create a project. If you do not, all project creation menus and tasks are disabled.

Procedure

1. On the **File** menu in the IBM InfoSphere Information Server console, select **New Project**.
2. In the New Project window, select the type of project that you want to create. The **Type** field is displayed only if more than one product module is installed.
3. Type a name for the project.
4. Click **OK** to open the Project Properties workspace.

What to do next

- "Modifying project properties"
- "Assigning users to a project and assigning roles" on page 74

Modifying project properties

You can view and modify the properties of your project.

Before you begin

You must have project administrator authority.

Procedure

1. On the **Overview** navigator menu in the IBM InfoSphere Information Server console, select **Project Properties**.
2. Specify information about the project.
3. Click **Save All**.

Customizing the project dashboard

You can customize the Dashboard workspace in the IBM InfoSphere Information Server console to add or remove content panes. For some product modules, you can also configure the dashboard to show a set of charts and graphs that are based on underlying project information.

Procedure

1. On the **Overview** navigator menu in the IBM InfoSphere Information Server console, select **Dashboard**.
2. In the Dashboard workspace, click Configure 🔧
3. Optional: Click **Add** to add content panes to the Content list. The available content panes depend on the product modules that are installed.
4. In the Configure Dashboard window, select the content pane that you want to modify.
5. For each content pane, you can modify the label of the pane and select whether it is displayed on the workspace. Some content panes have additional configuration properties.
6. Click **OK** to save your changes.

Opening an existing project in the IBM InfoSphere Information Server console

You can open an existing project to perform tasks that are associated with the project's product module, such as information analysis or information services enablement.

Before you begin

You or your administrator must create and set up a project.

Procedure

1. In the Projects pane of the My Home workspace, select a project from the list.
2. Click **Open Project** to open the Dashboard workspace.

Chapter 5. Customizing the consoles

You can customize both the IBM InfoSphere Information Server console and the IBM InfoSphere Information Server Web console.

Customizing the IBM InfoSphere Information Server console

The IBM InfoSphere Information Server console integrates multiple product modules into a unified user interface. To customize the IBM InfoSphere Information Server console, you can set user preferences, create shortcuts, create notes, and change your password.

Customizing the My Home workspace

You can customize the My Home workspace to show or remove information in the Getting Started pane, project information, and favorite reports. You can also add or remove content panes for the product modules that are installed.

Procedure

1. On the **Home** navigator menu, select **My Home**.
2. In the My Home workspace, click **Configure**
3. In the Configure My Home window, select the content pane that you want to modify.
4. Optional: Click **Add** to add content panes to the Content list. The content panes that are available depend on the product modules that are installed. Product module panes might have additional configurable details.
5. For each content pane, you can modify the label of the pane and specify whether it is displayed on the My Home workspace.
6. Click **OK** to close the window.

Modifying user preferences

You can modify user preferences for startup, to change the behavior of panes, and to customize the status bar.

Procedure

1. Select **Edit** > **Preferences**.
2. In the User Preferences window, select the type of preferences that you want to modify.
3. Modify the available options.
4. Click **OK** to close the window and save your changes.

Creating shortcuts

You can create shortcuts to quickly access frequently used workspaces or tasks.

Procedure

1. On the workspace or task, click **Add Shortcut** .
2. In the Add to Shortcuts window, type a name for the shortcut.

3. Optional: Click **New Folder** to create a folder to organize your shortcuts.
4. Optional: Select a folder to add your shortcut to. You can also drag folders around in the list to reorder them or to nest them.
5. Click **OK** to save your changes.

What to do next

You can now access your shortcut on the Shortcuts palette.

Working with palettes

Palettes are containers for IBM InfoSphere Information Server console shortcuts, workspace history, open workspaces, and notes. You can dock, float, and anchor the palettes.

About this task

By default, the palettes are docked on the left side of the IBM InfoSphere Information Server console. When docked, the palettes display as a set of vertical tabs.

Procedure

To open a palette, click the tab. You can click a workspace to hide the palettes again.

What to do next

To pin the palette to stay open, click the pin image 📌.

To reposition a palette, right-click the tab or the top bar of the palette.

Floating the palettes

You can float the palettes to move them as a separate pane in the IBM InfoSphere Information Server console. You can float an individual palette or you can float the palettes as a group.

Procedure

To float the palettes as a group, select the top bar of the palettes and drag it to a new location in the console. You can also select and drag an individual tab in the palettes to just float that tab.

What to do next

Floated palettes can be docked by clicking **Dock** ⇤, or anchored by clicking **Anchor** ◨.

Anchoring the palettes

You can anchor the palettes to one side of the workspace. You can anchor an individual palette or you can anchor the palettes in groups.

Procedure

To anchor a palette, drag the palette to the opposite edge of the workspace. Anchored palettes can be stacked vertically or grouped together in one or more sets.

What to do next

Anchored palettes can be docked by clicking **Dock** , or floated by clicking **Float** .

To switch the side of the window that the palettes are docked or anchored to, select the top bar of the docked palettes and drag it to the other side of the workspace.

Creating notes

In some product modules, you can create notes to comment on an object, provide information to other users, and flag issues for further investigation.

Procedure

1. On the pane or table that you want to add the note, click **Note** .
2. On the Notes palette, click **New**. New notes are saved when you create them.
3. In the table, specify information for the note. Any changes you make to a note are automatically saved.
4. In the Notes palette, click **Close**.

What to do next

After you create the note, you and other users can access the note by clicking **Note** .

Refreshing an object list

You can refresh an object list to view changes made by other users.

Procedure

To refresh an object list, click **Refresh** or right-click the header above the object list.

Changing your password

You can change the password that you use to log in to the server. If IBM InfoSphere Information Server is configured to authenticate against an external directory, passwords cannot be changed.

Procedure

To change your password, click **File** > **Change Password**.

Customizing the IBM InfoSphere Information Server Web console

You can access suite administration and reporting tasks, information about deployed information services, and glossaries of information assets in the IBM InfoSphere Information Server console. To customize the IBM InfoSphere Information Server console, you can customize the **Home** tab and change your password.

Customizing the Home tab

You can customize the Home tab. For example, you can show a list of the latest report results.

Procedure

1. On the **Home** tab, select **Customize My Home**.
2. In the Customize My Home dialog box, select the components that you want to display on the left and right sides of the Home tab.
3. Click **Save** to close the dialog box.

Changing your password

You can change the password that you use to log in to the IBM InfoSphere Information Server Web console.

Procedure

To change your password, click **Change Password** in the top right corner of the Web console window and type the required information.

Chapter 6. Managing security

To set up security, you configure the user registry, control access levels, create or update users and groups, and configure audit logging. After security is set up, you can change user names and passwords and perform other administrative tasks by using IBM InfoSphere Information Server administration commands and tools.

If you enabled Secure Sockets Layer (SSL) for IBM WebSphere Application Server, refer to the *IBM InfoSphere Information Server Planning, Installation, and Configuration Guide* for information about administering SSL for InfoSphere Information Server.

Security setup

Setting up a secure environment in IBM InfoSphere Information Server involves configuring the user registry, creating users, and assigning security roles to those users.

In InfoSphere Information Server, to set up a secure environment you complete the following tasks:

1. **Choose a user registry and configure it for InfoSphere Information Server.**

   A user registry contains valid user names and passwords. To log in to InfoSphere Information Server, a user must have a user name and password in the user registry. The installation program configures InfoSphere Information Server to use its internal user registry. As part of security setup, you can configure InfoSphere Information Server to use an external user registry such as a local operating system user registry or lightweight directory access protocol (LDAP) user registry.
2. **Create users and groups.**

   Create users and groups in the user registry. If InfoSphere Information Server is configured to use the internal user registry, create users and groups by using the InfoSphere Information Server console or the InfoSphere Information Server Web console. If InfoSphere Information Server is configured to use an external user registry, use standard operating system utilities or user registry utilities to create users and groups.
3. **Assign security roles to users and groups.**

   To configure which suite components a user or a group has access to and what level of access that user or group has in the suite component, assign security roles to the user or group.
4. **Configure InfoSphere Information Server engine security.**

   The InfoSphere Information Server engine performs user authentication separately from other InfoSphere Information Server components. Depending on your user registry configuration, you might have to map credentials between the InfoSphere Information Server user registry and the local operating system user registry on the computer where the engine is installed.
5. **Assign project roles to users.**

   Some suite components require that you assign project-specific roles to users.

Optionally, you can also complete the following setup tasks:

- **Configure IBM WebSphere Application Server for non-root administration.**

By default, WebSphere Application Server runs as root. However, it can also be run by using a non-root user ID. You can configure and set appropriate file system permissions for WebSphere Application Server to "run-as" a non-root user ID.

- **Configure InfoSphere Information Server agents for non-root administration**

  By default, the InfoSphere Information Server agents (such as the ASB and logging agents) run as root. However, they can also be run by using a non-root user ID. You can configure and set appropriate file system permissions for the agents to "run-as" a non-root user ID.
- **Configure the Auditing service.**

  The Auditing service creates an audit trail of security-related events. The trail includes all activities that set or modify security-related settings and all user authentications and application logins. You can configure which audit events to log and how much information to include based on your auditing requirements.

User registry configuration

A user registry holds user account information, such as a user name and password, that is accessed during authentication. To log in to IBM InfoSphere Information Server, a user must have a user name and password in the user registry.

During installation, the InfoSphere Information Server installation program configures InfoSphere Information Server to use an internal user registry. The internal user registry is located in the metadata repository. After you install InfoSphere Information Server, you can continue to use the internal user registry. Alternatively, you can set up InfoSphere Information Server to use a local operating system user registry or a Lightweight Directory Access Protocol (LDAP) compliant user registry.

If you choose to change registries, complete the change immediately after the installation finishes. For best results, do not change user registries after the system has been in production. If you must change the user registry after the system has been in production, consider migrating to a new installation to avoid security issues and risks. Otherwise, there a mismatch might occur between the users of the old and new user registries.

Internal user registry overview

By default, IBM InfoSphere Information Server stores user information in the internal user registry in the metadata repository.

The following figure shows an InfoSphere Information Server topology where the services tier and metadata repository tier are on one computer. InfoSphere Information Server and IBM WebSphere Application Server are both configured to use the internal user registry provided by InfoSphere Information Server. The internal user registry is stored in the metadata repository.

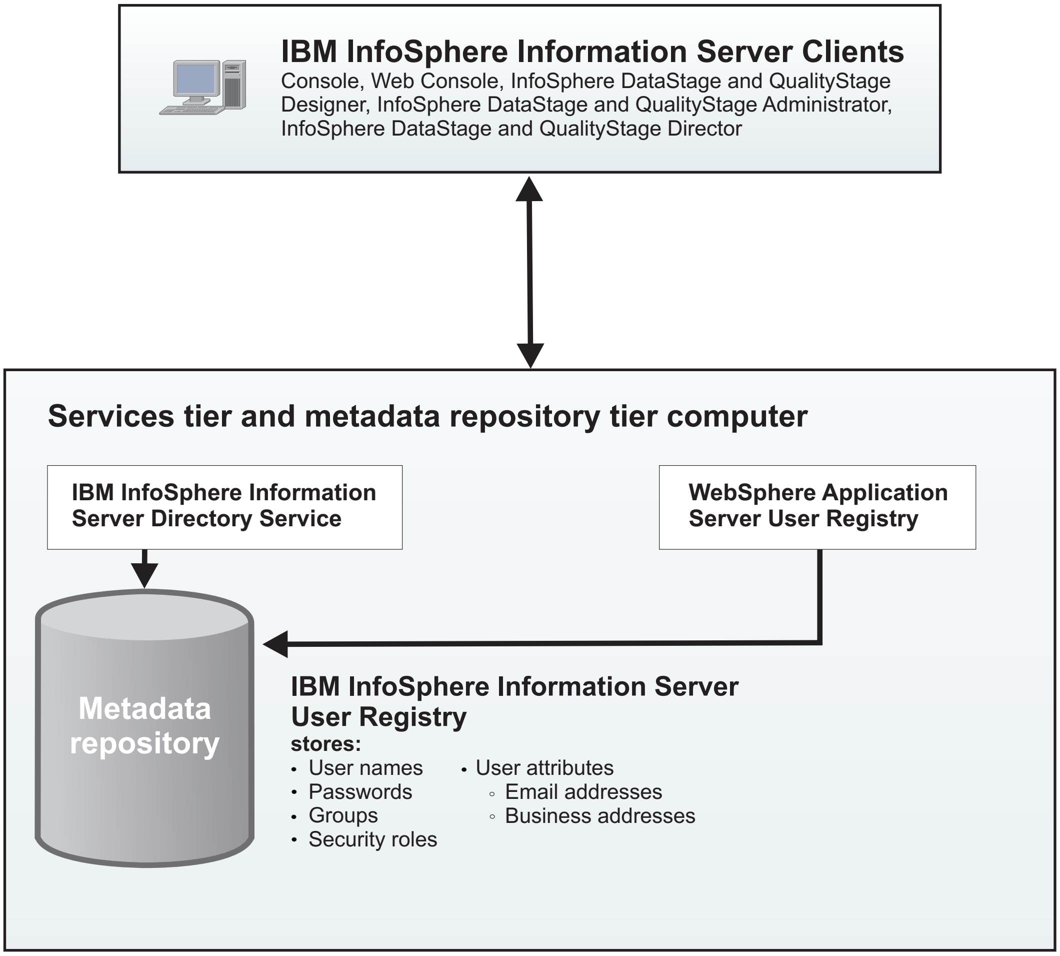

IBM InfoSphere Information Server Clients
Console, Web Console, InfoSphere DataStage and QualityStage Designer, InfoSphere DataStage and QualityStage Administrator, InfoSphere DataStage and QualityStage Director
Services tier and metadata repository tier computer
IBM InfoSphere Information Server Directory Service
WebSphere Application Server User Registry
Metadata repository
IBM InfoSphere Information Server User Registry
stores:
• User names
• Passwords
• Groups
• Security roles
• User attributes
◦ Email addresses
◦ Business addresses

Figure 16. Example of InfoSphere Information Server architecture that uses the internal user registry

As shown in the figure, the InfoSphere Information Server directory service communicates with the internal user registry. WebSphere Application Server also communicates with the internal user registry. WebSphere Application Server performs the underlying InfoSphere Information Server user authentication.

When you use the internal user registry, you create users directly through the InfoSphere Information Server console or the InfoSphere Information Server Web console. You can also create groups and assign users to those groups. The credentials are stored in the internal user registry. The group membership information and the associations between users and their security roles are also stored in the internal user registry. E-mail addresses and business addresses are also stored here.

The internal user registry stores only digested (one-way encryption) passwords for increased security. User names and group IDs can contain any letters or digits, and the following special characters:

- Underscore (_)
- Hyphen (-)
- Comma (,)
- Backslash (\)
- Equal sign (=)
- Dollar sign ($)

- Period (.)
- Colon (:)
- Spacebar key ( )
- At sign (@)

The InfoSphere Information Server engine performs user authentication separately from other InfoSphere Information Server components, and cannot use the internal user registry. Instead, the InfoSphere Information Server engine uses the operating system user registry to perform user authentication. If you configure InfoSphere Information Server to use the internal user registry, you must map credentials between the InfoSphere Information Server user registry and the local operating system user registry on the computer where the engine is installed.

External user registry overview

You can configure IBM InfoSphere Information Server to authenticate users based on an existing external user registry, such as a local operating system user registry or a Lightweight Directory Access Protocol (LDAP) user registry.

InfoSphere Information Server supports all external registries that are supported by IBM WebSphere Application Server Network Deployment. For more information about user registries that WebSphere Application Server supports, see the WebSphere Application Server documentation:

- IBM WebSphere Application Server Network Deployment 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/tsec_useregistry.html
- IBM WebSphere Application Server Network Deployment 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/tsec_useregistry.html

The following figures show an InfoSphere Information Server topology where the services tier and metadata repository tier are located on one computer. In the first figure, InfoSphere Information Server and IBM WebSphere Application Server are both configured to use the local operating system user registry. In the second figure, InfoSphere Information Server and IBM WebSphere Application Server are both configured to use an external LDAP user registry.

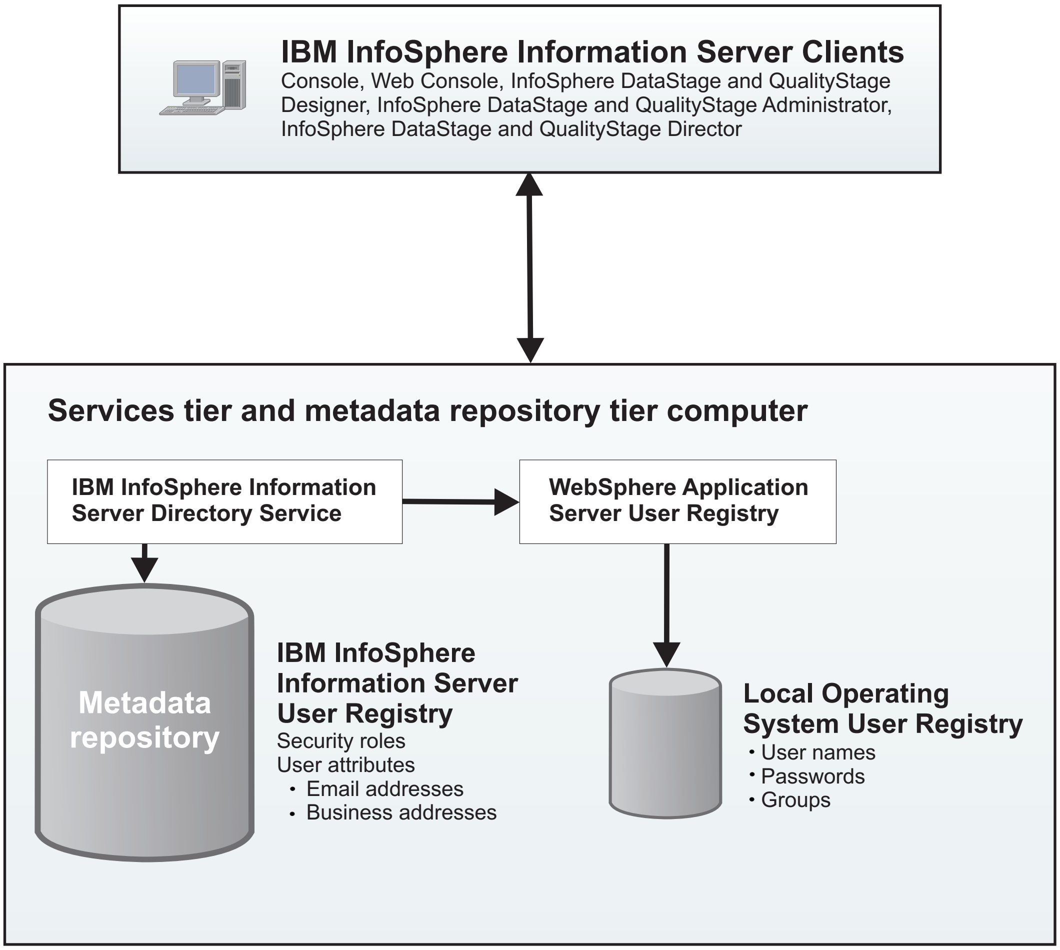

IBM InfoSphere Information Server Clients
Console, Web Console, InfoSphere DataStage and QualityStage Designer, InfoSphere DataStage and QualityStage Administrator, InfoSphere DataStage and QualityStage Director
Services tier and metadata repository tier computer
IBM InfoSphere Information Server Directory Service
WebSphere Application Server User Registry
Metadata repository
IBM InfoSphere Information Server User Registry
Security roles
User attributes
• Email addresses
• Business addresses
Local Operating System User Registry
• User names
• Passwords
• Groups

Figure 17. Example of an InfoSphere Information Server architecture that uses the local operating system user registry

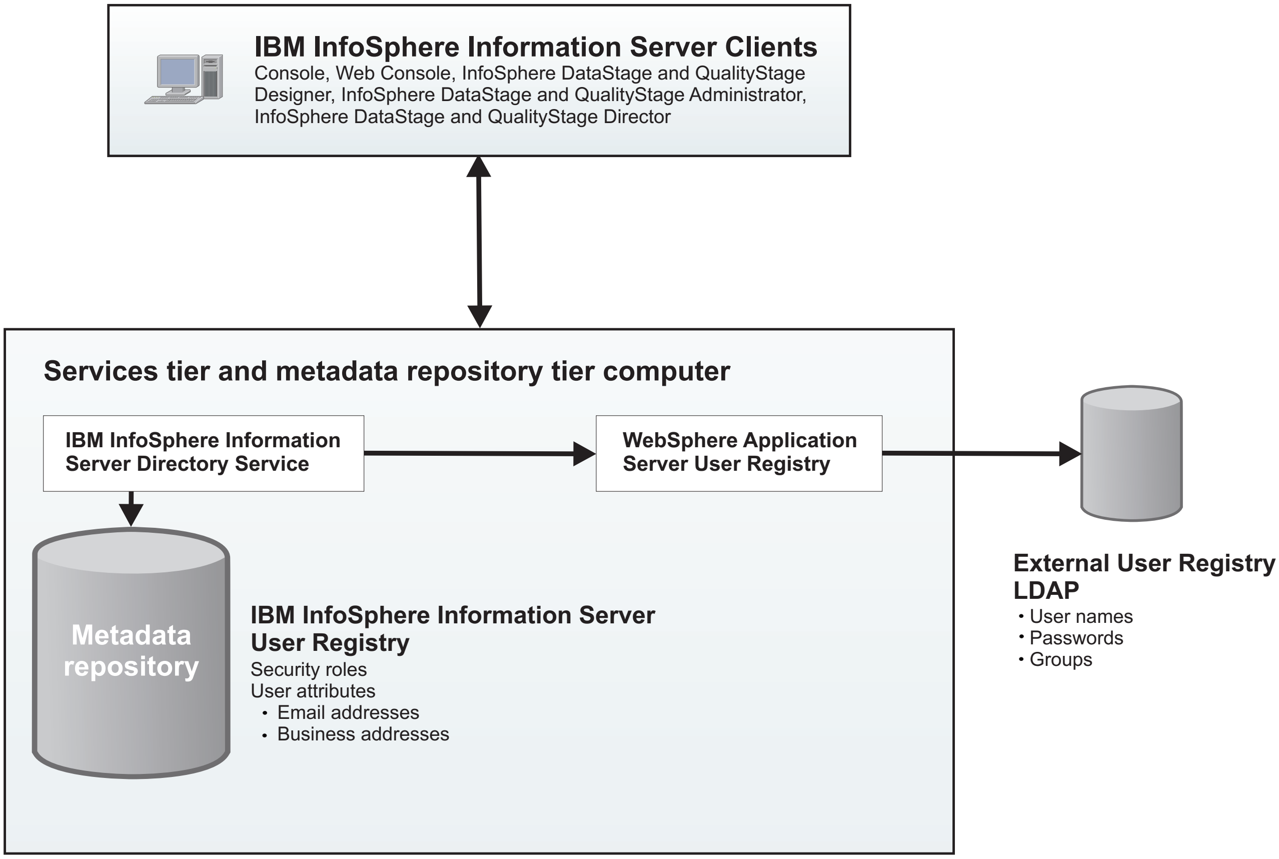

IBM InfoSphere Information Server Clients
Console, Web Console, InfoSphere DataStage and QualityStage Designer, InfoSphere DataStage and QualityStage Administrator, InfoSphere DataStage and QualityStage Director
Services tier and metadata repository tier computer
IBM InfoSphere Information Server Directory Service
WebSphere Application Server User Registry
Metadata repository
IBM InfoSphere Information Server User Registry
Security roles
User attributes
• Email addresses
• Business addresses
External User Registry LDAP
• User names
• Passwords
• Groups

Figure 18. Example of an InfoSphere Information Server architecture that uses an external LDAP user registry

When you use an external user registry, WebSphere Application Server communicates with that user registry. The InfoSphere Information Server directory service communicates with the WebSphere Application Server user registry. It does not communicate with the external user registry directly. By going through WebSphere Application Server to access the external user registry, InfoSphere Information Server takes advantage of the capabilities in WebSphere Application Server for handling various kinds of external user registries.

When you use an external user registry, you create users and groups through the administration tools for that user registry. InfoSphere Information Server looks to the external user registry for user names, passwords, group definitions, and group memberships. Password restrictions are imposed by the user registry.

If you are configuring WebSphere Application Server clustering for scalability or high-availability, you cannot configure InfoSphere Information Server to use the local operating system user registry. Instead, configure an LDAP user registry or the internal user registry.

Even when you configure InfoSphere Information Server to use an external user registry, certain user information is still maintained in the internal user registry. Specifically, the internal user registry always stores the security roles that are assigned to users and groups, as well as attributes that are not passed through by WebSphere Application Server, such as e-mail addresses and business addresses. The internal user registry is always available and working in the background.

User registry considerations

Choose your user registry configuration based on the scale of your installation and the experience of your administrators.

The supported user registry configurations differ in the following areas:

- Ease of installation and setup.
- Ease of maintenance of users and groups, and the level of authentication required.
- The number of sets of credentials that you must maintain.
- How the credentials are stored.
- Feature support.
- Engine security considerations. The IBM InfoSphere Information Server engine performs user authentication separately from other InfoSphere Information Server components. Depending on your topology and the user registry that you choose, you might have to map credentials between the InfoSphere Information Server user registry and the local operating system user registry on the computer where the engine is installed.

Internal user registry: Least complex, suitable for small-scale installations

Consider the following information when determining whether to use the internal user registry:

- The internal user registry is set up by the installation program. InfoSphere Information Server is configured to use this user registry by default.
- To manage users and groups, you use the InfoSphere Information Server console or Web console. With other user registry configurations, you must have administrative access to the user registry.
- Because the internal user registry is separate from other user registries, it requires that you maintain an independent set of credentials for each InfoSphere Information Server user that are unrelated to any other user registry that is maintained for other business applications.
- User credentials are stored in the InfoSphere Information Server metadata repository database. User credential information is one-way encrypted in the database.
- The internal user registry has no support for password policies, length, or expiration dates.
- The InfoSphere Information Server engine cannot use the internal user registry for authentication. You must map credentials between the InfoSphere Information Server user registry and the local operating system user registry on the computer where the engine is installed. If the user names or passwords are changed in the local operating system user registry, an administrator must update the mapping. The administrator can use the InfoSphere Information Server console for this task.
- The mapped user credentials are also stored in the InfoSphere Information Server metadata repository database. User credential information is strongly encrypted in the database.

Local operating system user registry: Suitable for small and self-contained installations, if the internal user registry is unsuitable

Consider the following information when determining whether to use a local operating system user registry:

- Windows You might experience major performance issues if you use a local operating system user registry configuration on a Microsoft Windows computer when the computer is registered in a Windows domain.
- To use a local operating system user registry configuration, you must perform additional configuration steps after software installation is complete.
- To manage users and groups, you use standard operating system utilities. For this reason, you must have administrative access.
- Unlike the internal user registry configuration, with this configuration you can maintain a single set of credentials for each user.
- The local operating system user registry has support for features such as password policies, length, and expiration dates.
- Linux UNIX IBM WebSphere Application Server must be run as root, because the application server authenticates passwords.
- If you plan to create a WebSphere Application Server cluster for scalability or high-availability, you cannot use a local operating system user registry configuration because it is not supported.
- If the services tier and engine tier are installed on the same computer, you can configure both InfoSphere Information Server and the engine to share the local operating system user registry. In this case, credential mapping is not required. If the services tier and engine tier are installed on separate computers, you must map credentials between the InfoSphere Information Server user registry and the local operating system user registry on the computer where the engine is installed.

Lightweight Directory Access Protocol (LDAP) user registry: Most powerful, but most complex

- To use an LDAP user registry configuration, you must perform additional configuration steps after the software installation is complete.
- Setup and administration of an LDAP user registry is more technically complex than with the other user registry configurations.
- An LDAP user registry has better performance than the other user registry configurations, and is more scalable.
- Unlike the internal user registry configuration, with this configuration you can maintain a single set of credentials for each user.
- An LDAP user registry has support for features such as password policies, length, and expiration dates.
- To manage users and groups, you use utilities that are specific to the LDAP server. You must have LDAP server administrative access.
- You can configure both InfoSphere Information Server and the engine to use the LDAP user registry. In this case, credential mapping is not required. However, in IBM AIX®, Solaris, HP-UX, and Linux installations, you must configure Pluggable Authentication Module (PAM) support on the engine tier computer.

Switching to the local operating system user registry (IBM WebSphere Application Server Network Deployment)

After you install IBM InfoSphere Information Server, you can configure the suite to use the local operating system user registry. Follow this procedure if your installation includes IBM WebSphere Application Server Network Deployment 7.0 or 8.0.

Before you begin

If you have implemented WebSphere Application Server clustering for your installation, use of the local operating system user registry is not supported.

WebSphere Application Server has a number of restrictions regarding local operating system user registries on both UNIX and Microsoft Windows. For example:

- Linux UNIX WebSphere Application Server processes must be run as root.
- Linux UNIX The network information service (NIS) protocol is not supported.
- Windows The use of domain accounts imposes access rights on users who run WebSphere Application Server processes.

See the WebSphere Application Server documentation for more information:

- publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/usec_localosreg.html
- publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.nd.doc/info/ae/ae/tsec_localos.html

Procedure

1. Create a user account on the local computer to use for the WebSphere Application Server administration account. Alternatively, select an existing account. As part of the switch to the local operating system user registry, you direct WebSphere Application Server to use this account for the administrator role.

   Note: This account can be the same as the account that owns the WebSphere Application Server installation. Alternatively, the account can be the same as the account that runs the WebSphere Application Server processes. Alternatively, it can be a different account.
2. Log in to the WebSphere Application Server administrative console.
3. In the console, click **Security** > **Global Security**. The Global Security page appears.
4. Ensure that the **Use domain-qualified user names** option is not selected.
5. In the User account repository section on the right side of the page, click the **Available realm definitions** list and select **Local operating system**.
6. Click **Configure**.
7. In the **Primary administrative user name** field, type the name of the user account that you created in step 1.
8. Click **Apply**.
9. Select **Server identity that is stored in the repository**.
10. In the **Server user ID or administrator user on a Version 6.0.x node** field, type the short name of the user account that you created in step 1.
11. In the **Server user password** field, type the password of the user account that you created in step 1.
12. Click **OK**.
13. Click the **Save** link at the top of the page, and click the **Save** button.

14. On the Global Security page, ensure that **LTPA** is selected for the **Active authentication mechanism** setting.
15. In the **Available realm definitions** list, select **Local operating system**, and click **Set as current**. If an error occurs, the application server is unable to authenticate with the local operating system by using the credentials that you provided.
16. Click the **Save** link, and click the **Save** button.
17. Stop WebSphere Application Server.
18. Log in to the services tier computer.
19. From the command line, run the **AppServerAdmin** command. This command propagates the WebSphere Application Server administrator user name and password to WebSphere Application Server.

    Linux UNIX

    ```
    /opt/IBM/Information/server/ASBServer/bin/AppServerAdmin.sh -was
       -user was_admin_user_id -password was_admin_password
    ```

    Windows

    ```
    C:\IBM\InformationServer\ASBServer\bin\AppServerAdmin.bat -was
       -user was_admin_user_id -password was_admin_password
    ```

    In the command, *was_admin_user_id* and *was_admin_password* must match the credentials that you provided in the WebSphere Application Server administrative console.
20. If you are switching the user registry for a system that has been used for a while by multiple users, clean up the users and groups that are related to the security configuration. See "Switching the user registry configuration for a system in use" on page 52.
21. Restart WebSphere Application Server.

    After WebSphere Application Server is restarted, during the InfoSphere Information Server initialization, the WebSphere Application Server user registry configuration is checked and the InfoSphere Information Server user registry configuration is automatically adjusted if needed. The default WebSphere Application Server administrator user is also automatically configured as the initial new InfoSphere Information Server default administrator user.

What to do next

After you change the user registry, you can open the InfoSphere Information Server Web console and grant suite administrator access to additional users as needed.

Configuring IBM InfoSphere Information Server to use PAM (Linux, UNIX)

Pluggable Authentication Module (PAM) is currently supported on IBM AIX, Oracle Solaris, HP-UX, and Linux platforms. You can configure the services tier, engine tier, or both, to use PAM. If you choose to use PAM on the engine tier and you also want to use an LDAP user registry, you must configure PAM on the engine tier *before* setting up IBM InfoSphere Information Server to use an LDAP user registry.

Configuring the IBM InfoSphere Information Server services tier to use PAM (Linux, UNIX):

Configuring PAM for the services tier is optional. Configure PAM only if you want the services tier to use PAM for authentication. Unlike the engine tier, the services tier can authenticate through LDAP without PAM.

Before you begin

To complete these tasks, you must have a working knowledge of PAM and the authentication modules and strategies.

About this task

Consider these reasons why you might configure PAM on the services tier:

- Multiple PAM modules can be configured to allow fallback authentication options. For example, you can configure an LDAP server as the primary user registry for authentication and also configure a fallback to local operating system authentication in case the LDAP authentication fails. Such a configuration allows you to combine multiple user registries.
- PAM is a way to customize local operating system authentication. For example, PAM can be used to delegate a local operating system authentication to an LDAP server.

PAM provides authentication support only (verification of the user ID and password). InfoSphere Information Server also requires user and group membership information to determine the roles assigned to a user used for authorization decisions. PAM does not provide user and group membership support. InfoSphere Information Server determines user and group membership by using two possible mechanisms:

1. By default, it looks in the `/etc/passwd` and `/etc/group` files.
2. You can specify the user and group files to use as PAM registry configuration options.

Restrictions:

- If you configure PAM for use with InfoSphere Information Server, it is strongly recommended that you not run IBM WebSphere Application Server in a clustered environment. Because PAM relies on local files to determine user and group memberships, you would need to ensure that the user and group files are in sync across the nodes. Unexpected results can occur if the files become out of sync.
- The PAM user registry is supported as a stand-alone user registry and is not supported when using a WebSphere federated user registry.

Perform this task on the computer that hosts the services tier. PAM support is specific to each platform.

Procedure

1. Add to or create the PAM configuration file on your platform.
2. Configure IBM WebSphere Application Server
   a. Log in to the IBM WebSphere Application Server Administrative console.
   b. Navigate to the security section of the IBM WebSphere Application Server Administrative console. Select **Security** > **Global Security**.
   c. In the User account repository section, select Standalone custom registry from the **Available realm definitions** field and click **Configure**.

d. In the **Primary administrative user name** field, type the administrator user name, which is a valid PAM user ID.

e. Select the server identity that is stored in the repository. Enter the valid PAM user ID and password.

f. Ensure that the custom registry class name is the following string: *com.ibm.is.isf.j2ee.impl.was.security.WASExtendedCustomUserRegistry*. Click **Apply**.

g. Complete this step only if you want to use files other than the local operating system authentication files. In the Custom Properties section, select **New**, define the following properties and values, and click **OK**.

Property	Value
usersFile	The file where the user information is stored. The information in the file must be stored in the same manner as it would in the `/etc/passwd` file. If this property is not specified, the default user registry file `/etc/passwd` is used.
groupsFile	The file where the group information is stored. The information in the file must be stored in the same manner as it would in the `/etc/groups` file. If this property is not specified, the default group registry file `/etc/groups` is used.
moduleName	You can configure multiple PAM modules with different names on the same computer. Choose the one that you want to specify for this configuration. If this property is not specified, then the default value *isfpam* is chosen and a module with that file name is expected to be in the pam.d configuration directory.

h. Test your configuration. In the Standalone Custom Registry section, click **Set as current**. If an error occurs, the application server is unable to authenticate with the internal user registry by using the credentials that you provided. Recheck your configuration.

i. Click **Apply**, click **Save**, and log out of the console.

3. Stop the application server.

   Attention:

   - When stopping the application server processes, use the old user name and password, that is, the credentials of the application server administrator from the previous user registry.
   - It is recommended that you not configure PAM in a clustered installation. However, if you do, first stop the application servers and the node agents, and then stop the Deployment Manager.

4. Log in to the computer on which the `AppServerAdmin` tool is installed. This tool is on the same computer as the services tier, in the `*IS_install_dir*/ASBServer/bin` directory.

5. From the command line, run the `AppServerAdmin` command. This command propagates the administrator user name and password to the application server. Specify the same user ID and password specified in the Administrative console in step 2d

```
IS_install_dir/ASBServer/bin/AppServerAdmin.sh -was
-user was_admin_user_id -password was_admin_password
```

6. Restart the application server. In a clustered installation, start the Deployment Manager, the node agents, and then the application servers. If one of the node agents does not start, the node agent cannot be restarted because the user registry configuration at the Deployment Manager and node levels do not match. To fix this problem, run the application server `syncNode` command to synchronize the node with the Deployment manager.
   a. Log in to the node.
   b. Run the `syncNode` command.

      ```
      WAS_install_dir/AppServer/profiles/custom_profile/bin/syncNode.sh
      dmgr_hostname dmgr_port -user was_admin_username -password was_admin_password
      ```

      dmgr_hostname
         The host name of the computer on which the Deployment Manager is running.

      dmgr_port
         The port number of the Deployment Manager. (The default is 8879.)

      was_admin_username **and** *was_admin_password*
         The administrator user name and password for the application server.
7. Check the application server log files to ensure that no errors occurred.
8. Verify the configuration by logging in to the IBM InfoSphere Information Server Web console with the new user ID and password.

Configuring the IBM InfoSphere Information Server engine tier to use PAM (Linux, UNIX):

Configuring PAM on the engine tier is optional. Configure PAM on the engine tier only if you want the engine tier to authenticate through an LDAP server.

Before you begin

To complete these tasks, you must have a working knowledge of PAM and the authentication modules and strategies.

About this task

Perform this task on the computer that hosts the engine tier.

To configure PAM on IBM AIX, see the Configuring DataStage to use PAM Authentication on AIX support document (http://www.ibm.com/support/docview.wss?rs=14&uid=swg21398309).

Use the following procedure to configure PAM on Linux and UNIX.

Procedure

1. Add to or create the PAM configuration file on your platform.
2. Stop the InfoSphere Information Server engine by running the following command:

   ```
   $DSHOME/bin/uv -admin -stop
   ```
3. Edit the `uvconfig` file in the `DSHOME` directory to change the setting of the `AUTHENTICATION` tunable to 1. The following example shows the `AUTHENTICATION` tunable set to 1.

```
# AUTHENTICATION - Specifies the method by which UNIX user
#   authentication is done.  Currently, the following methods
#   are supported:
#
#     0)  Standard O/S Authentication (default)
#     1)  Pluggable Authentication Module (PAM)
#
#   This value should only be changed with a full understanding
#   of the implications, as improper setting of this value can
#   lead to the environment being unusable.
AUTHENTICATION 1
```

4. Add the PAM service entry, dsepam, to the PAM configuration file. The name and the location of the PAM configuration file are platform-dependent.
5. Regenerate the InfoSphere Information Server engine configuration file by running the following command:

   ```
   $DSHOME/bin/uv -admin -regen
   ```

6. Restart the InfoSphere Information Server engine by running the following command:

   ```
   $DSHOME/bin/uv -admin -start
   ```

What to do next

Set up the InfoSphere Information Server engine tier to use the Lightweight Directory Access Protocol (LDAP) user registry.

If you have configured PAM for both the engine and services tier by using an LDAP user registry, you can share the user registry with the tiers that you configured for PAM. Both PAM configurations must point to the same user registry by using the same set of PAM modules. For more information, see “Shared user registry overview” on page 78.

Examples of PAM configuration files (Linux, UNIX):

Some example PAM configuration files for various operating systems are shown.

On a Linux system, you must create a file named dsepam in the /etc/pam.d directory. The following example shows the possible contents of the dsepam file on a 64-bit Linux system:

```
#%PAM-1.0
auth      required  /lib64/security/pam_stack.so service=system-auth
password  required  /lib64/security/pam_stack.so service=system-auth
account   required  /lib64/security/pam_stack.so service=system-auth
```

For IBM AIX, see the Configuring DataStage to use PAM Authentication on AIX support document (http://www.ibm.com/support/docview.wss?rs=14&uid=swg21398309) for an example PAM configuration file on AIX.

The following example is for SUSE Linux on System z® and on 64 bit platforms:

```
#%PAM-1.0
auth      required  pam_unix2.so nullok #set_secrpc
password  required  pam_unix2.so nullok #set_secrpc
account   required  pam_unix2.so nullok #set_secrpc
```

On a Solaris system, you must edit the existing pam.conf file in the /etc directory and add an entry like the following example:

```
dsepam   auth required    /usr/lib/security/pam_unix.so.1
```

Switching to an LDAP user registry

You can authenticate users by using a Lightweight Directory Access Protocol (LDAP) user registry. You configure IBM InfoSphere Information Server to use LDAP authentication after installation finishes.

Before you begin

- The InfoSphere Information Server engine performs user authentication separately from other InfoSphere Information Server components. You can configure the engine to use the LDAP user registry that you set up. For IBM AIX, Solaris, HP-UX, and Linux platforms, you can optionally configure Pluggable Authentication Module (PAM) support before you switch the user registry. For more information, see "Configuring IBM InfoSphere Information Server to use PAM (Linux, UNIX)" on page 42.
- In an IBM WebSphere Application Server stand-alone installation, WebSphere Application Server must be running.
- In a clustered installation, the Deployment Manager and all node agents must be running.

About this task

InfoSphere Information Server supports any LDAP-compliant user registry that IBM WebSphere Application Server Network Deployment supports. For more information about supported LDAP servers, see the IBM WebSphere Application Server Network Deployment system requirements:

- IBM WebSphere Application Server Network Deployment 7.0: http://www.ibm.com/support/docview.wss?rs=180&uid=swg27012369
- IBM WebSphere Application Server Network Deployment 8.0: http://www.ibm.com/support/docview.wss?rs=180&uid=swg27021246

Procedure

1. Do the procedures in the WebSphere Application Server documentation for configuring LDAP user registries.

   Procedures for configuring LDAP user registries within WebSphere Application Server can be found in the WebSphere Application Server information center:

   - IBM WebSphere Application Server Network Deployment 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.nd.doc/info/ae/ae/tsec_ldap.html
   - IBM WebSphere Application Server Network Deployment 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.nd.doc/info/ae/ae/tsec_ldap.html
2. In a clustered installation, synchronize the configuration files on the nodes in the cluster:
   a. In the **System administration** > **Nodes**.
   b. Select the check boxes beside all nodes.
   c. Click **Synchronize**.
   d. Log out of the console.
3. Stop WebSphere Application Server. In a clustered installation, stop the application servers and the node agents, and then stop the Deployment Manager.

Important: When stopping the WebSphere Application Server processes, use the credentials of the WebSphere Application Server administrator from the previous user registry.

4. Log in to the computer on which the **AppServerAdmin** tool is installed:
   - If you have implemented WebSphere Application Server clustering within your installation, log in to the computer that hosts the WebSphere Application Server Deployment Manager.
   - If you have not implemented clustering, log in to the services tier computer.
5. From the command line, run the **AppServerAdmin** command. This command propagates the WebSphere Application Server administrator user name and password to WebSphere Application Server.

   Linux UNIX

   ```
   /opt/IBM/Information/server/ASBServer/bin/AppServerAdmin.sh -was
      -user was_admin_user_id -password was_admin_password
   ```

   Windows

   ```
   C:\IBM\InformationServer\ASBServer\bin\AppServerAdmin.bat -was
      -user was_admin_user_id -password was_admin_password
   ```

   In the command, *was_admin_user_id* and *was_admin_password* must match the new WebSphere Application Server administrator credentials that you provided in the WebSphere Application Server administrative console.
6. If you are switching the user registry for a system that has been used for a while by multiple users, clean up the users and groups that are related to the security configuration. See "Switching the user registry configuration for a system in use" on page 52.
7. Restart WebSphere Application Server. In a clustered installation, start the Deployment Manager, and then the node agents and application servers.

   After WebSphere Application Server is restarted, during the InfoSphere Information Server initialization, the WebSphere Application Server user registry configuration is checked and the InfoSphere Information Server user registry configuration is automatically adjusted if needed. The default WebSphere Application Server administrator user is also automatically configured as the initial new InfoSphere Information Server default administrator user.
8. If one of the node agents was not running when you did the previous steps, the node agent cannot be restarted because the user registry configuration at the Deployment Manager and node levels do not match. To fix this problem, run the WebSphere Application Server **syncNode** command to synchronize the node with the Deployment manager. To run the **syncNode** command:
   a. Log in to the node.
   b. Run the **syncNode** command.
      - Linux UNIX

        ```
        /opt/IBM/WebSphere/AppServer/profiles/custom_profile/bin/syncNode.sh
           dmgr_hostname dmgr_port -user was_admin_username -password
           was_admin_password
        ```
      - Windows

        ```
        C:\IBM\WebSphere\AppServer\profiles\custom_profile\bin\syncNode
           dmgr_hostname dmgr_port -user was_admin_username -password
           was_admin_password
        ```

      In the command:
      - *dmgr_hostname* is the host name of the computer where the Deployment Manager is running.

- *dmgr_port* is the port number of the Deployment Manager (the default is 8879).
- *was_admin_username* is the user name of the WebSphere Application Server administrator.
- *was_admin_password* is the administrator password.

c. Restart the node agent. See "Starting IBM WebSphere Application Server (Windows)" on page 204 or "Starting IBM WebSphere Application Server (Linux, UNIX)" on page 206.

What to do next

After you change the user registry, you can use theWebSphere Application Server administrator user name and password to log in to the InfoSphere Information Server Web console. In the console, grant suite administrator access to additional users as needed. The WebSphere Application Server administrator is granted InfoSphere Information Server administrator privileges by default.

LDAP distinguished name (DN) determination:

To configure IBM InfoSphere Information Server to use a lightweight directory access protocol (LDAP) user registry, you might need the full LDAP distinguished name (DN) of the suite administrator. If you cannot get the LDAP DN from your LDAP administrator, you can use these procedures to determine the LDAP DN.

Determining an LDAP distinguished name (DN) by using the IBM WebSphere Application Server 7.0 or 8.0 Administrative Console:

You can determine a full LDAP distinguished name (DN) by using the WebSphere Application Server 7.0 or 8.0 administrative console.

Procedure

1. Log in to the IBM WebSphere Application Server 7.0 or 8.0 administrative console.
2. From the console, select **Applications** > **Application Types** > **WebSphere enterprise applications**.
3. Click an application name.
4. Under Detail properties, click **Security role to user/group mapping**.
5. Select a role and click **Map Users**.
6. In the **Search String** field, enter an asterisk (*) and click **Search**.

Determining an LDAP distinguished name (DN) by using Active Directory search (Windows):

If you have access to a Microsoft Windows computer that is registered with a Windows Active Directory domain, you can use the user search feature to determine a Windows Active Directory distinguished name.

Procedure

1. On the computer, click **Start** > **Run**.
2. In the window, type `compmgmt.msc` and press Enter.
3. Expand Local Users and Groups.
4. Open the **Groups** folder and double-click one of the groups.
5. In the Properties window, click **Add**.

6. In the Select Users window, click **Advanced**.
7. In the Select Users window, search for the IBM WebSphere Application Server user name. You must select the X500 name in the attributes to display the full distinguished name. The search returns the full distinguished name.

Switching back to the internal user registry

If necessary, after configuring the IBM InfoSphere Information Server suite to use an external user registry, you can switch back to the internal user registry. The internal user registry is the user registry that was configured during the initial installation of InfoSphere Information Server.

Before you begin

- In an IBM WebSphere Application Server stand-alone installation, WebSphere Application Server must be running.
- In a clustered installation, the Deployment Manager and all node agents must be running.
- See the WebSphere Application Server documentation for more information:
  - IBM WebSphere Application Server Network Deployment 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.nd.doc/info/ae/ae/tsec_tdaman.html
  - IBM WebSphere Application Server Network Deployment 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.nd.doc/info/ae/ae/tsec_tdaman.html

Procedure

The internal user registry is an IBM WebSphere Application Server custom user registry.

1. Log in to the computer on which the **DirectoryAdmin** tool is installed:
   - If you have implemented WebSphere Application Server clustering for your installation, log in to the computer that hosts the WebSphere Application Server Deployment Manager.
   - If you have not implemented clustering, log in to the services tier computer.
2. From the command line, run the following command to create the WebSphere Application Server default administrator in the internal user registry:

   Linux UNIX

   ```
   /opt/IBM/InformationSesrver/ASBServer/bin/DirectoryAdmin.sh -user
      -userid was_admin_username -password was_admin_password -admin
   ```

   Windows

   ```
   C:\IBM\InformationServer\ASBServer\bin\DirectoryAdmin.bat -user
      -userid was_admin_username -password was_admin_password -admin
   ```

   In the command, *was_admin_user_id* and *was_admin_password* are the user name and password of the new WebSphere Application Server administrator. This account is the administrator from the newly configured internal user registry.
3. Log in to the WebSphere Application Server administrative console.
4. In the console, click **Security** > **Secure administration, applications, and infrastructure**.

   In WebSphere Application Server, click **Security** > **Global Security**.
5. Ensure that the **Use domain-qualified user names** option is not selected.

6. In the User account repository section, click the **Available realm definitions** list and select **Standalone custom registry**.
7. Click **Configure**.
8. In the **Primary administrative user name** field, enter the administrator user name that you specified in the command in step 2 on page 50.
9. Ensure that the custom registry class name is the following string:

   ```
   com.ibm.is.isf.j2ee.impl.was.security.WASCustomUserRegistry
   ```
10. Click **Apply**.
11. Select **Server identity that is stored in the repository**.
12. In the **Server user ID or administrative user on a Version 6.0.x node** field, type the short name of the user account that you created in step 2 on page 50.
13. In the **Password** field, type the password of the user account that you specified in the command in 2 on page 50.
14. Click **OK**.
15. In WebSphere Application Server 7.0: on the Global Security page, ensure that **LTPA** is selected for the **Active authentication mechanism** setting.
16. In the User account repository section, click the **Available realm definitions** list and select **Standalone custom registry**.
17. Click **Set as current**. If an error occurs, the application server is unable to authenticate with the internal user registry by using the credentials that you provided.
18. Click **Apply** and then click **Save**.
19. Log out of the console.
20. Stop WebSphere Application Server. In a clustered installation, stop the application servers and the node agents, and then stop the Deployment Manager.

    Important: When stopping the WebSphere Application Server processes, use the credentials of the WebSphere Application Server administrator from the previous user registry.
21. Log in to the computer on which the **`AppServerAdmin`** tool is installed. This tool is on the same computer as the **`DirectoryAdmin`** tool.
22. From the command line, run the **`AppServerAdmin`** command. This command propagates the WebSphere Application Server administrator user name and password to WebSphere Application Server.

    Linux UNIX

    ```
    /opt/IBM/Information/server/ASBServer/bin/AppServerAdmin.sh -was
       -user was_admin_user_id -password was_admin_password
    ```

    Windows

    ```
    C:\IBM\InformationServer\ASBServer\bin\AppServerAdmin.bat -was
       -user was_admin_user_id -password was_admin_password
    ```

    In the command, *was_admin_user_id* and *was_admin_password* must match the credentials that you provided in the WebSphere Application Server Administrative Console.
23. If you are switching the user registry for a system that has been used for a while by multiple users, clean up the users and groups that are related to the security configuration. See “Switching the user registry configuration for a system in use” on page 52.
24. Restart WebSphere Application Server. In a clustered installation, start the Deployment Manager, and then the node agents and application servers.

25. If one of the node agents was not running when you did the previous steps, the node agent cannot be restarted. The user registry configuration at the Deployment Manager and node levels do not match. To fix this problem, run the WebSphere Application Server **syncNode** command to synchronize the node with the Deployment manager. To run the **syncNode** command:
    a. Log in to the node.
    b. Run the **syncNode** command.
    - Linux UNIX

      ```
      /opt/IBM/WebSphere/AppServer/profiles/custom_profile/bin/syncNode.sh
         dmgr_hostname dmgr_port -user was_admin_username -password
         was_admin_password
      ```

    - Windows

      ```
      C:\IBM\WebSphere\AppServer\profiles\custom_profile\bin\syncNode
         dmgr_hostname dmgr_port -user was_admin_username -password
         was_admin_password
      ```

    In the command:
    - *dmgr_hostname* is the host name of the computer where the Deployment Manager is running.
    - *dmgr_port* is the port number of the Deployment Manager (default is 8879).
    - *was_admin_username* is the user name of the WebSphere Application Server administrator.
    - *was_admin_password* is the administrator password.

    c. Restart the node agent. See "Starting IBM WebSphere Application Server (Windows)" on page 204 and "Starting IBM WebSphere Application Server (Linux, UNIX)" on page 206.
26. Check the WebSphere Application Server log files to ensure that there are no errors.

What to do next

The administrator account is also automatically configured as the initial new InfoSphere Information Server default administrator.

After the user registry configuration change, you can open the InfoSphere Information Server Web console, create new users, and grant them roles.

Switching the user registry configuration for a system in use

If you switch the user registry after the system has been used for a while by multiple users, you must clean up the security repository as part of the user registry change. If you switch the user registry immediately after installation, you do not have to do this procedure.

About this task

If you must switch the user registry, do the registry switch immediately after installing the software if possible, before you do any additional security configuration tasks. If you must switch the user registry at a later time, do this procedure to clean up all previous security configuration settings. Settings include role assignments, credential mappings, and access rights. These settings are deleted from the repository. You must configure the settings again manually for the new users of the new registry.

If you must change the user registry after the system has been in production, consider instead migrating to a new installation to avoid any security issues and risks. Otherwise, a mismatch might occur between the users of the old and new user registries.

Procedure

1. Perform the procedure to switch the user registry. Stop the procedure at the point where you are directed back to this procedure. For user registry switching procedures, see “User registry configuration” on page 34.
2. Log in to the computer on which the **DirectoryAdmin** tool is installed:
   - If you have implemented WebSphere Application Server clustering within your installation, log in to the computer that hosts the WebSphere Application Server Deployment Manager.
   - If you have not implemented clustering, log in to the services tier computer.
3. From the command line, run the following command to clean up all of the groups that are related to the security configuration:

   Windows

   ```
   C:\IBM\InformationServer\ASBServer\bin\DirectoryAdmin.bat -delete_groups
   ```

   Linux UNIX

   ```
   /opt/IBM/InformationServer/ASBServer/bin/DirectoryAdmin.sh -delete_groups
   ```
4. From the command line, run the following command to clean up all of the users related to the security configuration:

   Windows

   ```
   C:\IBM\InformationServer\ASBServer\bin\DirectoryAdmin.bat -delete_users
   ```

   Linux UNIX

   ```
   /opt/IBM/InformationServer/ASBServer/bin/DirectoryAdmin.sh -delete_users
   ```
5. If you switch to the InfoSphere Information Server internal user registry, run the following command from the command line again:

   Windows

   ```
   C:\IBM\InformationServer\ASBServer\bin\DirectoryAdmin.bat -user
     -userid was_admin_username -password was_admin_password
   ```

   Linux UNIX

   ```
   /opt/IBM/InformationServer/ASBServer/bin/DirectoryAdmin.sh -user
     -userid was_admin_username -password was_admin_password
   ```

   You can provide the password as plain text or as a string that has been encrypted with the encrypt command.
6. Complete the remainder of the user registry switching procedure.

User and group creation

Create users as the first level of security. You must create a user for each person who will log in to IBM InfoSphere Information Server.

If the InfoSphere Information Server internal user registry is used, you can create users and groups by using the InfoSphere Information Server console or the InfoSphere Information Server Web console. The InfoSphere Information Server console is available with IBM InfoSphere Information Analyzer and InfoSphere Information Services Director. The InfoSphere Information Server Web console is available to all InfoSphere Information Server users with the SuiteUser role.

If you are using an external user registry, such as the local operating system user registry or Lightweight Directory Access Protocol (LDAP), you must create users and groups by using the user registry administration tools. You cannot create users and groups in external user registries by using the InfoSphere Information Server consoles.

Default and preconfigured users

In addition to users that you create, several default or preconfigured users are created by you or for you during the installation process.

Accounts must be created for the administrator users for IBM InfoSphere Information Server and IBM WebSphere Application Server. These users are typically called "isadmin" and "wasadmin." You can choose to create them during installation. The accounts must be created in the user registry that is used by WebSphere Application Server.

Table 5. Services tier users

Sample user name	Description
isadmin	InfoSphere Information Server administrator
wasadmin	WebSphere Application Server administrator and InfoSphere Information Server administrator

Linux UNIX There must be at least one user account for the engine. This user ID is typically called "dsadm." You can choose to create this account during installation. It must be created in the user registry that is used by the engine. This user registry can be the local operating system user registry. Alternatively, the user registry can be an external user registry. This external user registry must be configured through Pluggable Authentication Modules (PAM). PAM must run on the operating system of the computer that is hosting the engine.

Table 6. Engine tier users

Sample user name	Description
dsadm	IBM InfoSphere DataStage administrator

There are several other users that you must define. The following users must be local operating system users where the metadata repository tier is installed. You can choose to create these accounts during installation:

- If you use IBM DB2 for the metadata repository:
  - You must have a DB2 instance owner. This user is the owner of the DB2 database management system. This user is typically called "db2admin" in Microsoft Windows installations, and "dasusr1" in Linux and UNIX installations.
  - Linux UNIX You must have a non-fenced instance user. This user is typically called "db2inst1"
  - Linux UNIX You must have a fenced user. This user is typically called "db2fenc1".
- All installations must have an owner for the metadata repository database within the database management system. This account is typically called "xmeta."

- IBM InfoSphere Information Analyzer installations must have an owner for the information analysis database within the database management system. This account is typically called "iauser."

Table 7. Additional users

Sample user name (Windows)	Sample user name (Linux, UNIX)	Description
db2admin	dasusr1	DB2 instance owner (only required if you are using DB2 to host the metadata repository database or analysis database)
N/A	db2inst1	DB2 non-fenced instance user (only required if you are using DB2 to host the metadata repository database or analysis database)
N/A	db2fenc1	DB2 fenced user (only required if you are using DB2 to host the metadata repository database or analysis database)
xmeta	xmeta	Metadata repository database owner
iauser	iauser	Information analysis database owner

Creating users in the IBM InfoSphere Information Server console

If the IBM InfoSphere Information Server internal user registry is used, you can create users as the first level of security. You must create a user for each person that needs to log in to InfoSphere Information Server.

Before you begin

- You must have IBM InfoSphere Information Analyzer or InfoSphere Information Services Director installed.
- You must have Administrator authority.

Procedure

1. On the **Home** navigator menu, select **Configuration** > **Users**.
2. In the Tasks pane, click **New User**.
3. In the New User pane, specify information about the user. The **User Name**, **Password**, **Confirm Password**, **First Name (Given Name)**, and **Last Name (Family Name)** fields are required.
4. In the Suite pane, specify the rights for the user.
5. In the Suite Component pane, select whether the user has any suite component roles. You must add at least one suite component role for each suite component that you want the user to access. For example, if you are creating a user that will access IBM InfoSphere Information Analyzer, you must assign the Information Analyzer Project Administrator, Data Administrator, or User role.
6. Optional: In the Groups pane, click **Browse** to add the user to a group.
   a. In the Add Groups window, select the group that you want to add the user to.
   b. Click **Add**.
   c. Click **OK** to close the window.
7. Click **Save** > **Save and Close**.

What to do next

After you create users, you can add the users to new or existing projects.

Creating groups in the IBM InfoSphere Information Server console

If the IBM InfoSphere Information Server internal user registry is used, you can create user groups and assign security settings and roles to the groups. All users that belong to a group automatically inherit the security settings and roles that are assigned to the group.

Before you begin

- You must have IBM InfoSphere Information Analyzer or InfoSphere Information Services Director installed.
- You must have Administrator authority.

Procedure

1. On the **Home** navigator menu, select **Configuration** > **Groups**.
2. On the Groups workspace, click **New Group** on the Tasks pane.
3. Specify information about the group. The **ID** and the **Group Name** fields are required.
4. In the Suite pane, specify the rights for the group.
5. In the Suite Component pane, select whether the group has any suite component roles. You must add at least one suite component role for each suite component that you want the group of users to access. For example, if you are creating a group that will access IBM InfoSphere Information Analyzer, you must assign the Information Analyzer Project Administrator, Data Administrator, or User role.
6. Optional: In the Users pane, click **Browse** to add users to the group.
   a. In the Add Users window, select the user that you want to add to the group.
   b. Click **Add**.
   c. Click **OK** to close the window.
7. Click **Save** > **Save and Close**.

What to do next

After you create groups, you can add the groups to new or existing projects.

Adding users to a group in the IBM InfoSphere Information Server console

If the IBM InfoSphere Information Server internal user registry is used, you can add users to a group to quickly assign and reassign user roles.

Before you begin

You must have IBM InfoSphere Information Analyzer or InfoSphere Information Services Director installed.

Procedure

1. On the **Home** navigator menu, select **Configuration** > **Groups**.
2. In the Groups workspace, select a group.

3. In the Task pane, click **Open**.
4. In the Users pane, click **Browse**.
5. In the Add Users window, select the users that you want to add to the group.
6. Click **Add**.
7. Click **OK** to save your choices and to close the Add Users window.
8. Click **Save** > **Save and Close** to save the assignments.

Creating users in the IBM InfoSphere Information Server Web console

If the IBM InfoSphere Information Server internal user registry is used, you can create users as the first level of security. You must create a user for each person that needs to log in to InfoSphere Information Server.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Users and Groups** > **Users**.
3. In the Users pane, click **New User**.
4. In the Create New User pane, provide information about the user.
5. In the Roles pane, specify whether the user is an administrator and user of the suite or a user of the suite.
6. In the Suite Component pane, select whether the user has any suite component roles. To log in to any of the product modules, a user must have the suite user role. Also add at least one suite component role for each suite component that you want the user to access. For example, if you are creating a user that will access IBM InfoSphere Information Analyzer, you must assign the suite user role, and also the Information Analyzer Project Administrator, Data Administrator, or User role.
7. Click **Save and Close** to save the user information in the metadata repository.

Creating groups in the IBM InfoSphere Information Server Web console

If the IBM InfoSphere Information Server internal user registry is used, you can create user groups and assign security settings and roles to the groups. All users that belong to a group automatically inherit the security settings and roles that are assigned to the group.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Users and Groups** > **Groups**.
3. In the Groups pane, click **New Group**.
4. In the Create New Group pane, provide information for the group.

5. Optional: In the Roles pane, specify whether the group has administrator and user privileges in the suite or user privileges in the suite.
6. Optional: In the Suite Component pane, select whether the group has any suite component roles. You must add at least one suite component role for each suite component that you want the users in the group to access. For example, if you are creating a group for users that are to access IBM InfoSphere Information Analyzer, you must assign the Information Analyzer Project Administrator, Data Administrator, or User role.
7. Assign users to the group.
   a. In the Users pane, click **Browse**.
   b. In the Search for Users window, type a name in the search fields and click **Filter**. To view all users, click **Clear Filter**.
   c. Select the users that you want to assign to the group.
   d. Click **OK** to save your choices and close the Search for Users window.
8. Click **Save and Close** to save the group.

Adding users to a group in the IBM InfoSphere Information Server Web console

If the IBM InfoSphere Information Server internal user registry is used, you can add users to a group to quickly assign and reassign user roles.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Users and Groups** > **Groups**.
3. In the Groups pane, select a group and click **Open Group**.
4. In the Users pane, click **Browse**.
5. In the Search for Users window, locate the users that you want to add to the group.

Option	Description
To search for a user by name:	Type a name in the search fields and click **Filter**.
To view all users:	Do not enter any text in the fields and click **Clear Filter**.

6. Select the users that you want to assign to the group.
7. Click **OK** to save your choices and close the Search for Users window.
8. Click **Save and Close** to save the assignments.

Permissions and groups configuration (Windows Server 2008)

After you install IBM InfoSphere Information Server on Microsoft Windows 2008 Server, you must perform an additional task to configure users.

About this task

Which task you use depends on whether Microsoft Windows Server 2008 is configured to be a domain controller.

The first time that a user of an InfoSphere Information Server client, such as the IBM InfoSphere DataStage client or the IBM InfoSphere Information Server console, successfully logs in to the InfoSphere Information Server services tier, the server is added to the `registered-servers.xml` file. This file is located in the `C:\IBM\InformationServer\ASBNode\eclipse\plugins\com.ibm.isf.client.` directory by default.

When logging in to the services tier for the first time, the operating system user on the client must have write permission to the `registered-servers.xml` file on the client so that in can be updated. If the user does not have the required permission, the login fails.

System administrators can limit access to specific InfoSphere Information Server services tiers from any client by removing the file system write permission to the `registered-servers.xml` file. The administrator, or anyone who has write permission, can log in ahead of time to each server that the client user will access. The administrator can then distribute the prepopulated `registered-servers.xml` file to the remaining clients in their network. To set or remove file system write permission, see "Configuring write permission to the registered-servers.xml file" on page 62.

Configuring permissions and groups (Windows Server 2008):

You must complete these tasks to configure users and groups to access to IBM InfoSphere Information Server. This configuration is required only for the engine tier computer. This configuration is only applicable to the users of the operating system where the engine tier components are installed.

Procedure

1. Log in to Microsoft Windows Server 2008 as an administrator.
2. Create a group.
   a. Click **Start** > **Control Panel** > **Administrative Tools** > **Computer Management**.
   b. In the Computer Management window, expand **System Tools** > **Local Users and Groups** > **Groups**.
   c. Click **Action** > **New Group**.
   d. In the New Group window, type `DataStage` as the name for the group, click **Create**, and click **Close**.
3. Configure users and the DataStage group to log in.
   a. Click **Start** > **Control Panel** > **Administrative Tools** > **Local Security Policy**.
   b. In the Local Security Settings window, expand **Local Policies** > **User Rights Assignment** to display the policies.
   c. In the Local Security window, click the **Allow log on Locally** policy and click **Actions** > **Properties**.
   d. In the Allow log on Locally Properties window, click **Add User or Group**.
   e. In the Select Users or Groups window, click **Locations**, click the name of your local computer, and click **OK**.
   f. In the Select Users or Groups window, click **Advanced** and click **Find Now**.
   g. In the search results, select **Authenticated Users** and **DataStage** and click **OK** three times to save the results and to return to the Local Security window.
   h. In the Local Security window, click the **Log on as a Batch Job** policy and click **Actions** > **Properties**.
   i. In the Log on as a Batch Job window, click **Add User or Group**.

    j. In the Select Users or Groups window, click **Locations**, click the name of your local computer, and click **OK**.
    k. In the Select Users or Groups window, click **Advanced**, and then click **Find Now**.
    l. In the search results, select **DataStage** and click **OK** three times to save the results and to return to the Local Security window.
    m. Close the Local Security Policy window.
4. Add users to the group.
    a. From the Computer Management window, click **Groups**.
    b. Click the name of the group that you want to add users to (DataStage).
    c. Click **Action** > **Add to Group**.
    d. In the User Properties window, click **Add**.
    e. In the Select Users or Groups window, click **Location**.
    f. Click the name of your local computer, and then click **OK**.
    g. In the Select Users window, click **Advanced**.
    h. In the window that opens, click **Find Now**.
    i. Click the names of users that you want to include in the group, and click **OK**. At a minimum, include all authenticated users.
    j. Click **OK** three times to return to the Computer Management window.
    k. Close the Computer Management window.
5. Set permissions for the following folders:
    - `C:\IBM\InformationServer\Server`
    - `C:\Program Files\MKS Toolkit\fifos`
    - `C:\Windows\%TEMP%`
    - `C:\tmp`

    Complete the following steps for each of the listed folders.
    a. Select the folder and click **File** > **Properties**.
    b. In the Properties window, click the **Security** tab, and click **Edit**.
    c. In the Permissions window, click **Add**.
    d. In the Select Users or Groups window, click **Locations**.
    e. Click the name of the local computer, and click **OK**.
    f. In the Select Users or Groups window, click **Advanced**.
    g. In the window that opens, click **Find Now**.
    h. Click the name of the group that you want to set permissions for (DataStage).
    i. Click **OK** twice.
    j. In the Permissions list, select to allow Modify, Read & execute, List folder contents, Read, and Write Permissions. Click **OK**.
    k. If you receive a message that asks you to confirm the changes, click **Apply changes to this folder, subfolders and files**.

Configuring permissions and groups (Windows Server 2008 domain controller):

If Microsoft Windows Server 2008 is a domain controller, you must complete these tasks to configure users and groups to access IBM InfoSphere Information Server. This configuration is required only for the engine tier computer and is only applicable to the users of the operating system where the engine tier components are installed.

Procedure

Because you cannot add the built-in authenticated users group to a group that you create in steps 3 and 2, you might prefer to skip steps 3 and 2 and use the authenticated users group directly.

1. Log in to Microsoft Windows Server 2008 as an administrator.
2. Create a group.
   a. Click **Start** > **Control Panel** > **Administrative Tools** > **Active Directory and Computers**.
   b. In the Active Directory and Computers window, click **Users** in the current domain.
   c. In the window that opens, click **Action** > **New Group**.
   d. In the New Group window, type `DataStage` as the name for the group.
   e. Leave **Group scope** as **Global** and **Group type** as **Security**.
   f. Click **OK**
3. Configure the server to allow local users and the DataStage group to log in.
   a. Click **Start** > **Control Panel** > **Administrative Tools** > **Domain Security Policy**.
   b. In the Domain Security Policy window, expand **Local Policies** > **User Rights Assignment** to display the policies.
   c. In the Domain Security window, click the **Allow log on Locally** policy, and click **Actions** > **Properties**.
   d. In the Allow log on Locally Properties window, click **Add User or Group**.
   e. Click **Browse**.
   f. In the Select Users, Computers, or Groups window, click **Advanced** and then click **Find Now**.
   g. In the search results, click **Authenticated Users** and **DataStage**, and then click **OK** three times to return to the Domain Security Policy window.
   h. In the Domain Security window, click the **Log on as a Batch Job** policy, and click **Actions** > **Properties**.
   i. In the Log on as a Batch Job window, click **Add User or Group**.
   j. Click **Browse**.
   k. In the Select Users, Computers, or Groups window, click **Advanced** and then click **Find Now**.
   l. In the search results, click **DataStage** and click **OK** three times to return to the Domain Security Policy window.
   m. Close the Domain Security Policy window.
4. Add users to the group.
   a. In the Users in the current domain window, click the name of the group that you want to add users to (DataStage), and click **OK**. Authenticated users are not available.
   b. Click **Action** > **Properties**.
   c. In the Properties window, click the **Members** tab, and then click **Add**.
   d. In the window that opens, click **Advanced**, and then click **Find Now**.
   e. Click the names of users that you want to add to the group, and then click **OK**. Authenticated users are not available.
   f. Click **OK** two times to save your results and to return to the Active Directory and Computers window.

g. Close the Active Directory and Computers window.

5. Set permissions for the following folders:
   - `C:\IBM\InformationServer\Server`
   - `C:\Program Files\MKS Toolkit\fifos`
   - `C:\Windows\%TEMP%`
   - `C:\tmp`

   Complete the following steps for each of the listed folders.

   a. Select the folder and click **File** > **Properties**.

   b. In the Properties window, click the **Security** tab, and click **Edit**.

   c. In the Permissions window, click **Add**.

   d. In the Select Users, Computers, or Groups window, click **Locations**.

   e. In the window that opens, click **Advanced**, and then click **Find Now**.

   f. Click the name of the group that you want to set permissions for (DataStage).

   g. Click **OK** twice.

   h. In the Permissions list, select to allow Modify, Read & execute, List folder contents, Read, and Write Permissions. Click **OK**.

   i. If you receive a message to confirm your changes, confirm by clicking **Apply changes to this folder, subfolders and files**.

Configuring write permission to the registered-servers.xml file:

The first time that a given services tier is accessed from a given client system, the user that is currently logged into the operating system must have write permission to the `registered-servers.xml` file to allow the application to add the host name and port of the client system to the file. Once the information is added, any subsequent login by any user by any InfoSphere Information Server application on the client system only requires read access to the file.

About this task

When an InfoSphere Information Server client application logs into a services tier for the first time, the application adds the services tier host name and port to the local `registered-servers.xml` file. This file contains the list of services tiers to be displayed as choices for subsequent client logins.

Be default, administrators have write permission to the `registered-servers.xml` file. Write permission for the Users group must also be added for the application to access the file.

Procedure

To give the Users group write permission to the file:

- Windows XP
  1. In Microsoft Windows Explorer, locate the `registered-servers.xml` file. By default, this file is located in the following directory: `C:\IBM\InformationServer\ASBNode\eclipse\plugins\com.ibm.isf.client`
  2. Right-click the file and select **Properties**
  3. In the Properties window, click the **Security** tab.
  4. Click **Add**.
  5. In the Select Users or Groups window, click **Locations**.

    6. Select the name of your local computer and click **OK**.
    7. In the Select Users or Groups window, click **Advanced**.
    8. Click **Find Now** and select the Users group.
    9. Click **OK** twice.
    10. With the Users group selected, click **Allow** for the **Write** permission, and click **OK**.
    11. If you receive a message to confirm your changes, confirm by clicking **Apply changes to this folder, subfolders and files**.
- Windows 2008 and Windows 7
    1. In Microsoft Windows Explorer, locate the `registered-servers.xml` file. By default, this file is located in the following directory: `C:\IBM\InformationServer\ASBNode\eclipse\plugins\com.ibm.isf.client`
    2. Right-click the file and select **Properties**
    3. In the Properties window, click the **Security** tab.
    4. Click **Edit**.
    5. In the Permissions window, click **Add**.
    6. In the Select window, click **Locations**.
    7. Select the name of your local computer and click **OK**.
    8. In the Select window, click **Advanced**.
    9. Click **Find Now** and select the Users group.
    10. Click **OK** twice.
    11. With the Users group selected, click **Allow** for the **Write** permission, and click **OK**.
    12. If you receive a message to confirm your changes, confirm by clicking **Apply changes to this folder, subfolders and files**.

Assigning user roles

IBM InfoSphere Information Server supports role-based access control. User roles determine which features users can use. For some suite components, user roles also determine which projects a user can access.

User roles can be defined at several levels that build on one another. Users derive authority from the combination of their role in InfoSphere Information Server (their suite roles), their role in the suite component (for example, IBM InfoSphere Information Analyzer or IBM InfoSphere FastTrack), and the permissions they have to work in a given project (their project roles).

Suite

Suite-level roles are the basic roles that users need to access any part of InfoSphere Information Server. Users who are not **Suite Users** cannot authenticate with InfoSphere Information Server. All InfoSphere Information Server users must have the **Suite User** role. A suite user can also have the **Suite Administrator** role to complete administration tasks. Users with the **Suite Administrator** role must also have the **Suite User** role assigned to their user names.

The common metadata component roles are also suite-level roles. These roles have certain authority over metadata in the metadata repository.

Component

Component-level roles provide access to the features of a specific product module. Users can be users or administrators of a product module. For example, you can be an InfoSphere Information Analyzer user and an IBM InfoSphere DataStage administrator.

Project

Project-level roles are defined in the product module and by the product module. For example, in an information analysis project in the IBM InfoSphere Information Server console, you can assign a user the Information Analyzer Data Steward role for that project.

Assigning user roles

Typically, an InfoSphere Information Server administrator assigns suite-level roles and component-level roles. Both roles are assigned by using the IBM InfoSphere Information Server console or IBM InfoSphere Information Server Web console. The InfoSphere Information Server console is available with IBM InfoSphere Information Analyzer and InfoSphere Information Services Director. The InfoSphere Information Server Web console is available to all InfoSphere Information Server users with the SuiteUser role.

After the security roles are configured, the administrator of each product module further defines the project-level roles in the IBM InfoSphere Information Server console or the IBM InfoSphere DataStage and QualityStage Administrator client. To perform the actions of a particular project-level role, a user must also have suite-level access and access to the product module that owns the project. For example, to be an InfoSphere DataStage developer, a user must be assigned the roles of suite user and component-level InfoSphere DataStage, as well as the InfoSphere DataStage developer project role.

Security role overview

IBM InfoSphere Information Server supports role-based access control. Users derive authority from the union of their roles in InfoSphere Information Server (the suite roles), their roles in the suite component, such as IBM InfoSphere Information Analyzer (the suite component roles), and the projects that they work with (the project roles).

Security configuration is performed by two levels of administrators:

InfoSphere Information Server administrators

These administrators are in charge of assigning the suite and suite component roles to users. These roles determine which suite components the user can access and whether the user has component administrator or component user access in those suite components. InfoSphere Information Server administrators can also configure credential mappings for InfoSphere Information Analyzer, IBM InfoSphere DataStage, and IBM InfoSphere QualityStage users. InfoSphere Information Server administrators must have, at least, the Suite Administrator and Suite User role assigned to their user names. During installation, a default InfoSphere Information Server administrator is created to perform the initial installation tasks and configure the user registry. The default IBM WebSphere Application Server administrator is always automatically configured as an InfoSphere Information Server administrator when you restart IBM WebSphere Application Server.

InfoSphere Information Server suite component administrators
These administrators are in charge of assigning the component project roles to the users that were configured by the InfoSphere Information Server administrator. These assignments are configured in the suite component. For example, the InfoSphere Information Server component administrator can assign the Information Analyzer Business Analyst role to a user in the information analysis screens of the console. For InfoSphere DataStage projects, these role assignments are configured in the InfoSphere DataStage Administrator client. The InfoSphere DataStage and QualityStage administrators can also use the IBM InfoSphere Information Server Web console to configure credential mappings.

Suite roles

Suite Administrator
Provides maximum InfoSphere Information Server administration privileges.

Suite User
Identifies which users in the user registry have general access to InfoSphere Information Server and the suite components. A user must have this role to authenticate with InfoSphere Information Server or any of the suite components.

The common metadata roles are also suite roles. See “Common metadata roles” on page 69.

The following figure shows the InfoSphere Information Server security roles.

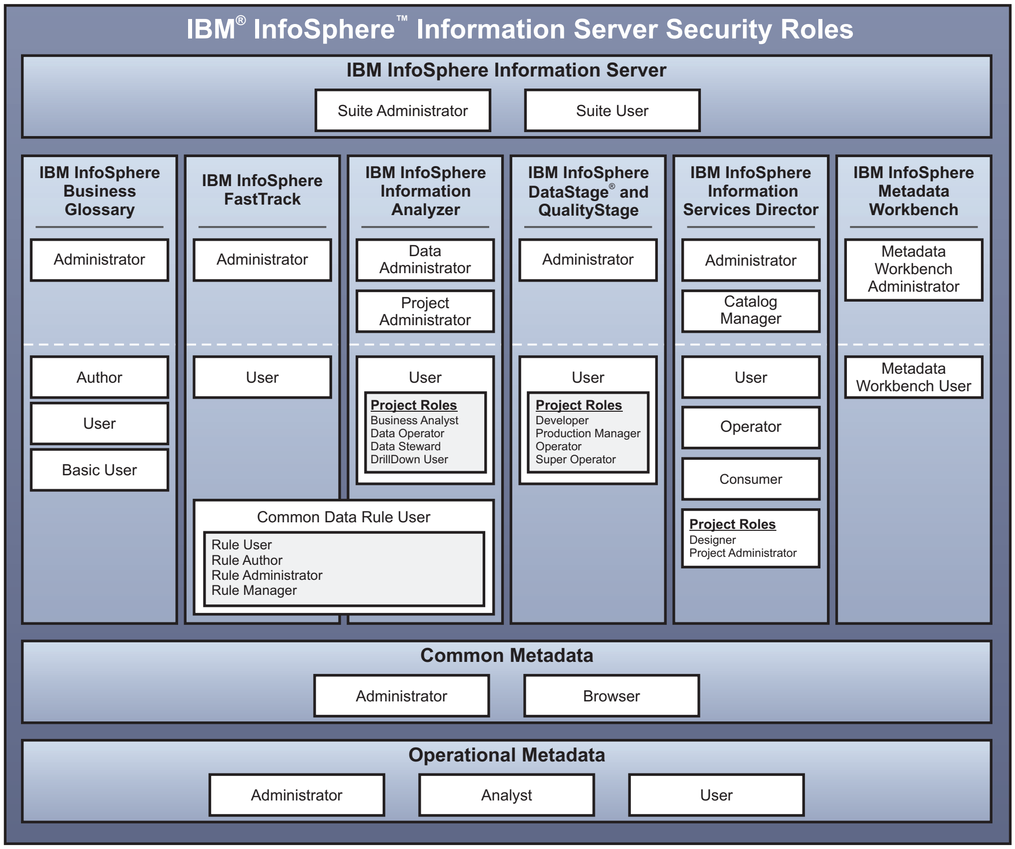


Figure 19. InfoSphere Information Server security roles

IBM InfoSphere FastTrack roles:

For IBM InfoSphere FastTrack, administrators can further define user authority by assigning suite component roles to InfoSphere FastTrack users.

Suite component roles

FastTrack Project Administrator
The InfoSphere FastTrack Project Administrator can create and manage projects, and manage user and group access to projects.

FastTrack User
An InfoSphere FastTrack User can use InfoSphere FastTrack functions. Users must be authorized to projects before they can use functions for creating, managing, and viewing mapping specifications.

InfoSphere Metadata Workbench roles:

The suite administrator assigns roles that define the tasks that users of IBM InfoSphere Metadata Workbench can perform.

IBM InfoSphere Metadata Workbench has the following roles:

Metadata Workbench Administrator
Runs the automated and manual analysis services, publishes queries, and explores metadata models. Performs all tasks that IBM InfoSphere Metadata Workbench users can perform.

The Metadata Workbench administrator must be familiar with the enterprise database metadata and data file metadata that is imported into the repository. The administrator must also be familiar with the metadata that is used in jobs.

Metadata Workbench User
Finds and explores information assets, runs analysis reports, and creates, saves, and runs queries.

IBM InfoSphere Business Glossary roles:

For IBM InfoSphere Business Glossary, administrators can further define user authority by assigning suite component roles to InfoSphere Business Glossary users.

Suite component roles

Business Glossary Administrator
Can set up and administer the glossary so that other users can find and analyze the information that they need. Can also create stewards from users and groups.

Business Glossary Author
Can create and edit terms and categories, including assigning assets in the metadata repository to terms.

Business Glossary User
Can examine the terms and categories in the glossary, and the assets in the metadata repository.

Business Glossary Basic User
Can examine the terms and categories in the glossary, but cannot examine the assets in the metadata repository.

Business Glossary Asset Assigner
Assigns assets in the metadata repository to glossary terms and categories from other products in the InfoSphere Information Server suite

IBM InfoSphere DataStage and IBM InfoSphere QualityStage roles:

For InfoSphere DataStage and InfoSphere QualityStage, administrators can further define user authority by assigning suite component and project roles to InfoSphere DataStage and InfoSphere QualityStage users.

You can assign suite component roles in the console or the Web console. Project roles can be assigned only in the Permissions page of the IBM InfoSphere DataStage Administrator client.

Suite component roles

DataStage and QualityStage Administrator
Can perform the following tasks:

- Assign project roles to InfoSphere DataStage suite users in the InfoSphere DataStage Administrator client
- Use the Administrator client to create, delete, and configure projects
- Mark projects as protected
- Unprotect protected projects
- Issue server engine commands

- Use the Designer client to create and edit jobs and other objects
- Use the Director client to run and schedule jobs
- View the entire job log messages
- Import objects into protected projects

With this role, the user cannot edit jobs or other objects in protected projects.

DataStage and QualityStage User

Provides access to InfoSphere DataStage and InfoSphere QualityStage. Additionally, this role is used to filter the lists of users and groups that are shown in the InfoSphere DataStage Administrator client. If an IBM InfoSphere Information Server user does not have this role, that user cannot access any of the InfoSphere DataStage or InfoSphere QualityStage product modules, even if that user has InfoSphere DataStage or InfoSphere QualityStage project roles assigned to the user name.

Project roles

DataStage Developer

Can perform the following tasks:

- Use the Designer client to create and edit jobs and other objects
- Use the Director client to run and schedule jobs
- View entire job log messages

With this role, the user can also use the Administrator client to perform limited tasks including changing project NLS settings and changing project properties (not protect/unprotect).

With this role, the user cannot edit jobs or other objects in protected projects, create, delete, or configure projects (can perform limited configuration tasks), mark existing projects as protected, unprotect protected projects, assign project roles to InfoSphere DataStage suite users in the Administrator client, or import objects into protected projects.

DataStage Production Manager

Can perform the following tasks:

- Mark existing projects as protected
- Unprotect protected projects
- Use the Designer client to create and edit jobs and other objects
- Use the Director client to run and schedule jobs
- View entire job log messages
- Import objects into protected projects

With this role, users can also use the InfoSphere DataStage Administrator client to perform limited tasks including changing the project NLS settings, issuing server engine commands, and changing project properties.

With this role, users cannot edit jobs or other objects in protected projects. In addition, the role cannot create, delete, or configure projects (except for limited configuration tasks), or assign project roles to InfoSphere DataStage suite users in the Administrator client.

DataStage Operator

Can perform the following tasks:

- Use the Director client to run and schedule jobs

- View entire job log messages (unless set to read first line only by InfoSphere DataStage Administrator)

With this role, users can also use the Administrator client to perform limited tasks including changing project NLS settings and changing project properties (not protect/unprotect).

DataStage Super Operator
Can perform the following tasks:

- Use the Director client to run and schedule jobs
- View entire job log messages
- Use the Designer client to view jobs and view objects

This role can also use the Administrator client to perform limited tasks including changing project NLS settings and changing project properties (not protect/unprotect).

With this role, users cannot use the Designer client to create and edit jobs and other objects, edit jobs or other objects in protected projects, create, delete or configure projects, mark existing projects as protected, unprotect protected projects, assign project roles to InfoSphere DataStage suite users in the Administrator client, or import objects into protected projects.

For more information, see the *IBM InfoSphere DataStage and QualityStage Administrator Client Guide*.

Operational metadata roles:

You can assign operational metadata component roles to a user.

Suite component roles

Operational Metadata Administrator
Can import operational metadata into the repository. You can assign this role to a suite user and edit the `runimporter.cfg` file to include the user name and password of that user. When you run the `runimporter` file, it uses those credentials to allow the user to import operational metadata into the repository.

Operational Metadata Analyst
Can create and run reports on operational metadata in the Reporting tab of the Web console.

Operational Metadata User
Can view reports on operational metadata.

Common metadata roles:

You can assign common metadata component roles to a user.

Suite component roles

Common Metadata User
Uses the **Repository Management** tab of InfoSphere Metadata Asset Manager to browse, search for, and inspect assets that are in the metadata repository.

Common Metadata Importer
On the **Import** tab of InfoSphere Metadata Asset Manager, creates import areas, imports to the staging area, analyzes, previews, and shares imports

to the metadata repository and performs all other tasks. Views and works in only those import areas that this user creates. Uses the **Repository Management** tab to browse, search for, and inspect assets that are in the metadata repository.

Common Metadata Administrator
On the **Administration** tab of InfoSphere Metadata Asset Manager, specifies import policies and configures metadata interchange servers. On the **Import** tab, creates import areas, imports to the staging area, analyzes, previews, and shares to the metadata repository. Can view and work in all import areas. On the **Repository Management** tab, merges and deletes assets and sets implementation relationships. Additionally, has all the privileges of the Common Metadata User and the Common Metadata Importer.

On the istool command line, exports, imports, and deletes common metadata assets.

Common data rule roles:

You can assign data rule roles to a user.

Suite component roles

Rule Administrator
Sets up and administers who can access and run data rules and rule sets, so that other users can find and run data rules and rule sets for projects.

Rule Author
Provides the ability to author data rule definitions and rule set definitions.

Rule Manager
Manages the creation and organization of data rules and rule sets. This role manages who can create data rule definitions, rule set definitions, and metrics, as well as who can run data rules, rule sets, and metrics.

Rule User
Provides the ability to run data rules and rule sets.

IBM InfoSphere Information Analyzer roles:

For IBM InfoSphere Information Analyzer, administrators can further define user authority by assigning suite component and project roles to InfoSphere Information Analyzer users.

You can assign suite component roles in the IBM InfoSphere Information Server console or the IBM InfoSphere Information Server Web console. Project roles can be assigned only in the Project Properties workspace of the console.

Suite component roles

Information Analyzer Data Administrator
Can import metadata, modify analysis settings, and add and modify system sources.

Information Analyzer Project Administrator
Can administer projects by creating, deleting, and modifying information analysis projects.

Information Analyzer User
Can log on to InfoSphere Information Analyzer, view the dashboard, and open a project.

Project roles

Information Analyzer Business Analyst
Reviews analysis results. With this role, users can set baselines and checkpoints for baseline analysis, publish analysis results, delete analysis results, and view the results of analysis jobs.

Information Analyzer Data Operator
Manages data analyses and logs. With this role, users can run or schedule all analysis jobs.

Information Analyzer Data Steward
Provides read-only views of analysis results. With this role, users can also view the results of all analysis jobs.

Information Analyzer DrillDown User
Provides the ability to drill down into source data if drill down security is enabled.

IBM InfoSphere Information Services Director roles:

For IBM InfoSphere Information Services Director, administrators can further define user authority by assigning suite component roles and project roles to InfoSphere Information Services Director users.

Suite component roles

Information Services Director Catalog Manager
Provides full access to the Information Services Catalog tab including the ability to manage and modify services categories, services, and custom attributes. The InfoSphere Information Services Director Administrator is automatically granted Information Services Catalog Manager authority.

Information Services Director Administrator
Provides access to all of the InfoSphere Information Services Director functions.

Information Services Director Consumer
Provides ability to invoke secured services.

Information Services Director Operator
Provides access to the InfoSphere Information Services Director runtime functions. An operator can add and remove providers as well as configure runtime parameters of a deployed application, service and operation. In addition, an operator can deploy applications from the design time view.

Information Services Director User
Provides access to view a list of applications in the runtime environment and view information on the Information Services Catalog tab. This user can browse deployed applications, services, operations, and providers.

Project roles

Information Services Director Designer
With the Information Services Director Designer role, users can access only projects that it is authorized for at design time. At the project level at design time, the ISD Designer can:

- View project details and the list of projects
- View the list of applications
- Update applications
- Export applications
- Import services into an existing application
- View, add, or remove services.

At run time, the Information Services Director Designer can view the list of applications.

Information Services Director Project Administrator
Provides access to create and delete applications, add and remove users and groups to projects, and edit project properties.

Assigning security roles in the IBM InfoSphere Information Server console

To create a secure project environment, you can define a security policy that is based on user authentication and role identification. Users derive authority from the union of their individual and group roles.

Before you begin

You must have IBM InfoSphere Information Analyzer or InfoSphere Information Services Director installed to use the InfoSphere Information Server console.

About this task

In the InfoSphere Information Server console, you can specify which roles users can perform in the suite. You can further define which suite components the users have access to and what their roles are in those suite components.

Assigning security roles to a user in the IBM InfoSphere Information Server console:

All users require authorization to access components and features of the IBM InfoSphere Information Server. You can assign one or more suite and suite component roles to a user.

Before you begin

You must have suite administrator authority.

About this task

Changing the roles that are assigned to a user does not affect any currently active sessions for that user. The new role assignments will only be available the next time the user logs in. You can use session administration to disconnect the user and force the user to log in again.

Procedure

1. On the **Home** navigator menu, select **Configuration** > **Users**.
2. In the Users workspace, select a user.
3. In the Task pane, click **Assign Roles**.
4. In the Roles pane, select a suite role to assign to the user.

5. In the Suite Component pane, select one or more suite component roles to assign to the user.
6. Click **Save** > **Save and Close** to save the authorizations in the metadata repository.

What to do next

Certain suite components, such as IBM InfoSphere DataStage and IBM InfoSphere Information Analyzer, also require that you assign additional user roles in the clients or projects.

Assigning security roles to a group in the IBM InfoSphere Information Server console:

You can assign one or more suite and suite component roles to a group of users.

Before you begin

You must have suite administrator authority.

About this task

Changing the roles that are assigned to a group does not affect any currently active sessions for the users in that group. The new role assignments will only be available the next time the users log in. You can use session administration to disconnect the users and force the users to log in again.

Procedure

1. On the **Home** navigator menu, select **Configuration** > **Groups**.
2. In the Groups workspace, select a group.
3. In the Task pane, click **Assign Roles**.
4. In the Roles pane, select a suite role to assign to the group.
5. In the Suite Component pane, select one or more suite component roles to assign to the group.
6. Click **Save** > **Save and Close** to save the authorizations in the metadata repository.

Viewing the roles that are assigned to a user or a group:

In the IBM InfoSphere Information Server console, you can view the suite and suite component roles that are assigned to a user or group. If an administrator assigned project roles to the user or group, you can also view the project roles.

Before you begin

You must have suite administrator authority.

Procedure

1. On the **Home** navigator menu, select **Configuration** > **Users**, or select **Configuration** > **Groups**.
2. Select a user or group and click **Open**.
3. In the Roles pane, view the list of assigned suite, suite component, or assigned project roles. Project roles are assigned in the context of a project in IBM InfoSphere DataStage, or in the IBM InfoSphere Information Server console.

Assigning users to a project and assigning roles

When you create a project, you can specify which users can access that project. You can also specify which actions users can perform in that project.

About this task

To add users to a project and assign roles, you use different tools. The tool you use depends upon the product module in which you are working:

- For IBM InfoSphere Information Analyzer and IBM InfoSphere Information Services Director, use the IBM InfoSphere Information Server console as described in this procedure.
- For IBM InfoSphere DataStage and IBM InfoSphere QualityStage, use the IBM InfoSphere DataStage and QualityStage Administrator. See the *IBM InfoSphere DataStage and QualityStage Administrator Client Guide*.
- For IBM InfoSphere FastTrack, use the IBM InfoSphere FastTrack console. See the IBM InfoSphere FastTrack Tutorial.

Procedure

1. In the IBM InfoSphere Information Server console, open the project that you want to assign users and roles to.
2. On the **Overview** navigator menu in the IBM InfoSphere Information Server console, select **Project Properties**.
3. On the Project Properties workspace, select the **Users** tab.
4. In the Users pane, click **Browse** to add users to the project.
5. On the Add Users window, select the users that you want to add to the project, click **Add**, then click **OK**.
6. On the Project Roles pane, select a project role to assign to the selected user. A user can be assigned one or more roles in a project.
7. Click **Save All**.

Assigning groups to a project and specifying roles

When you create a project, you can specify which groups can access that project. You can also specify which actions they can perform in that project.

About this task

To assign groups to a project and select roles, you use different tools. The tool you use depends on the product module in which you are working:

- For IBM InfoSphere Information Analyzer and IBM InfoSphere Information Services Director, use the IBM InfoSphere Information Server console as described in this procedure.
- For IBM InfoSphere DataStage and IBM InfoSphere QualityStage, use the IBM InfoSphere DataStage and QualityStage Administrator. See the *IBM InfoSphere DataStage and QualityStage Administrator Client Guide*.
- For IBM InfoSphere FastTrack, use the IBM InfoSphere FastTrack console. See the IBM InfoSphere FastTrack Tutorial.

Procedure

1. In the IBM InfoSphere Information Server console, open the project that you want to assign groups to.
2. On the **Overview** navigator menu in the IBM InfoSphere Information Server console, select **Project Properties**.

3. On the Project Properties workspace, select the **Groups** tab.
4. In the Groups pane, click **Browse** to add groups to the project.
5. On the Add Groups window, select the groups that you want to add to the project, click **Add**, then click **OK**.
6. On the Project Roles pane, select a role to assign to the selected group. A group can be assigned one or more roles in a project.
7. Click **Save All**.

Assigning security roles in the IBM InfoSphere Information Server Web console

To create a secure project environment, you define a security policy that is based on user authentication and roles. Users derive authority from the union of their individual and group roles.

About this task

In the IBM InfoSphere Information Server Web console, you can specify which roles users can perform in the suite. You can further define which suite components the users have access to and what their roles are in those suite components.

Assigning security roles to a user in the IBM InfoSphere Information Server Web console:

All users require authorization to access components and features of IBM InfoSphere Information Server. You can assign one or more suite and suite component roles to a user.

Before you begin

You must have suite administrator authority.

About this task

Changing the roles that are assigned to a user does not affect any currently active sessions for that user. The new role assignments will only be available the next time the user logs in. You can use session administration to disconnect the user and force the user to log in again.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Users and Groups** > **Users**.
3. In the Users pane, select a user and click **Open User**.

   Note: You can assign roles to more than one user at a time by clicking **Add Roles to Multiple Users**.
4. In the Roles pane, select a suite role to assign to the user.
5. In the Suite Component pane, select one or more suite component roles to assign to the user.
6. Click **Save and Close** to save the authorizations in the metadata repository.

What to do next

Certain suite components, such as IBM InfoSphere DataStage and IBM InfoSphere Information Analyzer, also require that you assign additional user roles in the clients or projects.

Assigning security roles to a group in the IBM InfoSphere Information Server Web console:

You can assign one or more suite and suite component roles to a group of users.

Before you begin

You must have suite administrator authority.

About this task

Changing the roles that are assigned to a group does not affect any currently active sessions for the users in that group. The new role assignments will only be available the next time the users log in. You can use session administration to disconnect the users and force the users to log in again.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Users and Groups** > **Groups**.
3. In the Users pane, select a group and click **Open Group**.

   Note: To assign roles to more than one group at a time, click **Add Roles to Multiple Groups**.
4. In the Roles pane, select a suite role to assign to the group.
5. In the Suite Component pane, select one or more suite component roles to assign to the group.
6. Click **Save and Close** to save the authorizations in the metadata repository.

What to do next

Certain suite components, such as IBM InfoSphere DataStage and IBM InfoSphere Information Analyzer, also require that you assign additional group roles in the clients or projects.

Viewing the roles that are assigned to a user or a group:

You can view the suite and suite component roles that are assigned to a user or group. If an administrator assigned project roles to the user or group, you can also view the project roles.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.

2. In the Navigation pane
   - Select **Users and Groups** > **Users**.
   - Or, select **Users and Groups** > **Groups**.
3. Select a user or group.
4. Click **Open User** or **Open Group**.
5. In the Roles pane, view the list of assigned suites, suite component, or project roles. Project roles are assigned in the context of a project in IBM InfoSphere DataStage or in the IBM InfoSphere Information Server console.

Engine security configuration

The IBM InfoSphere Information Server engine performs user authentication separately from other InfoSphere Information Server components. Depending upon your user registry configuration, you might have to map credentials between the InfoSphere Information Server user registry and the local operating system user registry on the computer where the engine is installed.

IBM InfoSphere DataStage, IBM InfoSphere QualityStage, and IBM InfoSphere Information Analyzer require access to the engine and require that engine credentials be configured.

The InfoSphere Information Server engine requires valid user credentials for each InfoSphere Information Server user that needs to access the engine. User credentials are stored in a user registry.

If the InfoSphere Information Server engine can share the user registry that InfoSphere Information Server uses, the user credentials for both InfoSphere Information Server and the engine can come from this user registry. If the user registry cannot be shared, you must create a mapping between credentials in the user registry that InfoSphere Information Server uses and valid user credentials that exist in the local operating system user registry on the computer where the engine is installed.

The services tier and the engine can share a local operating system user registry if they are installed on the same computer. If they are installed on separate computers, they can share an external user registry such as a Lightweight Directory Access Protocol (LDAP) or Windows Active Directory user registry. The services tier and the engine cannot share the InfoSphere Information Server internal user registry.

In an installation with more than one InfoSphere Information Server engine, you choose the authentication method on a per InfoSphere Information Server engine basis.

Credential mapping overview

If IBM InfoSphere Information Server and the InfoSphere Information Server engine do not share the user registry, you must create a mapping between credentials in the user registry that InfoSphere Information Server uses and user credentials that exist in the local operating system user registry on the engine tier computer.

After you have configured the shared user registry, use the IBM InfoSphere Information Server Web console to indicate the new configuration to InfoSphere Information Server.

Do these tasks to map credentials.

After you share the user registry or define credential mappings, you must give your users access to IBM InfoSphere DataStage and IBM InfoSphere QualityStage.

Shared user registry overview

If you configure IBM InfoSphere Information Server to use an external user registry, you might be able to share the user registry between InfoSphere Information Server and the InfoSphere Information Server engine.

Sharing the user registry allows IBM WebSphere Application Server, InfoSphere Information Server, and the InfoSphere Information Server engine to access the same user names, passwords, and group definitions. When the user registry is shared, authentication to the engine occurs silently by using the same credentials (user ID and password) that the user uses to authenticate with InfoSphere Information Server. In this mode, no credential mapping is required.

You can share the user registry in any of the following scenarios:

- The engine tier and the services tier are installed on the same computer, and InfoSphere Information Server is configured to use the local operating system user registry. In this case, they can share the local operating system user registry.

  Note: Sharing of the local operating system user registry is not supported in installations that include WebSphere Application Server clustering.
- Linux UNIX The engine tier and the services tier are installed on separate computers, but both use the same Lightweight Directory Access Protocol (LDAP) user registry for authentication. In this scenario, you must configure Pluggable Authentication Module (PAM) on the engine tier computer.
- Windows The engine tier and the services tier are installed on separate computers, but both use the same Microsoft Windows Active Directory user registry (which is an LDAP user registry) for authentication.
- Windows The engine tier and the services tier are installed on separate computers, but the computers are within the same domain. This configuration may have performance issues, and is not recommended.

  Note: This configuration is not supported in installations that include WebSphere Application Server clustering.

If the engine tier and services tier cannot share a user registry, you must create a mapping between credentials in the user registry that InfoSphere Information Server is using and valid user credentials that exist in the local operating system user registry on the computer where the engine is installed.

The engine tier cannot use the InfoSphere Information Server internal user registry. If InfoSphere Information Server is configured to use the internal user registry, you must configure credential mapping.

The following figure shows a configuration in which the engine tier and services tier are installed on the same computer. They both share the local operating system user registry. Specifically, the InfoSphere Information Server engine is configured to use the local operating system user registry. InfoSphere Information Server is configured to use the WebSphere Application Server user registry and then access the same operating system user registry.

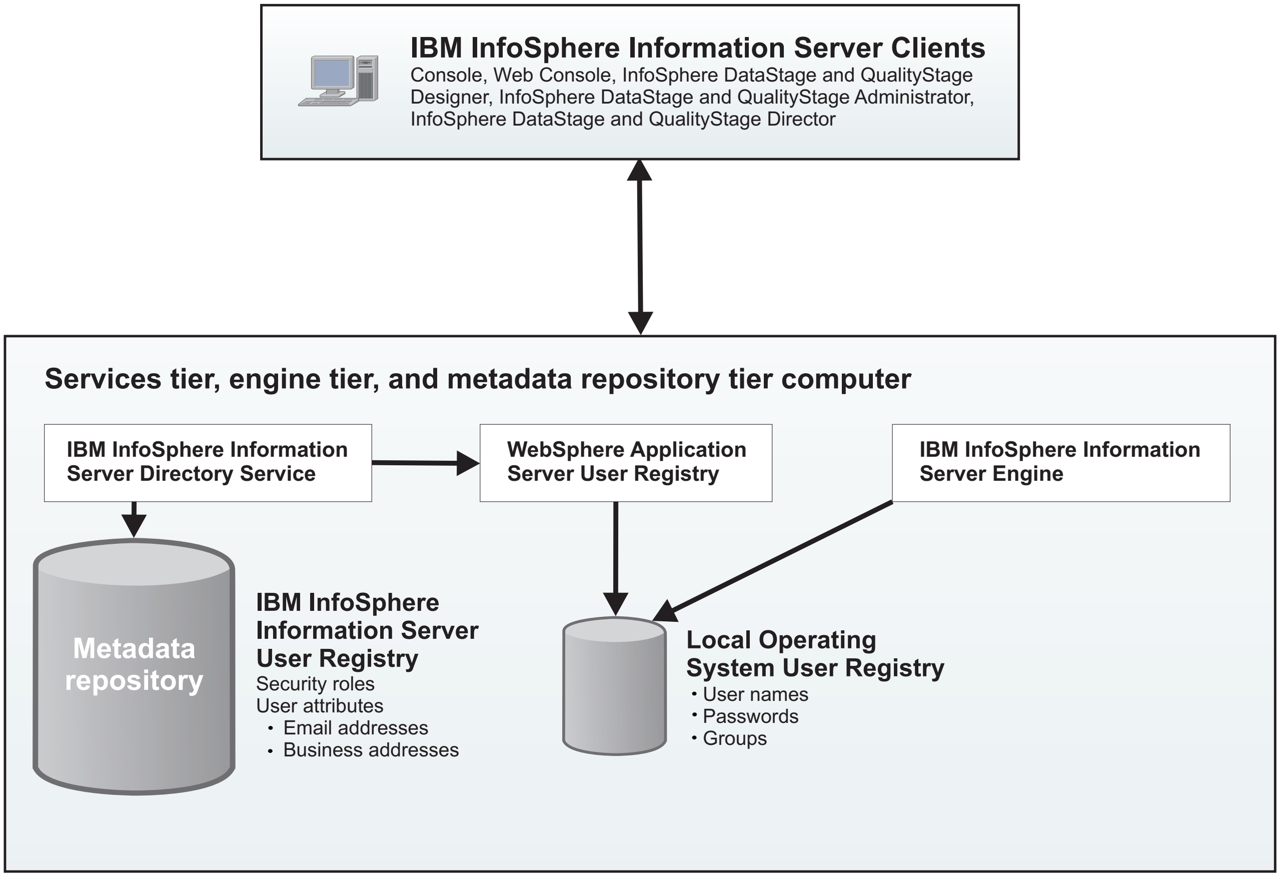

IBM InfoSphere Information Server Clients
Console, Web Console, InfoSphere DataStage and QualityStage Designer, InfoSphere DataStage and QualityStage Administrator, InfoSphere DataStage and QualityStage Director
Services tier, engine tier, and metadata repository tier computer
IBM InfoSphere Information Server Directory Service
WebSphere Application Server User Registry
IBM InfoSphere Information Server Engine
Metadata repository
IBM InfoSphere Information Server User Registry
Security roles
User attributes
• Email addresses
• Business addresses
Local Operating System User Registry
• User names
• Passwords
• Groups

Figure 20. Example of architecture that uses a shared local operating system user registry

The following figure shows a configuration in which the engine tier and services tier are installed on separate UNIX computers. They both share a common LDAP user registry. Specifically, the InfoSphere Information Server engine is configured to use the LDAP user registry. InfoSphere Information Server is configured to use the WebSphere Application Server user registry and then access the LDAP user registry. To provide the interface between the engine and the LDAP user registry, Pluggable Authentication Module (PAM) is configured on the engine tier computer.

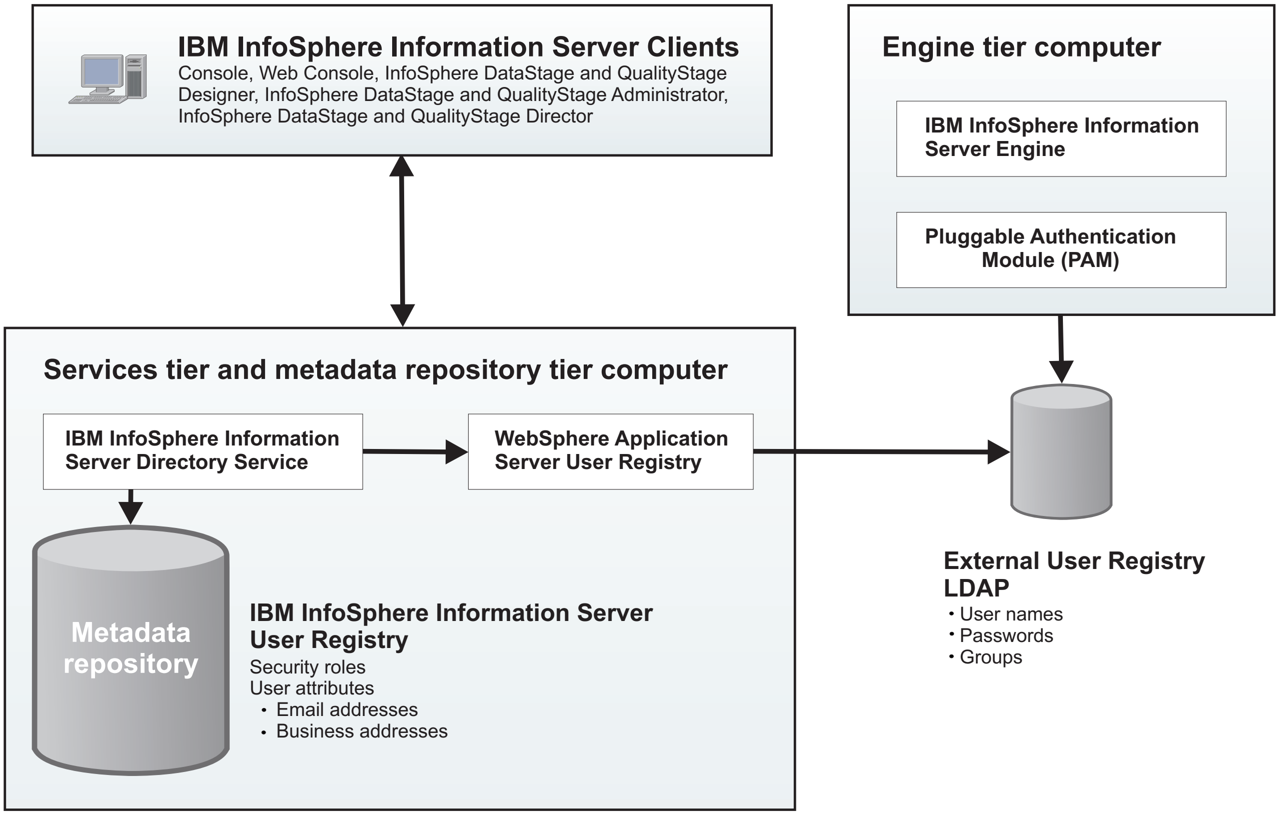

IBM InfoSphere Information Server Clients
Console, Web Console, InfoSphere DataStage and QualityStage Designer, InfoSphere DataStage and QualityStage Administrator, InfoSphere DataStage and QualityStage Director
Engine tier computer
IBM InfoSphere Information Server Engine
Pluggable Authentication Module (PAM)
Services tier and metadata repository tier computer
IBM InfoSphere Information Server Directory Service
WebSphere Application Server User Registry
Metadata repository
IBM InfoSphere Information Server User Registry
Security roles
User attributes
• Email addresses
• Business addresses
External User Registry LDAP
• User names
• Passwords
• Groups

Figure 21. Example of architecture that uses a shared LDAP user registry

Windows After you share the user registry, you must still grant the engine tier operating system users the required permissions. See Permissions and groups configuration.

Credential mapping overview

If IBM InfoSphere Information Server and the InfoSphere Information Server engine do not share the user registry, you must create a mapping between credentials in the user registry that InfoSphere Information Server uses and user credentials that exist in the local operating system user registry on the engine tier computer.

You must use credential mapping in the following scenarios:

- InfoSphere Information Server is configured to use the internal user registry. The InfoSphere Information Server engine cannot use the internal user registry.
- Linux UNIX The services tier and engine tier are installed on separate computers. They do not share a user registry.
- Windows The services tier and engine tier are installed on separate computers. The computers are not in the same domain.

The credential mappings are stored with the internal user registry in the metadata repository. The passwords are strongly encrypted for increased security.

You can create individual user mappings, so that each InfoSphere Information Server user is associated with exactly one engine user. You also can create a default user mapping, so that all InfoSphere Information Server users who do not have individual credential mappings can access the engine through a shared user name.

In the following figure, the services tier and engine tier are installed on the same computer. However, InfoSphere Information Server is configured to use the internal user registry. Because the engine tier computer cannot use this user registry, credential mapping is configured between the internal user registry and the local operating system user registry.

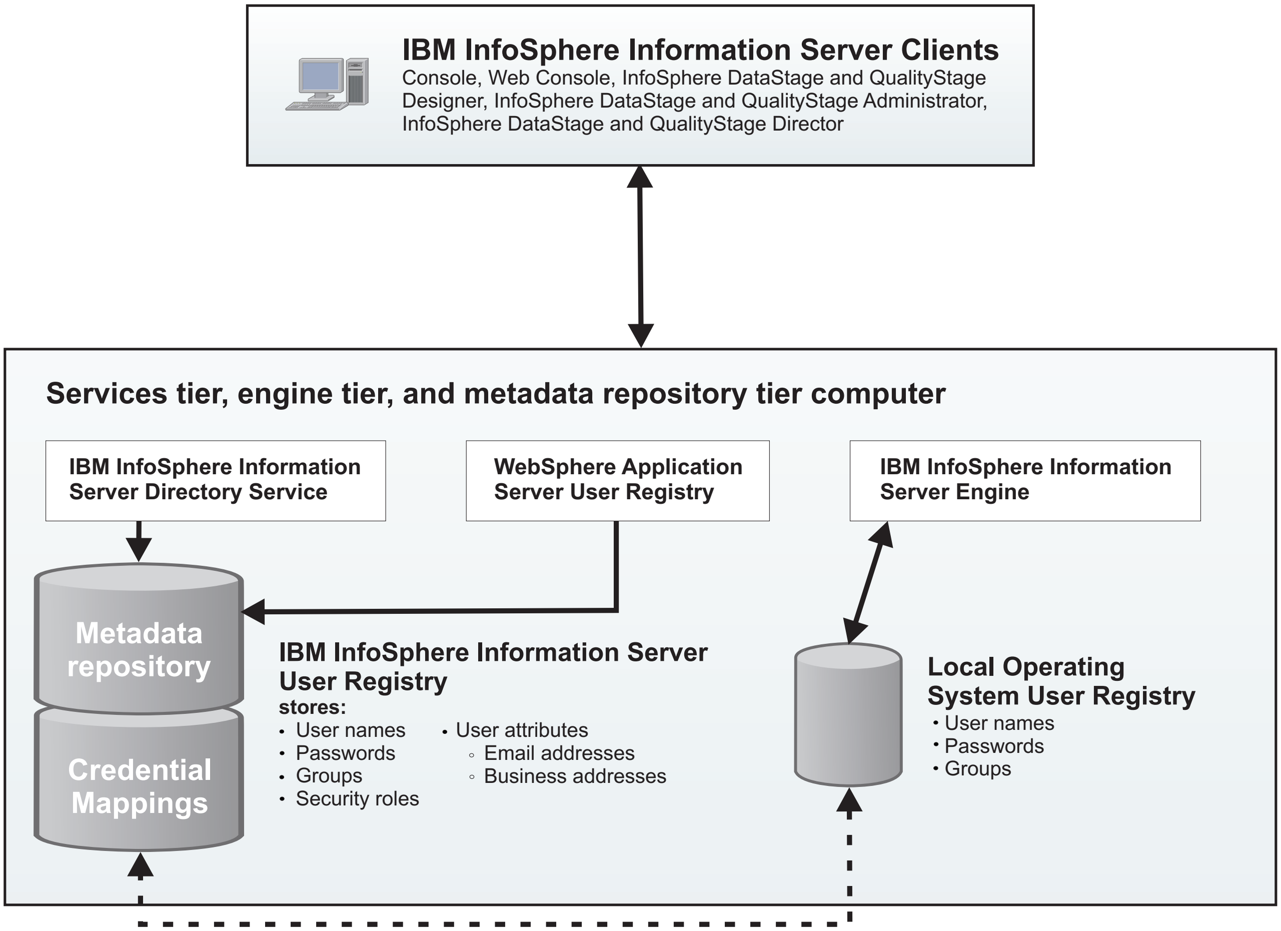

IBM InfoSphere Information Server Clients
Console, Web Console, InfoSphere DataStage and QualityStage Designer, InfoSphere DataStage and QualityStage Administrator, InfoSphere DataStage and QualityStage Director
Services tier, engine tier, and metadata repository tier computer
IBM InfoSphere Information Server Directory Service
WebSphere Application Server User Registry
IBM InfoSphere Information Server Engine
Metadata repository
Credential Mappings
IBM InfoSphere Information Server User Registry
stores:
• User names
• Passwords
• Groups
• Security roles
• User attributes
◦ Email addresses
◦ Business addresses
Local Operating System User Registry
• User names
• Passwords
• Groups

Figure 22. Example of architecture where internal user registry is used. Credential mapping is configured

In the following figure, the services tier and engine tier are installed on separate computers. InfoSphere Information Server is configured to use the local operating system user registry. Since the engine tier computer cannot share this user registry, credential mapping is configured between the local operating system user registry on the services tier computer and the local operating system user registry on the engine tier computer.

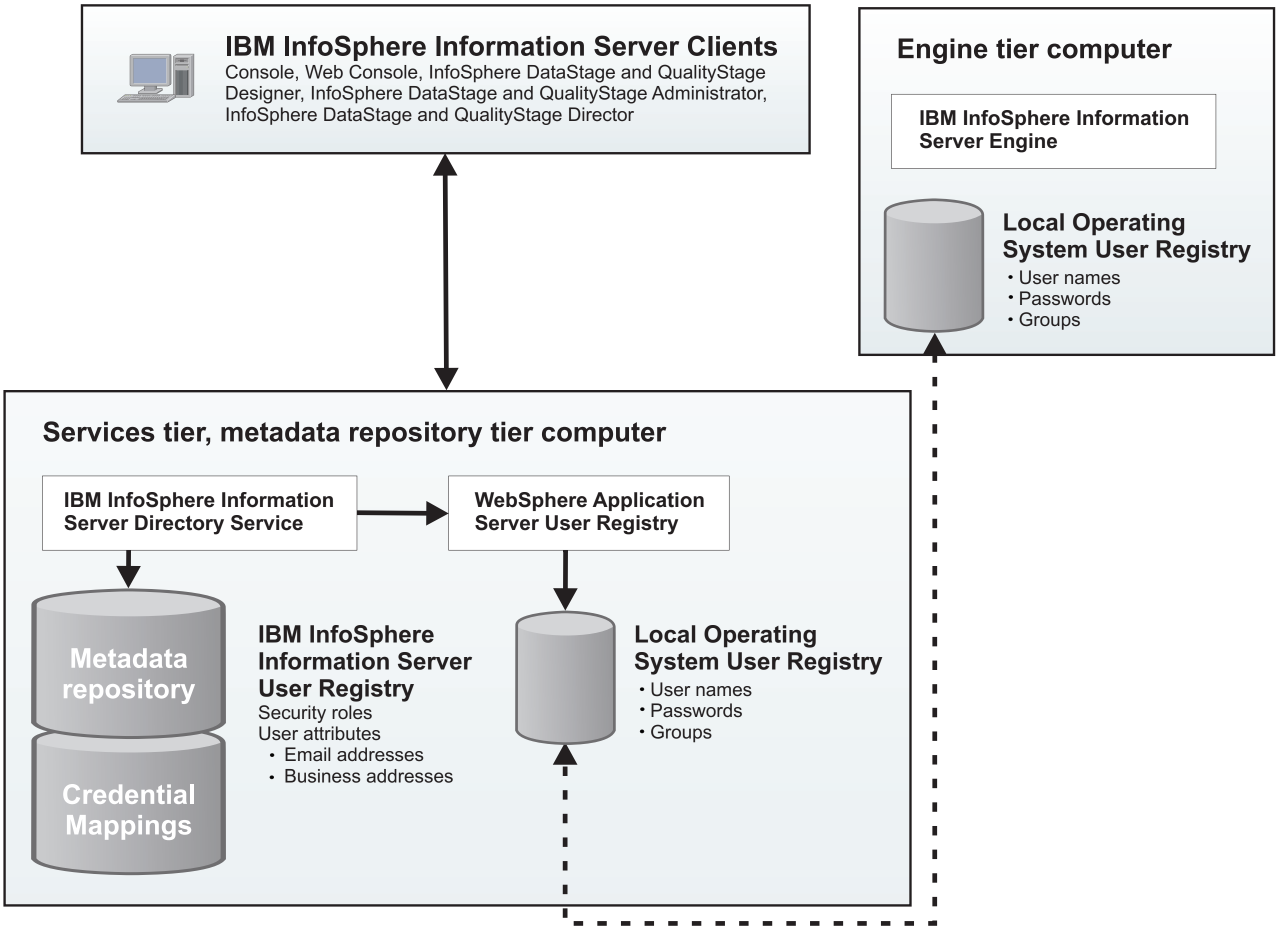

IBM InfoSphere Information Server Clients
Console, Web Console, InfoSphere DataStage and QualityStage Designer, InfoSphere DataStage and QualityStage Administrator, InfoSphere DataStage and QualityStage Director
Engine tier computer
IBM InfoSphere Information Server Engine
Local Operating System User Registry
• User names
• Passwords
• Groups
Services tier, metadata repository tier computer
IBM InfoSphere Information Server Directory Service
WebSphere Application Server User Registry
Metadata repository
Credential Mappings
IBM InfoSphere Information Server User Registry
Security roles
User attributes
• Email addresses
• Business addresses
Local Operating System User Registry
• User names
• Passwords
• Groups

Figure 23. Example of architecture with separate services tier and engine tier computer. Credential mapping is configured

Indicating to InfoSphere Information Server that the user registry is shared

After you have configured the shared user registry, use the IBM InfoSphere Information Server Web console to indicate the new configuration to InfoSphere Information Server.

Before you begin

- You must have suite administrator authority.
- You must ensure that the user registry that you are sharing is the same for both the services tier and the engine tier, and that no credential mapping is required.

Procedure

1. In the InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Domain Management** > **Engine Credentials**.
3. Select the InfoSphere Information Server engine that you have configured to use the same user registry as InfoSphere Information Server.
4. Click **Open Configuration**.

5. In the configuration pane, select **Share User Registry between InfoSphere Information Server and its engine**.
6. Click **Save and Close**.

What to do next

Grant your users access to IBM InfoSphere DataStage and IBM InfoSphere QualityStage. After you indicate to InfoSphere Information Server that the user registry is shared, all credential mapping menus are disabled and you do not need to define any additional mappings. The same user name and password that is used to log in to InfoSphere Information Server is used to run data integration jobs in the engine.

Credential mapping

Do these tasks to map credentials.

An administrator can perform credential mappings for a group of users. Alternatively, users can map their own credentials. The following table describes the credential mapping-related tasks that different types of users can complete:

Table 8. Credential mapping-related tasks for different user types

User type	Permitted credential mapping-related tasks
InfoSphere Information Server suite administrators, IBM InfoSphere DataStage administrators, and IBM InfoSphere QualityStage administrators	These users can define default engine tier operating system credentials to use for all users that are trying to connect to InfoSphere Information Server engine and that do not have a specific credential mapping defined. For each individual InfoSphere Information Server user, these administrators can define specific engine tier operating system credentials to map to the InfoSphere Information Server user credentials.
InfoSphere DataStage and InfoSphere QualityStage users	These users can define their own credential mappings in the Web console. Users can only define credentials for their user names.

Defining default credentials:

You can define a default user name and password for the suite to map to each user's engine tier operating system user credentials.

Before you begin

You must have suite administrator authority or IBM InfoSphere DataStage and IBM InfoSphere QualityStage administrator authority.

About this task

The default credentials are used for any users who do not have their own credential mappings. If you do not want users who do not have mapped credentials to access the server, do not add default mapping credentials.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigator pane, select **Domain Management** > **Engine Credentials**.
3. Select the InfoSphere Information Server engine for which you want to specify the default credentials.
4. Click **Open Configuration**.
5. In the **User Name** field, type the user name to be used by all InfoSphere Information Server users for whom a specific mapping is not defined.
6. In the **Password** field, type the corresponding password. The user name and password that you provide must be a valid user name and password for the operating system where the engine tier components are installed.
7. Confirm the password.
8. Click **Save and Close**.

Configuring your credentials:

As a suite administrator or suite user, you can map the credentials for your own user account.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Domain Management** > **Engine Credentials**.
3. Select the InfoSphere Information Server engine that you want to configure.
4. Click **Open My Credentials**.
5. Type the user name and password that you want to use to connect to the IBM InfoSphere Information Server engine. The user name and password that you provide must be a valid user name and password for the operating system where the engine tier components are installed.
6. Click **Save and Close**.

Mapping user credentials:

You can map one or more user credentials to engine tier operating system user credentials.

About this task

If you use the IBM InfoSphere Information Server user registry, you must create credential mappings before you can use IBM InfoSphere DataStage and IBM InfoSphere QualityStage clients. Create users and groups in the Web console before you begin this task.

Suite users can configure their own credential mappings.

Procedure

1. Log in to the IBM InfoSphere Information Server Web console by using Administrator credentials.
2. On the Administration tab, expand the **Domain Management** section and click **Engine Credentials**.

3. Select the InfoSphere Information Server engine for which you want to map user credentials.
4. Click **Open User Credentials**.
5. Click **Browse** to search for suite users.
6. Specify additional search criteria, and click **Filter** to display a list of users.
7. From the search results, select the suite users that you want to map to the engine tier operating system local credentials and click **OK**.
8. On the Map User Credentials pane, select one or more users to map to the credentials. If you want to map some suite users to one user and map other suite users to a different user, select one subset of users and continue.
9. In the Assign User Credentials pane, specify the local operating system user credentials. The user name and password that you provide must be a valid user name and password for the operating system where the engine tier components are installed. If you want to preserve credential mappings that users have already configured, select the **Apply Only to Users without Credentials** check box.
10. Click **Apply**.
11. To map credentials for additional suite users, do one of the following:
    - Repeat steps 8 through 10 to map credentials for additional users displayed in the Map User Credentials pane.
    - Repeat steps 5 through 10 to select from a new filtered list of users and map credentials for those users.

What to do next

After you map the credentials, any suite user or group that is assigned an IBM InfoSphere DataStage and QualityStage user or administrator security role can log in to an InfoSphere DataStage and QualityStage client.

Granting access to IBM InfoSphere DataStage and QualityStage users

After you share the user registry or define credential mappings, you must give your users access to IBM InfoSphere DataStage and IBM InfoSphere QualityStage.

Procedure

1. Ensure that the operating system user has the proper file access permissions to InfoSphere DataStage, InfoSphere QualityStage, and the relevant files.
2. Grant the required suite and suite component roles to the user in the Web console.
   a. Using a role that has administrative privileges, log in to the IBM InfoSphere Information Server Web console.
   b. Select the **Administration** tab.
   c. In the Navigation pane, select **Users and Groups** > **Users**.
   d. Select the user that you want to grant access to and click **Open User**.
   e. In the Roles pane, assign the following roles to the user.

      Suite User
      Required for all users in order to log in to any of the suite components.

      DataStage and QualityStage User
      Required for any user in order log in to any of the InfoSphere DataStage and InfoSphere QualityStage product modules.

DataStage and QualityStage Administrator
Optional. Grants full access to all projects and the administrative capability of InfoSphere DataStage and InfoSphere QualityStage.

3. If you did not grant the DataStage and QualityStage Administrator authority, you must use the IBM InfoSphere DataStage and QualityStage Administrator client to grant project level roles to the user. If the user has only the DataStage and QualityStage user role and no specific project roles, that user cannot log in to the InfoSphere DataStage clients.

Configuring WebSphere Application Server for non-root administration (Linux, UNIX)

By default, the IBM WebSphere Application Server runs as root. However, it can also be run by using a non-root user ID. The following instructions describe the steps required to configure and set appropriate file system permissions for WebSphere Application Server to run as a non-root user ID.

It might be necessary to rerun the post-installation steps (go to "Running post-installation commands to enable non-root administration (Linux, UNIX)" on page 87) after installing any add-on components, fix packs, or patches to the services tier because certain installations might change permissions.

Restrictions

- If you are using the local operating system as the user registry, WebSphere Application Server must be run as root. WebSphere Application Server must be run as root in this case, because of system permissions that are required for credential checking.
- WebSphere Application Server must be run as root when installing patches, fix packs, and upgrades. When running the installation program or Update Installer, make sure to first restart WebSphere Application Server to run as root. When preparing to run an installation process, if WebSphere Application Server is running as a non-root user, you might need to first stop WebSphere Application Server while logged in as that non-root user. You can then log in as root, start WebSphere Application Server as root, and then start the installation program or Update Installer.
- The task of starting and stopping WebSphere Application Server must be designated to one non-root user only.

  The user who starts WebSphere Application Server must also be the user who stops WebSphere Application Server. Therefore, as preparation for any installations, after WebSphere has already been configured for running as a non-root user and is started by that non-root user, you must first stop WebSphere Application Server while logged in as the configured non-root user. When WebSphere Application Server is stopped, log in as root and restart WebSphere Application Server before starting any InfoSphere Information Server installations.
- Avoid assigning the dsadm user to manage WebSphere Application Server. Using the dsadm user to manage WebSphere Application Server might cause overwrite issues for the InfoSphere Information Server environment settings. The non-root user selected for running WebSphere must not source dsenv.

Setting up a new non-root user for WebSphere Application Server (Linux, UNIX)

If you have IBM InfoSphere Information Server installed, you can create a user who can manage WebSphere Application Server processes. These steps need to be completed only once.

Before you begin

Make sure to read the restrictions in “Configuring WebSphere Application Server for non-root administration (Linux, UNIX)” on page 86.

Important: Before you begin this task, back up your system so that the backup can be used to restore the original state if necessary. See Chapter 12, “Backing up and restoring IBM InfoSphere Information Server,” on page 185.

About this task

The general purpose in these instructions is to transfer the ownership of some of the files under WebSphere Application Server and InfoSphere Information Server to the new non-root user, at which point the new user would be able to take over the management of the WebSphere Application Server process. This one-time setup task describes the steps for creating the user. The post installation instructions describe the steps that must be performed after every installation action.

These steps use wasadmin as the new non-root user. However, this is just an example user name; you can use any user name that you want, or use an existing user.

You must be a system administrator with root access.

Procedure

1. Create the **wasadmin** user by running the command:
   ```
   useradd -m -d /home/wasadmin wasadmin
   ```
   Note: If you are using an existing user, replace instances of wasadmin with your selected user name.
2. Set the umask of this user to `0022` by typing: `umask 0022`

What to do next

Proceed to the post-installation tasks for either a stand-alone environment or cluster environment to configure the settings in InfoSphere Information Server for the non-root user: “(Stand-alone environment) Running post-installation commands to enable non-root administration (Linux, UNIX)” or “(Cluster environment) Running post-installation commands to enable non-root administration (Linux, UNIX)” on page 90

Running post-installation commands to enable non-root administration (Linux, UNIX)

After installing IBM InfoSphere Information Server or adding components, patches, or fix packs, run these commands to enable non-root administration. The steps differ depending upon whether IBM WebSphere Application Server is set up in a clustered configuration or stand-alone configuration.

(Stand-alone environment) Running post-installation commands to enable non-root administration (Linux, UNIX):

You must run these tasks every time you install IBM InfoSphere Information Server where IBM WebSphere Application Server is set up in a stand-alone configuration. You must also run these tasks after you install any new add-on components, patches, or fix packs in this configuration. If you are installing an InfoSphere Information Server engine or client patch, the following instructions do not apply.

Before you begin

- If you have more than one patch or add-on InfoSphere Information Server product to install, install all the patches and add-on products before you begin these steps. When running the installation program or Update Installer, make sure to first restart IBM WebSphere Application Server to be running under root. If WebSphere Application Server was previously configured for non-root administration and is running under the non-root user, you might need to first stop WebSphere Application Server while logged in as the non-root user. You can then log in as root and start WebSphere Application Server under root before starting the installation.
- Stop all InfoSphere Information Server processes, including WebSphere Application Server, the server engine, JobMonApp, logging, and ASB agents. See "Shutting down services (Linux, UNIX)" on page 200.
  - The applications should be stopped while logged in as the user who started the application.
  - If WebSphere Application Server is already running as a non-root user, you must log in as that non-root user to stop WebSphere Application Server.
  - If the ASB and logging agents are started as root, you must log in as root to stop the agents.

About this task

- These steps apply to stand-alone (non-cluster) environments only. If you have a cluster configuration, see "(Cluster environment) Running post-installation commands to enable non-root administration (Linux, UNIX)" on page 90.
- The non-root user name, wasadmin, is an example that is used throughout the documentation. If you have a different non-root user name, make sure to use that one instead and replace every instance of wasadmin in the commands that you run.

Procedure

1. Remove *.jar and *.lck files from the temporary directory by running the commands:

   Note: The operating system-defined temporary directory, *tmp*, is either `/tmp` or `/var/tmp`. Change the file path below accordingly.

   Note: Alternatively, you can move these files to a backup directory. Third party applications might have dependencies on the .jar or .lck files in this temporary directory and you might want the option to restore them later.

   ```
   rm /tmp/*.jar
   rm /tmp/*.lck
   ```

2. If `WB_vrdata` or `BG_vrdata` exist in the temporary directory, run the following commands:

   Note: The OS-defined temporary directory, *tmp*, is either `/tmp` or `/var/tmp`. Change the file path below accordingly.

   ```
   rm –rf /tmp/WB__vrdata
   rm –rf /tmp/BG__vrdata
   ```

3. Either wasadmin must be a member of the group assigned to the Reporting workspace directories and below with rwx permission, or you must set wasadmin as the owner of the Reporting workspace directories and below.

   Note: If you relocated the Reporting workspace directory as described in the technote http://www.ibm.com/support/docview.wss?rs=14&uid=swg21317914, assign appropriate permissions to that directory instead.
   Run the commands to set the wasadmin user as the owner of the Reporting workspace directories:

   ```
   cd /tmp
   chown -R wasadmin informationServer
   ```

   Note: Where the temporary directory, *tmp*, is either `/tmp` or `/var/tmp` as defined by the operating system.

   Note: If your system was configured to relocate the temporary directory used by IBM InfoSphere Business Glossary or IBM InfoSphere Metadata Workbench as described in the following technote, follow the instructions in the following technote to assure that appropriate permissions are assigned to the `WB__vrdata` and `BG__vrdata` directories: http://www.ibm.com/support/docview.wss?rs=3291&uid=swg21413637.
4. Run the commands to set wasadmin as the owner of the InfoSphere Information Server profile of WebSphere Application Server:

   ```
   cd WAS_installation_path/profiles
   chown -R wasadmin InfoSphere
   ```

   Note: Where *WAS_installation_path* is the path where WebSphere Application Server is installed. The default installation path is `/opt/IBM/WebSphere/AppServer`. *InfoSphere* is the default name for the InfoSphere Information Server profile installed under WebSphere Application Server. If you installed InfoSphere Information Server to a profile name other than `InfoSphere`, use that profile name instead.
5. Start the WebSphere Application Server process as wasadmin and start all InfoSphere Information Server processes. See "Starting services (Linux, UNIX)" on page 205.

   Important: When you restart InfoSphere Information Server processes, LoggingAgent and ASBAgent are started as root. To configure these agents as the non-root user, you must complete the following procedure: "Starting IBM InfoSphere Information Server node agents as a non-root user" on page 93.

   If the agents are ever started by root and then are started by a non-root user, you must delete the process output files, such as `*.out` and `*.err` files that are located in the *`IS_installation_path`*`/ASBNode` and *`IS_installation_path`*`/ASBNode/bin` folders, to allow the new owners of the agent processes to regenerate those output files. This could have occurred during an installation process if the agents also had been configured to run under a non-root user and were restarted as root during the installation.

What to do next

Now, you can configure WebSphere Application Server to start as the non-root user during a system restart. See "Configuring WebSphere Application Server to start as the non-root user during a system restart (Linux, UNIX)" on page 92.

(Cluster environment) Running post-installation commands to enable non-root administration (Linux, UNIX):

You must run these tasks every time you install IBM InfoSphere Information Server and after you install any new add-on components, patches, or fix packs. If you are installing an InfoSphere Information Server engine or client patch, the following instructions do not apply.

Before you begin

- If you have more than one patch or add-on InfoSphere Information Server product to install, install all the patches and add-on products before you begin these steps. When running the installation program or Update Installer, make sure to first restart all IBM WebSphere Application Server processes to be running under root. If WebSphere Application Server was previously configured for non-root administration and is running under the non-root user, you might need to first stop all WebSphere Application Server processes while logged in as the non-root user. You can then log in as root and start all WebSphere Application Server processes under root before starting the installation.
- Stop all InfoSphere Information Server processes, including WebSphere Application Server, the server engine, JobMonApp, logging, and ASB agents. See "Shutting down services (Linux, UNIX)" on page 200.
  - The applications should be stopped while logged in as the user who started the application.
  - If WebSphere Application Server is already running as a non-root user, you must log in as that non-root user to stop WebSphere Application Server.
  - If the ASB and logging agents are started as root, you must log in as root to stop the agents.

About this task

- These steps apply to cluster environments only. If you have a stand-alone (non-clustered) configuration, see "(Stand-alone environment) Running post-installation commands to enable non-root administration (Linux, UNIX)" on page 87.
- The non-root user name, wasadmin, is an example that is used throughout the documentation. If you have a different non-root user name, make sure to use that one instead and replace every instance of wasadmin in the commands that you run.
- This procedure must be repeated on all systems where IBM WebSphere Application Server Network Deployment is installed. This includes the computer that hosts the Deployment Manager and the computers that host the various managed nodes.

Procedure

1. Remove *.jar and *.lck files from the temporary directory by running the commands:

   Note: The operating system-defined temporary directory, *tmp*, is either `/tmp` or `/var/tmp`. Change the file path below accordingly.

   Note: Alternatively, you can move these files to a backup directory. Third party applications might have dependencies on the .jar or .lck files in this temporary directory and you might want the option to restore them later.

   ```
   rm /tmp/*.jar
   rm /tmp/*.lck
   ```

2. If `WB_vrdata` or `BG_vrdata` exist in the temporary directory, run the following commands:

   Note: The operating system-defined temporary directory, *tmp*, is either `/tmp` or `/var/tmp`. Change the file path below accordingly.

   ```
   rm –rf /tmp/WB__vrdata
   rm –rf /tmp/BG__vrdata
   ```
3. Either wasadmin must be a member of the group assigned to the Reporting workspace directories and below with rwx permission, or you must set wasadmin as the owner of the Reporting workspace directories and below.

   Note: If you relocated the Reporting workspace directory as described in the technote http://www.ibm.com/support/docview.wss?rs=14&uid=swg21317914, assign appropriate permissions to that directory instead.
   Run the commands to set the non-root user as the owner of the Reporting workspace directories:

   ```
   cd /tmp
   chown -R wasadmin informationServer
   ```

   Note: The *tmp* temporary directory is either `/tmp` or `/var/tmp`, as defined by the operating system.

   Note: If your system was configured to relocate the temporary directory used by IBM InfoSphere Business Glossary or IBM InfoSphere Metadata Workbench as described in the following technote, follow the instructions in the following technote to assure that appropriate permissions are assigned to the `WB__vrdata` and `BG__vrdata` directories: http://www.ibm.com/support/docview.wss?rs=3291&uid=swg21413637.
4. Assign wasadmin ownership to all WebSphere Application Server profiles participating in the InfoSphere Information Server cluster.

   Note: There are multiple WebSphere Application Server profiles potentially on different machines.

   a. For each profile in the cluster, run the following command to change ownership to the non-root user.

      ```
      cd WAS_installation_path/profiles
      chown -R wasadmin Custom01
      ```

      WAS_installation_path is the path where WebSphere Application Server is installed. The default installation path is `/opt/IBM/WebSphere/AppServer`. *Custom01* is the default name for the InfoSphere Information Server profile installed under WebSphere Application Server. If you installed InfoSphere Information Server to a profile name other than Custom01, use that profile name instead.

      Repeat this step on each custom profile. (A custom profile is a WebSphere Application Server profile that hosts a managed node.)
   b. Run the commands to assign ownership to the non-root user of the Deployment Manager profile. In this example, the profile is named *Dmgr01*, but you can specify a different name.

      ```
      cd WAS_installation_path/profiles
      chown -R wasadmin Dmgr01
      ```

      WAS_installation_path is the path where WebSphere Application Server is installed. The default installation path is `/opt/IBM/WebSphere/AppServer`. *Dmgr01* is the default profile name for the Deployment Manager profile.

5. Start all WebSphere Application Server processes as wasadmin user and start all InfoSphere Information Server processes. See “Starting services (Linux, UNIX)” on page 205.

   Important: When you restart InfoSphere Information Server processes, LoggingAgent and ASBAgent are started as root. To configure these agents as the non-root user, you must follow the procedure in “Starting IBM InfoSphere Information Server node agents as a non-root user” on page 93.

   If the agents are ever launched by root and then are started by a non-root user, you must delete the process output files, such as `*.out` and `*.err` files that are located in the *`IS_installation_path`*`/ASBNode` and *`IS_installation_path`*`/ASBNode/bin` folders, to allow the new owners of the agent processes to regenerate those output files. The situation could have occurred during an installation process if the agents also had been configured to run under a non-root user and were restarted as root during the installation.

Configuring WebSphere Application Server to start as the non-root user during a system restart (Linux, UNIX)

You can configure IBM WebSphere Application Server to start as the non-root user when a system restart occurs. To set up WebSphere Application Server in this manner, locate and change the content of the `ISFServer` files.

About this task

Do this task after you have done the post-configuration steps for the first time. After you do the following steps, it is unnecessary to repeat them after new installation activities.

Note: This task applies to stand-alone (non-clustered) installations only.

Procedure

1. Find the `ISFServer` files that must be modified:
   - For the HP-UX operating system, use the command:
     ```
     cd /sbin
     find . -name *ISFServer*
     ```
   - For all other operating systems, use the command:
     ```
     cd /etc
     find . -name *ISFServer*
     ```

   This might return multiple files with various prefixes in the name. Some files might be links to other files and could reflect the change you made in the original file without needing to edit each file that was found. If you have multiple instances of WebSphere Application Server installed, there might be unique files for each WebSphere Application Server instance. You only have to modify the files that reference the instances of WebSphere Application Server that you have configured to start as non-root.
2. Identify the files to modify.
3. Change and save the content of these files.

   Note: This step assumes that InfoSphere Information Server has been installed under the default installation path, `/opt/IBM/InformationServer`. Your actual installation path might differ.

   Change the following content:

```
#!/bin/sh
# chkconfig: 2345 85 60
# description: Information Services Framework server.
IS_INIT_D=true;export IS_INIT_D
"/opt/IBM/InformationServer/ASBServer/bin/MetadataServer.sh" "$@"
```

Change as follows:

```
#!/bin/sh
# chkconfig: 2345 85 60
# description: Information Services Framework server.
IS_INIT_D=true;export IS_INIT_D
/usr/bin/su - wasadmin -c "/opt/IBM/InformationServer/ASBServer/bin/MetadataServer.sh $*"
```

Note: The location of your `MetadataServer.sh` file might be different and should reflect the location of your IBM InfoSphere Information Server installation directory.

Starting IBM InfoSphere Information Server node agents as a non-root user

The node agents (mainly the ASB and logging agents) can be started as the IBM InfoSphere DataStage administrator user. Do this procedure after you create an installation of InfoSphere Information Server. Repeat this procedure after you add additional product modules or fix packs.

Before you begin

Before doing these steps, back up your system so that you can restore the original state if necessary. See Chapter 12, "Backing up and restoring IBM InfoSphere Information Server," on page 185.

About this task

Do these steps on all engine tier computers. You must be a system administrator who has root access.

Instructions in this procedure use the default InfoSphere Information Server installation locations. Your path varies if you installed InfoSphere Information Server in a different location.

The following directory is the default InfoSphere Information Server installation location: `/opt/IBM/InformationServer`

Procedure

1. If you added additional product modules or fix packs to an existing InfoSphere Information Server installation, skip to step 6 on page 94. If you are modifying a fresh installation, continue with step 2.
2. Verify that the InfoSphere DataStage administrator account that originally installed the engine tier exists. Verify that it belongs to the InfoSphere DataStage primary group. The InfoSphere DataStage administrator account is typically named dsadm. The InfoSphere DataStage primary group is typically named dstage.

   Note: If you did not install InfoSphere DataStage or IBM InfoSphere Information Analyzer, you can choose any trusted user.
3. AIX Make sure that the *stack_hard* variable in the `/etc/security/limits` file is set to -1 for the user that was selected in step 2.

4. Make sure that the user can write to the temporary directory.
5. Configure the node agents to start as the non-root user when a computer restarts. To do so, locate and change the content of the `ISFAgents` files on the engine tier computers.

   Note: The location and file name are different for each operating system, but the content of the file is the same.

   a. Find the `ISFAgents` file that must be modified.
      - HP-UX Run this command: `cd /sbin`
      - Linux Solaris UNIX Run this command: `cd /etc`

   b. Run the command: `find . -name "*ISFAgents*"`

      Note: This step might return multiple files with various prefixes in the name. Some files might link to other files and might reflect your change to the original file. You do not have to edit the linked files. The main file is typically located in the `rc.d/init.d/ISFAgents` directory.

   c. Change the content of the file. The file contains information such as these lines:

      ```
      #!/bin/sh
      # chkconfig: 2345 85 60
      # description: Information Services Framework server.
      IS_INIT_D=true;export IS_INIT_D
      "/opt/IBM/InformationServer/ASBNode/bin/NodeAgents.sh" "$@"
      ```

      Change as follows:

      ```
      #!/bin/sh
      # chkconfig: 2345 85 60
      # description: Information Services Framework server.
      IS_INIT_D=true;export IS_INIT_D
      /usr/bin/su - dsadm -c "/opt/IBM/InformationServer/ASBNode/bin/NodeAgents.sh $*"
      ```

      Note: If you did not install InfoSphere DataStage or InfoSphere Information Analyzer, in place of `dsadm` in the file, specify the alternate user that was selected in step 2 on page 93.

6. Log in as a system administrator with root access.
7. Change to the `/opt/IBM/InformationServer/ASBNode/bin` directory.
8. Run this command to stop the node agents:

   ```
   ./NodeAgents.sh stop
   ```

   Note: If you use IBM InfoSphere Information Services Director, verify that all related jobs are stopped. Typically, stopping the node agents stops all InfoSphere Information Services Director jobs.

9. Remove any remaining `*.out`, `*.err`, and `*.pid` files from the `/opt/IBM/InformationServer/ASBNode` and `/opt/IBM/InformationServer/ASBNode/bin` directories.
10. If InfoSphere DataStage and InfoSphere Information Analyzer are not installed, change the ownership of the `/opt/IBM/InformationServer/ASBNode` directory to the trusted user that was selected in step 2 on page 93. To change the ownership, run this command:

    ```
    chown -R user /opt/IBM/InformationServer/ASBNode
    ```

    where *user* is the trusted user.

11. Log in as dsadm or as the user that you selected in step 2 on page 93.
12. Change to the following directory:

    ```
    /opt/IBM/InformationServer/ASBNode/bin
    ```

13. Run the following command to start the node agents:

    ```
    ./NodeAgents.sh start
    ```

What to do next

To ensure that your system is configured correctly, run the following commands. If the commands succeed, restart your system. Then run the commands again to make sure that the startup scripts were correctly modified.

- If the default ports for logging and ASB agents are 31531 and 31533, as specified during the initial installation, run this command:

  ```
  netstat –a | grep 3153
  ```

  If the agents are not running, you must stop and start the node agents again.
- Run the following command to verify that the agents are up and running as the specified user:

  ```
  ps –ef | grep Agent
  ```

Audit logging configuration

The Auditing service creates an audit trail of security-related events. These events include all security-related settings changes and user login and logout operations. You can configure which audit events to log and how much information to include based on your auditing requirements.

The auditing configuration is controlled by a properties file. You can restrict access to this properties file by using file system permission settings. This allows you to restrict the role of auditing configuration to select users or groups. Security auditing trails assist in the detection of access to controlled information and application usage. Monitoring and analysis of the logged audit information can lead to improvements in the control of data access and the prevention of malicious or careless unauthorized access to sensitive data or configuration settings. The monitoring of application and individual user access, including system administration actions, provides an historic record of activity. This information allows you to adjust user or group security roles to enable or prevent access to application features. This information can also assist in showing compliance with corporate security policies.

The following events log audit records:

- Creation and removal of users and groups
- Assignment or removal of a user from a group
- User password changes (does not log the password)
- Changes to security roles assigned to users or groups
- Changes to user or group permissions on a project and the associated project-level security roles that are assigned
- Changes to mapped engine credentials
- User login
- User logout
- Session termination
- Session timeout
- Changes to audit logging configuration settings

See “Types of audit events” on page 96 for more information about these events.

Configuration file

An auditing configuration file (`ISauditing.properties`) is installed in the classes directory of the IBM InfoSphere Information Server profile in IBM WebSphere Application Server. The default location is `WebSphere\AppServer\profiles\InfoSphere\classes`. This file is where you configure which audit events are logged and how much information to retain. You can keep the auditing configuration file in its default location or you can move it to another directory. You can set file system write permissions on the file or its folder to restrict who can change the auditing configuration settings.

Refer to "Configuring the audit configuration file" on page 101 for more information about the configuration file.

Audit log files

The default values in the auditing configuration file causes the audit log files to be created in the `logs` directory of the InfoSphere Information Server profile in IBM WebSphere Application Server. The default location is `Websphere\AppServer\profiles\InfoSphere\logs` with the name `ISauditLog_0.log`. If the `logs` directory does not exist, the audit log file is created in the directory of the application server where InfoSphere Information Server is installed.

Refer to "Audit logs" on page 104 for more information about the log files.

Types of audit events

The Auditing service provides groups of events that log audit records.

The following groups of audit events are logged:

- User and group management
- User, group, and project security role assignments
- Engine credential mapping
- User session management
- Audit configuration

User and group management events:

User and group management consists of the following events: creation and removal of users and groups, user group membership changes, and user credential changes.

User and group management events can be logged only if the User Registry Configuration is set to **InfoSphere Information Server User Registry**. These events cannot be logged when the User Registry Configuration is set to **Application Server Registry** such as when configured to use LDAP or the local operating system for user authentication. Those configurations manage users and groups through external tools so that IBM InfoSphere Information Server is not involved in the management of these resources and is not aware when changes are made.

The following event messages are logged with parameters that describe the subjects that are changed or created. The *(caller)* indicated in each message is the user ID of the caller to this event method:

ADD_USER *(caller)*: **UserID=**"*xxx*", **LastName=**"*xxx*", **FirstName=**"*xxx*"

Logged when a new user is created in the InfoSphere Information Server console, Web console, or DirectoryCommand command line tool. New users created through the DirectoryAdmin command line tool on the server do not log an audit event. However, these users cannot log in to InfoSphere Information Server until they are assigned at least the SuiteUser Security Role through the InfoSphere Information Server console or Web console. This security assignment is audited. The DirectoryAdmin command line tool is available on the server side installation that has restricted access. This command cannot be executed on a client side installation.

ADD_GROUP *(caller)*: **GroupID=***"xxx"*, **GroupName=***"xxx"*
Logged when a group is created in the InfoSphere Information Server console, Web console, or DirectoryCommand command line tool.

DELETE_USERS *(caller)*: **UserIDs=***"xxx, yyy"*
Logged when users are deleted through the InfoSphere Information Server console or Web console. Deleting ALL USERS through the DirectoryAdmin command line tool on the server does not log an audit event. This is not a typical action and is used only in a recovery type operation.

DELETE_GROUPS *(caller)*: **GroupIDs=***"xxx, yyy"*
Logged when groups are deleted through the InfoSphere Information Server console or Web console. Deleting ALL GROUPS through the DirectoryAdmin command line tool on the server does not log an audit event. This is not a typical action and is used only in a recovery type operation.

ADD_USERS_TO_GROUPS *(caller)*: **UserIDs=***"xxx, yyy"*, **GroupIDs=***"xxx, yyy"*
Logged when users are added to groups in the InfoSphere Information Server console, Web console, or DirectoryCommand command line tool.

DELETE_USERS_FROM_GROUPS *(caller)*: **UserIDs=***"xxx, yyy"*, **GroupIDs=***"xxx, yyy"*
Logged when users are removed from groups in the InfoSphere Information Server console or Web console.

CHANGE_PASSWORD *(caller)*: **UserID=***"xxx"*
Logged when the Change Password action is used in the InfoSphere Information Server console or Web console to change the password of the user who is currently logged in.

SET_CREDENTIAL *(caller)*: **UserID=***"xxx"*
Logged when a password is changed for any user by an administrator in the InfoSphere Information Server console or Web console. Changing a user's password through the DirectoryAdmin command line tool on the server does not log an audit event.

REMOVE_CREDENTIAL *(caller)*: **UserIDs=***"xxx, yyy"*
Logged when a password is cleared for one or more users.

User, group, and project security role assignment events:

The user, group, and project security role assignments consist of the following events: creation or deletion of a security role, assignment and removal of security roles to users or groups, and assignment or removal of users or groups and roles to a project.

The following event messages are logged with parameters that describe the subjects that are changed or created. The *(caller)* indicated in each message is the user ID of the caller to this event method:

ADD_ROLE *(caller)*: **RoleID=***"xxx"*
: Logged when a new security role is created. Because security roles are internally created by IBM InfoSphere Information Server, these audit events can occur only during a maintenance release installation that includes new roles, if any.

DELETE_ROLES *(caller)*: **RoleIDs=***"xxx, yyy"*
: Logged when a security role is deleted. This audit event does not occur because there is no user interface to delete a security role.

ASSIGN_GROUP_ROLES *(caller)*: **GroupIDs=***"xxx, yyy"*, **RoleIDs=***"xxx, yyy"*
: Logged when security roles are assigned to groups in the InfoSphere Information Server console, Web console, or **DirectoryCommand** command line tool.

ASSIGN_USER_ROLES *(caller)*: **UserIDs=***"xxx, yyy"*, **RoleIDs=***"xxx, yyy"*
: Logged when security roles are assigned to users in the InfoSphere Information Server console, Web console, or **DirectoryCommand** command line tool.

REVOKE_GROUP_ROLES *(caller)*: **GroupIDs=***"xxx, yyy"*, **RoleIDs=***"xxx, yyy"*
: Logged when security roles are deleted from groups in the InfoSphere Information Server console or Web console.

REVOKE_USER_ROLES *(caller)*: **UserIDs=***"xxx, yyy"*, **RoleIDs=***"xxx, yyy"*
: Logged when security roles are deleted from users in the InfoSphere Information Server console or Web console.

ASSIGN_PROJECT_USER_ROLES *(caller)*: **Project=***"xxx"*, **UserIDs=***"xxx, yyy"*, **RoleIDs=***"xxx, yyy"*
: Logged when users and associated project security roles are assigned to project permissions in the IBM InfoSphere DataStage Administrator, InfoSphere Information Server console, or IBM InfoSphere FastTrack client.

ASSIGN_PROJECT_GROUP_ROLES *(caller)*: **Project=***"xxx"*, **GroupIDs=***"xxx, yyy"*, **RoleIDs=***"xxx, yyy"*
: Logged when groups and associated project security roles are assigned to project permissions in the InfoSphere DataStage Administrator, InfoSphere Information Server console, or IBM InfoSphere FastTrack client.

REVOKE_PROJECT_USER_ROLES *(caller)*: **Project=***"xxx"*, **UserIDs=***"xxx, yyy"*, **RoleIDs=***"xxx, yyy"*
: Logged when project security roles are changed for a user or when users are removed from a project's permissions in the InfoSphere DataStage Administrator, InfoSphere Information Server console, or IBM InfoSphere FastTrack client.

REVOKE_PROJECT_GROUP_ROLES *(caller)*: **Project=***"xxx"*, **GroupIDs=***"xxx, yyy"*, **RoleIDs=***"xxx, yyy"*
: Logged when project security roles are changed for a group or when groups are removed from a project's permissions in the InfoSphere DataStage Administrator, Information Server console, or IBM InfoSphere FastTrack client.

REVOKE_PROJECT_ALL_ROLES *(caller)*: **Project=***"xxx"*
: Logged when all security roles assigned to a project are removed.

Engine credential mapping events:

The engine credential mapping consists of the following events: assignment and removal of credentials to IBM InfoSphere DataStage suite users and assignment of default credentials for an IBM InfoSphere Information Server engine when mapping credentials using the Engine Credentials panel of the IBM InfoSphere Information Server Web console.

The following event messages are logged with parameters that describe the subjects that are changed or created. The *(caller)* indicated in each message is the user ID of the caller to this event method:

`ADD_DATASTAGE_CREDENTIAL` *`(caller)`*`: `**`UserIDs=`***`"xxx, yyy"`*`, `**`DSServer=`***`"xxx"`*`, `**`Username=`***`"xxx"`*
: Logged when a mapped credential is set for one or more suite users in the IBM InfoSphere Information Server Web console.

`SET_DEFAULT_DATASTAGE_CREDENTIAL` *`(caller)`*`: `**`DSServers=`***`"xxx, yyy"`*`, `**`Username=`***`"xxx"`*
: Logged when default engine credentials are set in the Engine Configuration in the IBM InfoSphere Information Server Web console.

`REMOVE_DATASTAGE_CREDENTIAL` *`(caller)`*`: `**`UserIDs=`***`"xxx, yyy"`*`,  `**`DSServer=`***`"xxx"`*
: Logged when a mapped credential is cleared for one or more suite users in the IBM InfoSphere Information Server Web console.

`REMOVE_DEFAULT_DATASTAGE_CREDENTIAL` *`(caller)`*`: `**`DSServers=`***`"xxx, yyy"`*
: Logged when default engine credentials are cleared in the Engine Configuration in the IBM InfoSphere Information Server Web console.

`DATASTAGE_CREDENTIAL_MAPPING_DISABLED` *`(caller)`*`: `**`DSServer=`***`"xxx"`*
: Logged when **Share User Registry** is selected in the Engine Configuration in the IBM InfoSphere Information Server Web console. With this setting, InfoSphere DataStage users are authenticated to the operating system of the server engine using the same credentials they used to log in to the InfoSphere DataStage client application.

`DATASTAGE_CREDENTIAL_MAPPING_ENABLED` *`(caller)`*`: `**`DSServer=`***`"xxx"`*
: Logged when **Share User Registry** is cleared in the Engine Configuration in the IBM InfoSphere Information Server Web console. This restores the use of the mapped credentials for InfoSphere Information Server engine authentication.

User session management events:

User session management consists of the following events: user login and logout, direct session termination, and session expiration.

The following event messages are logged with parameters that describe the subjects that are involved. The *(caller)* indicated in each message is the user ID of the caller to this event method:

`LOGIN` *`(caller)`*`: `**`UserID=`***`"xxx"`*`, `**`Client=`***`"xxx"`*`, `**`Origin=`***`"xxx"`*`, `**`SessionID=`***`"xxx"`*
: Logged when a user logs in to an IBM InfoSphere Information Server client application or command line tool or when an internal process logs in to InfoSphere Information Server to perform an operation. This action creates an InfoSphere Information Server session. **`UserID`** is the userid used to authenticate with the server. In some cases, this userid value indicates a special trusted userid reserved for use by InfoSphere Information Server. This type of login is for performing some scheduled or system-initiated operation. **`Client`** indicates the type of application that initiated the login. **`Origin`** indicates the host name of the system from which the login originated. **`SessionID`** is a unique alphanumeric value that unambiguously associates this login session with a LOGOUT, SESSION_TERMINATED, or

SESSION_EXPIRED audit event, or with log messages associated with this session in other diagnostic logs. If this event is configured for LOG LEVEL=INFO, the system user login events are filtered out and not logged. These types of log ins are for InfoSphere Information Server internal operations performed for various tasks. An example of a system user login event is a LOGIN event with a **UserID**=*InformationServerSystemUser*. These events typically occur every 30 minutes as part of a scheduler activity but can occur for other operations at other times.

LOGOUT *(caller)*: **UserID=***"xxx"*, **Client=***"xxx"*, **Origin=***"xxx"*, **SessionID=***"xxx"*

Logged when a user or process explicitly logs out of an active InfoSphere Information Server session. This event might not occur when an application abnormally terminates, such as when the Web browser is closed with an active InfoSphere Information Server Web console or when a session is terminated by an administrator or times out (in which case a SESSION_TERMINATED or SESSION_EXPIRED event is logged). **UserID** is the authenticated userid that initially created this session. **Client** indicates the type of application that uses this session. **Origin** indicates the host name of the system from which the login originated. **SessionID** is the same value that was logged with the corresponding LOGIN event to uniquely identify this session. If this event is configured for LOG LEVEL=INFO, then logouts from system user sessions are filtered out and not logged. These types of log outs are for InfoSphere Information Server internal operations performed for various tasks.

SESSION_TERMINATED *(caller)*: **UserID=***"xxx"*, **Client=***"xxx"*, **Origin=***"xxx"*, **SessionID=***"xxx"*

Logged when an InfoSphere Information Server session is disconnected by an administrator in the IBM InfoSphere Information Server Web console. If Disconnect All is selected, or multiple sessions are selected, each disconnected session is logged as a separate audit event. Only active sessions that are terminated log an audit event. Sessions that have already expired are ignored because they have been previously logged with a SESSION_EXPIRED audit event. **UserID** is the authenticated userid that initially created this session. **Client** indicates the type of application that uses this session. **Origin** indicates the host name of the system from which the login originated. **SessionID** is the same value that was logged with the corresponding LOGIN event to uniquely identify this session.

SESSION_EXPIRED: SessionID=*"xxx"*

Logged when an idle InfoSphere Information Server session times out and is terminated. The timeout is based on the **Inactive Session Timeout** value configured in **Global Session Properties** of Session Management in the IBM InfoSphere Information Server Web console. **SessionID** is the same value that was logged with the corresponding LOGIN event to uniquely identify this session. Additional information about this session is not available at this time to be logged. To determine the actual client application and userid associated with this session, find the corresponding LOGIN event with the same **SessionID** value.

Audit configuration events:

Auditing configuration consists of the following events: auditing properties file location, audit file configuration settings, and audit event settings.

The following event messages are logged with parameters that describe the audit configuration settings used. These messages are logged when the application server starts and the auditing service is initialized.

AUDITING_CONFIGURATION_FILE: Path=*"xxx"*

Logged when IBM WebSphere Application Server starts and the Auditing Service is initialized. **Path** indicates the location and name of the auditing configuration file that is used to initialize and configure auditing support.

AUDITING_CONFIGURATION_SETTINGS: Path=*"xxx"*, Name=*"xxx"*, MaxSize=*"xxx"*, Count=*"xxx"*, Format=*"xxx"*, Append=*"xxx"*

Logged when WebSphere Application Server starts and the Auditing Service is initialized. **Path** indicates the location where audit log files are created. **Name** is the pattern configured for the log file name. **MaxSize** is the maximum size in bytes that each log file can grow to. **Count** is the maximum number of files created before recycling. **Format** is the format of the audit log file. **Append** indicates whether new records are appended or a new file is created when the Auditing service is initialized.

AUDITING_EVENT_SETTINGS: xxx=*"yyy"*, xxx=*"yyy"*

Logged when WebSphere Application Server starts and the Auditing Service is initialized. This event message includes a comma delimited list of all auditing event types and the current log level setting for each where **xxx** is the event type and **yyy** is the log level. Typical log levels are **ALL**, **INFO**, or **OFF**. **ALL** indicates that all events of this type are always logged. **OFF** indicates that no events of this type will be logged. Any other value will filter which messages are logged for that event type. Each message is assigned a specific log level by IBM InfoSphere Information Server. Only **INFO** and **FINE** levels are currently assigned to messages. Messages assigned at a lower level than **INFO**, which includes messages assigned a log level of **FINE**, are not logged if the event type is configured for **INFO**. The only event types that currently have FINE level log messages are LOGIN and LOGOUT events. Refer to "User session management events" on page 99 for more information about which messages are assigned which log levels.

Configuring the audit configuration file

Use the `ISauditing.properties` file to configure which audit events are logged and to configure the audit log file itself such as the location, name, maximum size, and number of cycled files to keep. By default, the file is located in the classes directory of the IBM InfoSphere Information Server profile in IBM WebSphere Application Server. The default location is `WebSphere\AppServer\profiles\InfoSphere\classes`. The file is read during the Auditing service initialization when the application server starts up, so changes to the configuration settings take effect only after the application server restarts.

Audit configuration values

The `ISauditing.properties` file contains the following default settings. The default values are used if the properties file is missing, if a value from the properties file is missing, or if an invalid value is configured.

auditing.enable = true

Enables or disables auditing. Setting this value to *false* disables all further logging and ignores all other settings in the configuration file.

audit.file.path = logs

Location where to create the audit log file. The WebSphere Application Server process owner must have write access to this directory. A relative path is considered to be off the InfoSphere Information Server profile directory of WebSphere Application Server. Use the forward slash (/) as the path separator.

audit.file.name = ISauditLog_%g.log

Audit file name. A pattern consisting of a string that includes the following special components that will be replaced at run time:

- *%g* - Generation number to distinguish rotated logs. This is replaced by a numeric value with 0 being the latest log file (the one currently being written to) and then sequential values increasing with each additional log file created as the file reaches the maximum size. The larger the number, the older the log file.
- %% - Translates to a single percent sign (%).

audit.file.size = 10000000

Maximum size of each audit log file in bytes. If this value is equal to zero, there is no limit to the size of the log file. All audit records continue to be logged to the same file. Use 0 with caution. When a logged audit record causes the file size to exceed this configured size, the log file cycles, and a new log file is created.

audit.file.count = 5

Maximum number of audit log files to rotate through. If this value is greater than 1 and the *%g* generation parameter is not included in the audit file name (**`audit.file.name`**), a numeric value preceded by a period is added to the end of the file name. Existing audit files are renamed when a new file is created. The higher the generation number, the older the log file. The count includes the 0 generation file. For example,

`audit.file.count=`*5* allows the creation of file name `ISauditLog_0.log` through `ISauditLog_4.log`.

audit.file.format = Simple

Format of the audit file. Possible values are *Simple*, *XML*, or *both*. If configured as *both*, the file name extension specified in `audit.file.name` will be replaced with .xml for the XML log files or added to the end of the file name if no extension is specified.

audit.file.append = true

Audit file append setting. Setting this value to *false*, forces the creation of a new 0 generation log file each time WebSphere Application Server restarts. Setting this value to *true* continues appending to the existing 0 generation file until the maximum size is reached. If the **`audit.file.format =`** *XML*, set the value to *false* to prevent multiple XML file headers from being written to the file.

The following list shows the valid audit event types and the log level setting for each:

audit.event.ADD_USER = ALL
audit.event.ADD_GROUP = ALL
audit.event.DELETE_USERS = ALL
audit.event.DELETE_GROUPS = ALL
audit.event.ADD_USERS_TO_GROUPS = ALL
audit.event.DELETE_USERS_FROM_GROUPS = ALL
audit.event.CHANGE_PASSWORD = ALL
audit.event.SET_CREDENTIAL = ALL
audit.event.REMOVE_CREDENTIAL = ALL
audit.event.ADD_ROLE = ALL
audit.event.DELETE_ROLES = ALL
audit.event.ASSIGN_GROUP_ROLES = ALL
audit.event.ASSIGN_USER_ROLES = ALL

audit.event.REVOKE_GROUP_ROLES = ALL
audit.event.REVOKE_USER_ROLES = ALL
audit.event.ASSIGN_PROJECT_USER_ROLES = ALL
audit.event.ASSIGN_PROJECT_GROUP_ROLES = ALL
audit.event.REVOKE_PROJECT_USER_ROLES = ALL
audit.event.REVOKE_PROJECT_GROUP_ROLES = ALL
audit.event.REVOKE_PROJECT_ALL_ROLES = ALL
audit.event.ADD_DATASTAGE_CREDENTIAL = ALL
audit.event.SET_DEFAULT_DATASTAGE_CREDENTIAL = ALL
audit.event.REMOVE_DATASTAGE_CREDENTIAL = ALL
audit.event.REMOVE_DEFAULT_DATASTAGE_CREDENTIAL = ALL
audit.event.DATASTAGE_CREDENTIAL_MAPPING_DISABLED = ALL
audit.event.DATASTAGE_CREDENTIAL_MAPPING_ENABLED = ALL
audit.event.LOGIN = ALL
audit.event.LOGOUT = ALL
audit.event.SESSION_TERMINATED = ALL
audit.event.SESSION_EXPIRED = ALL
audit.event.AUDITING_CONFIGURATION_FILE = ALL
audit.event.AUDITING_CONFIGURATION_SETTINGS = ALL
audit.event.AUDITING_EVENT_SETTINGS = ALL

Enables the audit events to be included in the logs. Set the desired log level for each audit event to *ALL*, *INFO*, or *OFF*.

- *ALL* enables logging of all audit records produced by the system for the configured event type. If an **audit.event** type is missing from the configuration file or is configured for an invalid log level, it defaults to a log level of *ALL*
- *INFO* filters which audit records get logged by ignoring requests to log all audit records defined with a log level lower than *INFO*. The only audit records produced with a log level lower than *INFO* are **LOGIN** and **LOGOUT** event records for System User logins and logouts. These system user events are not initiated by a user but are from internal operations within InfoSphere Information Server. Setting **audit.event.LOGIN**=*INFO* suppresses logging of the system user login events.
- *OFF* suppresses logging of all audit records produced by the system for the configured event type.

Audit configuration security

The Audit service creates an audit trail of security-related events. You can secure the audit configuration and logs to prevent unauthorized tampering.

Set the path where audit files are located in the `ISauditing.properties` configuration file. If configured as a relative path, the specified directory must exist off the IBM InfoSphere Information Server profile directory under IBM WebSphere Application Server. If configured in another location, the full path must be specified and you must ensure that the WebSphere Application Server process owner has file system write permission to that directory.

By default, the location of the `ISauditing.properties` configuration file is in the InfoSphere Information Server profile of WebSphere Application Server in the classes directory. This is the same location as the `isfconfig.properties` file. A new key is added to the `isfconfig.properties` file to indicate the location of the `ISauditing.properties` file. This key and default value are: **auditing.config.file** = *classes/ISauditing.properties*.

To ensure additional secure access to the auditing configuration settings, you can relocate the `ISauditing.properties` configuration file to another location and update the **`audit.config.file`** value in the `isfconfig.properties` file to specify the full path and auditing property file name of the new location. A relative path assumes a root of the InfoSphere Information Server Profile directory under WebSphere Application Server. Use the forward slash (/) for the path separator. The WebSphere Application Server process owner must have read access to the file wherever it is relocated. However, write access can be restricted to individuals who have the authority to modify the auditing configuration. To detect any attempt to spoof the official configuration, the location of the audit configuration file used is logged as an audit event in the audit file at WebSphere Application Server startup. If someone with write access to the `isfconfig.properties` file changes the location or name of the auditing configuration file, this information is logged.

The absence of the configured auditing properties file or a pointer to an invalid or partial file defaults to logging events using the default audit configuration settings. A missing property key or an invalid value for a key results in the default value being used for that property key. These precautions are in place to prevent an unauthorized circumvention of audit logging.

Auditing in a clustered environment

There are information and auditing considerations that are specific to a clustered IBM WebSphere Application Server configuration.

In a clustered configuration, a separate set of audit log files are created on each managed node, each containing the specific events processed by that node. You must gather and collate these files to sort events by timestamp if you want a single, chronological audit trail.

If a managed node in the cluster is configured with multiple application servers, each application server creates and manages its own audit log files. Because all application servers on a single managed node share the same auditing configuration settings, it is not possible to configure different file names or locations for each application server. The first application server that is initialized uses (or creates) the 0 generation audit file by the configured log file name. Subsequent application servers initialized on that same managed node create a 0 generation audit file by the same name, but with a period and a sequential number appended to the end of the file name.

For clustered configurations that include multiple managed nodes, any changes to the auditing configuration settings must be made to the `ISauditing.properties` file in the classes directory of each node's profile. If this properties file has been relocated or renamed, the appropriate changes must be made to the `isfconfig.properties` file on each managed node denoting the path and file name of the custom auditing configuration file.

Audit logs

The audit log file can be created in simple text format or in XML format. The size of each audit record varies depending on the event, the string length, and the number of parameters associated with the audit event and the format selected.

Audit events are recorded in the audit log file on the IBM InfoSphere Information Server Services tier. Logging in to or out of any InfoSphere Information Server client application or command-line tool logs events. Audit events are logged for managing the users, groups, or security roles in the InfoSphere Information Server console, InfoSphere Information Server Web console, the IBM InfoSphere FastTrack client, and the InfoSphere DataStage Administrator client. DirectoryCommand and other command-line tools also log events.

Log file sizing

The log file size and the number of log files to keep are based on the settings in the audit configuration file. With the default values of **audit.file.size=***10000000* and **audit.file.count=***5*, when the file grows to approximately 10 million bytes, it is renamed to ISauditLog_1.log. A new ISauditLog_0.log file is created to hold the most recent audit events. Up to five files can be created, at which time, when the current ISauditLog_0.log file exceeds the size limit of 10 million bytes, the oldest log is deleted, the other files are renamed, and a new file with generation number 0 is created. The higher the generation number of the file, the older the audit events.

Log file formats

The simple text format allows easy viewing and the XML format is convenient for formatting or parsing the logs with custom applications. Both file formats can be created at the same time. The XML format produces larger audit records and thus fewer events per file than the simple text format. When XML format is used, the Java logger creates the XML file and adds the XML file header. The logger is initialized on each startup of IBM WebSphere Application Server at which time the XML header is written to the file. If the logger is configured for **audit.file.append=***true*, the XML header is written to the current end of the file causing multiple XML file header elements to appear in the log file making the XML malformed. Configure **audit.file.append** as *false* when configured for **audit.file.format**=*xml* or *both*. However, **audit.file.append=***false* means the current 0 generation log file is renamed to generation 1 and a new generation 0 log file is created each time IBM WebSphere Application Server restarts. So certain log files might not be the full maximum size in length when you use **audit.file.append=***false*.

Example: Simple text format:

You can create the audit log in a simple text format.

Sample audit log

The following example is an excerpt from an audit log in simple text format. For illustration purposes, this example shows each event on more than one line. In an actual audit log file, each event is logged to a single line.

```
2009-04-04 03:58:25.357 EST INFO: LOGIN (admin): UserID="admin", Client="Console",
Origin="florence", SessionID="ED1D522D-D4DD-493D-80D9-0806EB4D907D"

2009-04-04 04:01:50.154 EST INFO: ADD_USER (admin): UserID="ppds1",
LastName="PersonDS1", FirstName="Project"

2009-04-04 04:01:50.387 EST INFO: SET_CREDENTIAL (admin): UserID="ppds1"

2009-04-04 04:01:50.654 EST INFO: ASSIGN_USER_ROLES (admin): UserIDs="ppds1",
RoleIDs="SuiteUser, DataStageAdmin, DataStageUser"

2009-04-04 04:11:41.325 EST INFO: ADD_GROUP (admin): GroupID="regPeeps",
GroupName="Regular People"

2009-04-04 04:11:42.895 EST INFO: ASSIGN_GROUP_ROLES (admin): GroupIDs="regPeeps",
RoleIDs="SuiteUser"
```

```
2009-04-04 04:12:01.343 EST INFO: ASSIGN_GROUP_ROLES (admin): GroupIDs="regPeeps",
RoleIDs="DataStageUser"

2009-04-04 04:12:12.784 EST INFO: LOGIN (admin): UserID="admin",
Client="DataStage Administrator", Origin="florence",
SessionID="FDBB462B-0381-4B14-80F9-82DDF060437A"

2009-04-04 04:12:45.336 EST INFO: REVOKE_PROJECT_GROUP_ROLES (admin):
Project="FLORENCE/test", GroupIDs="regPeeps", RoleIDs="DataStageProductionManager,
DataStageDeveloper, DataStageSuperOperator, DataStageOperator"

2009-04-04 04:12:45.779 EST INFO: ASSIGN_PROJECT_GROUP_ROLES (admin):
Project="FLORENCE/test", GroupIDs="regPeeps", RoleIDs="DataStageOperator"
```

Example: XML format:

You can create the audit log in XML format.

Sample audit log

The following example is an excerpt from an audit log in an XML format:

```
<?xml version="1.0" encoding="windows-1252" standalone="no"?>
<!DOCTYPE log SYSTEM "logger.dtd">
<log>
<record>
<date>2009-05-21T00:00:00</date>
<millis>1242878400161</millis>
<sequence>323</sequence>
<logger>com.ibm.is.auditing</logger>
<level>FINE</level>
<thread>51</thread>
<message>LOGIN (InformationServerSystemUser): UserID="InformationServerSystemUser",
Client="Server client", Origin="SwordIFS",
SessionID="34BADF15-ABA5-4FA9-AA7D-68D26402C2D6"</message>
<key>info.audit.session.LOGIN</key>
<catalog>com.ascential.acs.auditing.server.impl.resources.StringData</catalog>
<param>InformationServerSystemUser</param>
<param>InformationServerSystemUser</param>
<param>Server client</param>
<param>SwordIFS</param>
<param>34BADF15-ABA5-4FA9-AA7D-68D26402C2D6</param>
</record>
<record>
<date>2009-05-21T00:00:04</date>
<millis>1242878404458</millis>
<sequence>324</sequence>
<logger>com.ibm.is.auditing</logger>
<level>FINE</level>
<thread>51</thread>
<message>LOGOUT (InformationServerSystemUser): UserID="InformationServerSystemUser",
Client="Server client", Origin="SwordIFS",
SessionID="34BADF15-ABA5-4FA9-AA7D-68D26402C2D6"</message>
<key>info.audit.session.LOGOUT</key>
<catalog>com.ascential.acs.auditing.server.impl.resources.StringData</catalog>
<param>InformationServerSystemUser</param>
<param>InformationServerSystemUser</param>
<param>Server client</param>
<param>SwordIFS</param>
<param>34BADF15-ABA5-4FA9-AA7D-68D26402C2D6</param>
</record>
<record>
<date>2009-05-21T16:24:50</date>
<millis>1242937490614</millis>
<sequence>351</sequence>
<logger>com.ibm.is.auditing</logger>
```

```
<level>INFO</level>
<thread>46</thread>
<message>LOGIN (admin): UserID="admin", Client="Web Console", Origin="localhost",
SessionID="1C8D5CFD-269B-400F-8187-788D93681B09"</message>
<key>info.audit.session.LOGIN</key>
<catalog>com.ascential.acs.auditing.server.impl.resources.StringData</catalog>
<param>admin</param>
<param>admin</param>
<param>Web Console</param>
<param>localhost</param>
<param>1C8D5CFD-269B-400F-8187-788D93681B09</param>
</record>
<record>
<date>2009-05-21T16:27:24</date>
<millis>1242937644348</millis>
<sequence>370</sequence>
<logger>com.ibm.is.auditing</logger>
<level>INFO</level>
<thread>46</thread>
<message>ADD_USER (admin): UserID="ppds1", LastName="PersonDS1",
FirstName="Project"</message>
<key>info.audit.user.ADD_USER</key>
<catalog>com.ascential.acs.auditing.server.impl.resources.StringData</catalog>
<param>admin</param>
<param>ppds1</param>
<param>PersonDS1</param>
<param>Project</param>
</record>
<record>
<date>2009-05-21T16:27:24</date>
<millis>1242937644645</millis>
<sequence>371</sequence>
<logger>com.ibm.is.auditing</logger>
<level>INFO</level>
<thread>46</thread>
<message>ASSIGN_USER_ROLES (admin): UserIDs="ppds1", RoleIDs="SuiteUser"</message>
<key>info.audit.role.ASSIGN_USER_ROLES</key>
<catalog>com.ascential.acs.auditing.server.impl.resources.StringData</catalog>
<param>admin</param>
<param>ppds1</param>
<param>SuiteUser</param>
</record>
<record>
<date>2009-05-21T16:27:24</date>
<millis>1242937644801</millis>
<sequence>372</sequence>
<logger>com.ibm.is.auditing</logger>
<level>INFO</level>
<thread>46</thread>
<message>ASSIGN_USER_ROLES (admin): UserIDs="ppds1", RoleIDs="DataStageAdmin,
DataStageUser"</message>
<key>info.audit.role.ASSIGN_USER_ROLES</key>
<catalog>com.ascential.acs.auditing.server.impl.resources.StringData</catalog>
<param>admin</param>
<param>ppds1</param>
<param>DataStageAdmin, DataStageUser</param>
</record>
<record>
<date>2009-05-21T16:27:24</date>
<millis>1242937644973</millis>
<sequence>373</sequence>
<logger>com.ibm.is.auditing</logger>
<level>INFO</level>
<thread>46</thread>
<message>SET_CREDENTIAL (admin): UserID="ppds1"</message>
<key>info.audit.user.SET_CREDENTIAL</key>
<catalog>com.ascential.acs.auditing.server.impl.resources.StringData</catalog>
```

```
<param>admin</param>
<param>ppds1</param>
</record>
<record>
<date>2009-05-21T16:27:53</date>
<millis>1242937673989</millis>
<sequence>375</sequence>
<logger>com.ibm.is.auditing</logger>
<level>INFO</level>
<thread>45</thread>
<message>LOGOUT (admin): UserID="admin", Client="Web Console", Origin="localhost",
SessionID="1C8D5CFD-269B-400F-8187-788D93681B09"</message>
<key>info.audit.session.LOGOUT</key>
<catalog>com.ascential.acs.auditing.server.impl.resources.StringData</catalog>
<param>admin</param>
<param>admin</param>
<param>Web Console</param>
<param>localhost</param>
<param>1C8D5CFD-269B-400F-8187-788D93681B09</param>
</record>
</log>
```

Administrator account password changing

After running the installation program, you can change the passwords for administrator accounts that you created during installation.

You can change the following administrator account passwords:

- An IBM InfoSphere Information Server administrator password.
- An IBM WebSphere Application Server administrator password.
- IBM InfoSphere Information Analyzer analysis database owner account credentials.
- IBM DB2 passwords.

Changing an IBM InfoSphere Information Server administrator password

You can change an InfoSphere Information Server administrator account password after installation.

About this task

InfoSphere Information Server administrator accounts are the main administration accounts for InfoSphere Information Server.

You can create as many InfoSphere Information Server administrator accounts as you need. Any users with the suite administrator role assigned to them are InfoSphere Information Server administrators. The IBM WebSphere Application Server default administrator account also has this role.

Procedure

1. Change the password. Use the method that matches your user registry setup:

Option	Description
If your system uses the operating system user registry	Change the password by using standard operating system utilities.

Option	Description
If your system uses a Lightweight Directory Access Protocol (LDAP) user registry	Change the password by using LDAP utilities.
If your system uses the internal user registry	Change the password by using the InfoSphere Information Server Web console. See "Changing passwords by using the IBM InfoSphere Information Server Web console."

2. If the credentials that you change are also the WebSphere Application Server or IBM DB2 administrator credentials, run the **AppServerAdmin** command to propagate the new password across your configuration. See "IBM WebSphere Application Server administrator password changing" on page 110 and "Metadata repository database owner password changing" on page 113.

Changing passwords by using the IBM InfoSphere Information Server Web console

If your system is configured to use the internal user registry, change passwords by using the IBM InfoSphere Information Server Web console.

Before you begin

To change a suite administrator or suite component user password, you need suite-level administrator authority.

About this task

Use this procedure to change passwords if all of the following statements are true:

- Your system is configured to use the internal user registry.

  If your system is configured to use the local operating system user registry, do not use this procedure. Instead, change passwords by using standard operating system utilities.

  If your system uses a Lightweight Directory Access Protocol (LDAP) user registry, do not use this procedure. Instead, change passwords by using LDAP utilities.
- If your installation includes a stand-alone implementation of IBM WebSphere Application Server, you are changing a password other than the WebSphere Application Server administrator password.

  If you are changing the WebSphere Application Server administrator password in a stand-alone implementation, do not use this procedure. Instead, follow the procedure in "IBM WebSphere Application Server administrator password changing" on page 110.
- You can log in to the IBM InfoSphere Information Server Web console.

  If you cannot log in to the Web console, use the **DirectoryAdmin** tool as described in "DirectoryAdmin tool" on page 119 to change passwords.

Individual users can also change their passwords by logging in to the IBM InfoSphere Information Server Web console and clicking the **Change Password** link.

Procedure

1. Log in to the IBM InfoSphere Information Server Web console. Use an account with administrator access.
2. In the Web console, click the **Administration** tab.
3. In the navigation pane, select **Users and Groups** > **Users**.
4. In the Users pane, select the check box for the WebSphere Application Server administrator.
5. In the right pane, click **Open User**.
6. In the **Password** field, type the new password.
7. In the **Confirm Password** field, retype the new password.
8. In the lower right corner of the page, click **Save and Close**.

IBM WebSphere Application Server administrator password changing

The procedure for changing the WebSphere Application Server administrator password differs depending on whether WebSphere Application Server clustering is implemented within your installation.

Changing the IBM WebSphere Application Server administrator password in a stand-alone installation

You can change the WebSphere Application Server administrator password after installation. Follow this procedure if your implementation includes a stand-alone installation of WebSphere Application Server.

Procedure

1. Stop WebSphere Application Server. See "Stopping IBM WebSphere Application Server (Windows)" on page 199 or "Stopping IBM WebSphere Application Server (Linux, UNIX)" on page 201.
2. Log in to the services tier computer. Use an account with administrator credentials.

   Linux UNIX The account must have execution permission for the tools in the `ASBServer/bin` directory within the InfoSphere Information Server installation directory.
3. Change the password:
   - If your system is configured to use the internal user registry, change the password by using the **`DirectoryAdmin`** command:

     Windows

     ```
     C:\IBM\InformationServer\ASBServer\bin\DirectoryAdmin.bat -user
        -userid wasadmin -password password
     ```

     Linux UNIX

     ```
     /opt/IBM/InformationServer/ASBServer/bin/DirectoryAdmin.sh -user
        -userid wasadmin -password password
     ```

     In the command, *wasadmin* is the WebSphere Application Server administrator user name, and *password* as the new password.

     Do not use the IBM InfoSphere Information Server Web console to change the WebSphere Application Server administrator password.
   - If your system uses an operating system user registry, change the password by using standard operating system utilities.
   - If your system uses a Lightweight Directory Access Protocol (LDAP) user registry, change the password by using LDAP utilities.

4. Run the **AppServerAdmin** command with the -was option to update the credentials across your configuration.

   For example, to update your configuration with user name wasadmin1 and password mypassword, run the following command:

   - Linux UNIX

     ```
     /opt/IBM/InformationServer/ASBServer/bin/AppServerAdmin.sh -was
        -user wasadmin1 -password mypassword
     ```

   - Windows

     ```
     C:\IBM\InformationServer\ASBServer\bin\AppServerAdmin.bat -was
        -user wasadmin1 -password mypassword
     ```

   This command updates the WebSphere Application Server user registry configuration. You do not have to use the WebSphere Application Server administrative console.
5. Restart WebSphere Application Server. See "Starting IBM WebSphere Application Server (Linux, UNIX)" on page 206 or "Starting IBM WebSphere Application Server (Windows)" on page 204.
6. When restarting WebSphere Application Server, regardless of the method that you use, the startup method returns before the application server is fully started. To verify that WebSphere Application Server has started, monitor the log files. See "Checking the status of IBM WebSphere Application Server startup (stand-alone installation)" on page 210.

Changing the IBM WebSphere Application Server administrator password in a clustered installation

You can change the WebSphere Application Server administrator password after installation. Follow this procedure if WebSphere Application Server clustering is implemented for your installation.

Procedure

1. Make sure that all node agents are running. See Checking the status of IBM WebSphere Application Server node agents.
2. Change the user password:
   - If your system uses the internal user registry, change the password by using the IBM InfoSphere Information Server Web console. See "Changing passwords by using the IBM InfoSphere Information Server Web console" on page 109.
   - If your system uses a Lightweight Directory Access Protocol (LDAP) user registry, change the password by using LDAP utilities.
3. Log in to the computer that hosts the WebSphere Application Server Deployment Manager.
   - Linux UNIX Log in as root.
   - Windows Use an account with administrator privileges.
4. Make sure that all node agents are still running after the password change. See "Checking the status of IBM WebSphere Application Server node agents" on page 213.
5. Stop the Deployment Manager. See "Stopping the IBM WebSphere Application Server Deployment Manager (Windows)" on page 200 or "Stopping the IBM WebSphere Application Server Deployment Manager (Linux, UNIX)" on page 202. Do not stop the node agents.

6. On the computer that hosts the WebSphere Application Server Deployment Manager, run the **AppServerAdmin** command with the `-was` option to update the credentials across your configuration.

   For example, to update your configuration with user name `wasadmin1` and password `mypassword`, run the following command:

   - Linux UNIX

     ```
     /opt/IBM/InformationServer/ASBServer/bin/AppServerAdmin.sh -was
        -user wasadmin1 -password mypassword
     ```

     To run this command, use an account that has execution permission for the tools in the `ASBServer/bin` directory.

   - Windows

     ```
     C:\IBM\InformationServer\ASBServer\bin\AppServerAdmin.bat -was
        -user wasadmin1 -password mypassword
     ```

   This command updates the WebSphere Application Server user registry configuration. You do not have to use the WebSphere Application Server administrative console.

7. Restart the Deployment Manager. See "Starting the IBM WebSphere Application Server Deployment Manager (Windows)" on page 205 or "Starting the IBM WebSphere Application Server Deployment Manager (Linux, UNIX)" on page 208.

   You do not have to restart the node agents and application servers. They are automatically synchronized with the Deployment Manager after it is running. The synchronization process takes a few seconds. After the synchronization is complete, you can safely stop or start node agents or application servers when necessary.

8. If one of the node agents was not running when you changed the password in step 2 on page 111, the user cannot start that node agent because the passwords no longer match at the Deployment manager and node level. To fix this problem, run the WebSphere Application Server **syncNode** command to synchronize the node with the Deployment manager. To run the **syncNode** command:

   a. Log into the node.

   b. Run the **syncNode** command.

      - Linux UNIX

        ```
        opt/IBM/WebSphere/AppServer/profiles/custom_profile/bin/syncNode.sh
           dmgr_hostname dmgr_port -user was_admin_username -password
           was_admin_password
        ```

      - Windows

        ```
        C:\IBM\WebSphere\AppServer\profiles\custom_profile\bin\syncNode
           dmgr_hostname dmgr_port -user was_admin_username -password
           was_admin_password
        ```

      In the command:

      - *dmgr_hostname* is the host name of the computer where the Deployment Manager is running.
      - *dmgr_port* is the port number of the Deployment Manager (default is 8879).
      - *was_admin_username* is the user name of the WebSphere Application Server administrator.
      - *was_admin_password* is the administrator password.

c. Restart the node agent. See "Starting IBM WebSphere Application Server (Windows)" on page 204 and "Starting IBM WebSphere Application Server (Linux, UNIX)" on page 206.

9. When restarting WebSphere Application Server, regardless of the method that you use, the startup method returns before the application server is fully started. To verify that WebSphere Application Server has started, monitor the log files. See "Checking the status of IBM WebSphere Application Server startup (clustered installation)" on page 211.

Metadata repository database owner password changing

The procedure for changing the metadata repository database owner password differs depending upon whether IBM WebSphere Application Server clustering is implemented within your installation.

Changing the metadata repository database owner password in a stand-alone IBM WebSphere Application Server installation

You can change the metadata repository database owner account password after installation. Follow this procedure if your implementation includes a stand-alone installation of WebSphere Application Server.

About this task

Follow this procedure to change the metadata repository database owner password. The metadata repository database owner user name cannot be changed.

Procedure

1. Stop WebSphere Application Server. See "Stopping IBM WebSphere Application Server (Windows)" on page 199 or "Stopping IBM WebSphere Application Server (Linux, UNIX)" on page 201.
2. Change the metadata repository database owner account password on the computer:
   - If your database is implemented within IBM DB2, change the password by using standard operating system utilities.
   - If your database is implemented within another database management system, refer to the database management system documentation for information about changing the password.
3. Log in to the services tier computer. Use an account with administrator credentials.

   Linux UNIX The account must have execution permission for the tools in the `ASBServer/bin` directory within the InfoSphere Information Server installation directory.
4. Run the **AppServerAdmin** command with the `-db` option to update the password across your configuration.

   For example, to update your configuration with password `mypassword`, run the following command:

   - Linux UNIX

     ```
     /opt/IBM/InformationServer/ASBServer/bin/AppServerAdmin.sh -db -user xmeta1
        -password mypassword
     ```

   - Windows

     ```
     C:\IBM\InformationServer\ASBServer\bin\AppServerAdmin.bat -db -user xmeta1
        -password mypassword
     ```

This command updates the WebSphere Application Server user registry configuration. You do not have to use the WebSphere Application Server administrative console.

5. Restart WebSphere Application Server. See "Starting IBM WebSphere Application Server (Linux, UNIX)" on page 206 or "Starting IBM WebSphere Application Server (Windows)" on page 204.
6. When restarting WebSphere Application Server, regardless of the method that you use, the startup method returns before the application server is fully started. To verify that WebSphere Application Server has started, monitor the log files. See "Checking the status of IBM WebSphere Application Server startup (stand-alone installation)" on page 210.

Changing the metadata repository database owner password in a clustered installation

You can change the metadata repository database owner password after installation. Follow this procedure if IBM WebSphere Application Server clustering is implemented within your installation.

About this task

Follow this procedure to change the metadata repository database owner password. The metadata repository database owner user name cannot be changed.

Procedure

1. Stop all WebSphere Application Server processes, including the Deployment Manager, node agents and cluster members.
2. Change the metadata repository database owner account password on the computer:
   - If your database is implemented within IBM DB2, change the password by using standard operating system utilities.
   - If your database is implemented within another database management system, refer to the database management system documentation for information about changing the password.
3. Log in to the computer that hosts the WebSphere Application Server Deployment Manager.
   - Linux UNIX Log in as root.
   - Windows Use an account with administrator privileges.
4. Run the **AppServerAdmin** command with the `-db` option to update the credentials across your configuration.

   For example, to update your configuration with password `mypassword`, run the following command:
   - Linux UNIX

     ```
     /opt/IBM/InformationServer/ASBServer/bin/AppServerAdmin.sh -db -user xmeta1
        -password mypassword
     ```

     To run this command, use an account that has execution permission for the tools in the `ASBServer/bin` directory.
   - Windows

     ```
     C:\IBM\InformationServer\ASBServer\bin\AppServerAdmin.bat -db -user xmeta1
        -password mypassword
     ```

This command updates the WebSphere Application Server user registry configuration. You do not have to use the WebSphere Application Server administrative console.

5. Restart the Deployment Manager. See "Starting the IBM WebSphere Application Server Deployment Manager (Windows)" on page 205 or "Starting the IBM WebSphere Application Server Deployment Manager (Linux, UNIX)" on page 208.

   Do not restart the node agents and cluster members yet.
6. On each managed node, run the WebSphere Application Server **syncNode** command to resynchronize the nodes with the Deployment Manager:
   - Linux UNIX
     ```
     opt/IBM/WebSphere/AppServer/profiles/custom_profile/bin/syncNode.sh
        dmgr_hostname dmgr_port -user was_admin_username -password
        was_admin_password
     ```
   - Windows
     ```
     C:\IBM\WebSphere\AppServer\profiles\custom_profile\bin\syncNode
        dmgr_hostname dmgr_port -user was_admin_username -password
        was_admin_password
     ```

   In the command:
   - *dmgr_hostname* is the host name of the computer where the Deployment Manager is running.
   - *dmgr_port* is the port number of the Deployment Manager (default is 8879).
   - *was_admin_username* is the user name of the WebSphere Application Server administrator.
   - *was_admin_password* is the administrator password.
7. Restart the node agents and cluster members. See "Starting IBM WebSphere Application Server (Windows)" on page 204 or "Starting IBM WebSphere Application Server (Linux, UNIX)" on page 206.
8. When restarting WebSphere Application Server, regardless of the method that you use, the startup method returns before the application server is fully started. To verify that WebSphere Application Server has started, monitor the log files. See "Checking the status of IBM WebSphere Application Server startup (clustered installation)" on page 211.

Changing the analysis database owner account credentials

You can change your IBM InfoSphere Information Analyzer analysis database owner account credentials after installation.

Before you begin

You must have InfoSphere Information Analyzer administrator authority.

About this task

The analysis database owner account has ownership authority over the analysis database. By default, the user name of this account is `iauser`.

Follow this procedure to change the analysis database owner account credentials.

Procedure

1. Change the analysis database owner credentials on the computer. If your database is implemented within IBM DB2, change the credentials by using

standard operating system utilities. If your database is implemented within another database management system, refer to the database management system documentation for information about changing the credentials.

2. Log in to the IBM InfoSphere Information Server console. Specify a user name and password of an account with InfoSphere Information Analyzer administrator authority.
3. From the **Home** navigator menu in the console, select **Configuration** > **Analysis Settings**. If these items do not appear in the **Home** menu, log out of the console and log in with an account with InfoSphere Information Analyzer administrator authority.
4. Click the **Analysis Database** tab.
5. Change the information in the fields.
6. Click **Save All**.

Changing IBM DB2 passwords

You can change the DB2 administrator account or other DB2 account passwords after installation.

About this task

The DB2 administrator account owns the DB2 database management system for IBM InfoSphere Information Server. DB2 runs under this account.

Linux UNIX An InfoSphere Information Server installation also requires a non-fenced instance user and a fenced user.

Procedure

To change a DB2 password, see the IBM DB2 documentation:

- DB2 9.5: publib.boulder.ibm.com/infocenter/db2luw/v9r5/topic/com.ibm.db2.luw.admin.sec.doc/doc/c0007253.html
- DB2 9.7: publib.boulder.ibm.com/infocenter/db2luw/v9r7/topic/com.ibm.db2.luw.admin.sec.doc/doc/c0007253.html

Administration commands and tools

Use the IBM InfoSphere Information Server administration commands and tools to complete security administration tasks, such as updating new credentials across your configuration and searching for users in a configured user registry, and to troubleshoot your security configuration.

AppServerAdmin command

If you change the default IBM WebSphere Application Server administration credentials or the repository credentials, use the AppServerAdmin command to update the new credentials across your configuration.

Location

Issue the command from the *root_directory*/InformationServer/ASBServer/bin directory.

The **AppServerAdmin** command has two options: -was and -db.

-was option

If you change the default IBM WebSphere Application Server administrator user name and password, this command updates the user name and password throughout the WebSphere Application Server configuration.

You can change the WebSphere Application Server default administrator user name and password in the following cases:

- If you change the WebSphere Application Server user registry configuration in the WebSphere Application Server Administrative Console and the server ID and password for the current user registry is changed or a new user registry is configured.
- If the WebSphere Application Server default administrator is deleted from the configured user registry or if that user's password is changed or expired.

You must run the -was option each time the WebSphere Application Server default administrator credentials are changed.

-db option

The repository user credentials are used by WebSphere Application Server to connect to the IBM InfoSphere Information Server metadata repository. The user account for the metadata repository is typically called "xmeta." If you change the repository user password, this command updates the password throughout WebSphere Application Server and the InfoSphere Information Server configuration.

You must run this command each time the repository user password is changed.

You cannot change the user name of this account.

Syntax

The command syntax for the -was option:

Windows

```
AppServerAdmin.bat -was -user username [-password password]
```

Linux UNIX

```
AppServerAdmin.sh -was -user username [-password password]
```

The command syntax for the -db option:

Windows

```
AppServerAdmin.bat -db -user repository_userid [-password repository_password]
```

Linux UNIX

```
AppServerAdmin.sh -db -user repository_userid [-password repository_password]
```

Parameters

`-was`

Updates the new user credentials throughout the WebSphere Application Server configuration. WebSphere Application Server does not need to be up and running to run this command. If WebSphere Application Server is running, it must be restarted after this command is run.

-user The new WebSphere Application Server user name.

-password
Optional. The new password of the WebSphere Application Server user. You can provide the password as plain text or as a string that has been encrypted with the encrypt command. You will be prompted for a password if one is not provided.

-db
Updates the new user password throughout the WebSphere Application Server configuration and the InfoSphere Information Server configuration. WebSphere Application Server does not need to be up and running to run this command. If WebSphere Application Server is running, it must be restarted after you run this command.

-user The repository user name.

Important: Do not change the user name by using this command.

-password
Optional. The new password of the repository user. You can provide the password as plain text or as a string that has been encrypted with the encrypt command. You will be prompted for a password if one is not provided.

Changing the RunAs user of the ASB_managers.ear application

An administrative role other than the default primary IBM WebSphere Application Server administrator role can be used to deploy and undeploy applications in IBM InfoSphere Information Services Director. You can use this option if you have security concerns about propagating the primary WebSphere Application Server administrator credentials

About this task

As part of the procedure to switch to a Lightweight Directory Access Protocol (LDAP) registry, you must run the **`AppServerAdmin -was`** command to propagate the primary WebSphere Application Server administrator user credentials to a few places in WebSphere Application Server (for example, the RunAs user within `ASB_managers.ear`).

For more information about WebSphere Application Server administrative roles, go to the following documentation:

- Administrative roles in 7.0
- Administrative roles in 8.0

If you have concerns about IBM InfoSphere Information Server propagating the primary WebSphere Application Server Administrator credentials, you can use other roles, such as the Deployer role, which has fewer permissions than the WebSphere Application Server Administrator role, to accomplish tasks as the RunAs user within `ASB_managers.ear`.

Procedure

To update the RunAs role of the `ASB_managers.ear` application with a user that has Deployer administrative privileges:

1. In the WebSphere administrative console, click **Users and Groups** > **Administrative user roles** > **Add...**

2. Assign an existing user the WebSphere deployer role:
   - In 6.1: Type the user to be assigned this role and then select **Deployer**.
   - In 7.0: Select **Deployer** and search for the user to be assigned this role. Select and add that user to the **Mapped to role** list.

   Click **OK** and **Save**.
3. Go to the User RunAs roles page in the administrative console:
   - In 6.1: Click **Applications** > **Enterprise Applications** > **ASB_managers.ear** > **User RunAs roles**.
   - In 7.0: Click **Applications** > **Application Type** > **WebSphere enterprise applications** > **ASB_managers.ear** > **User RunAs roles**.
4. Update the RunAs role of the `ASB_managers.ear` application:
   a. Remove the current RunAs user.
   b. Add the user that was configured in step 2 as the new RunAs user.
5. Restart WebSphere Application Server.

Results

You can use this configuration to deploy and undeploy applications in IBM InfoSphere Information Services Director.

DirectoryAdmin tool

The DirectoryAdmin tool provides a command-line interface that you can use to interact with the metadata repository and complete a variety of IBM InfoSphere Information Server user registry tasks. You should only use this tool and these commands for advanced configuration, such as configuring the InfoSphere Information Server internal user registry or cleaning up the repository if you are changing a registry configuration on a system that has been in production, or for troubleshooting or recovery tasks.

The tool is available in the ASBServer\bin directory of your InfoSphere Information Server directory, for example C:\IBM\InformationServer\ASBServer\bin.

Creating a user in the IBM InfoSphere Information Server user registry

Use the following command to create a user in the IBM InfoSphere Information Server internal user registry. This command should only be used for troubleshooting or recovery, or if it is specified in other procedures in the documentation.

IBM WebSphere Application Server does not need to be running to run this command.

Syntax

Windows

```
DirectoryAdmin.bat -user -userid username -password password
```

Linux UNIX

```
DirectoryAdmin.sh -user -userid username -password password
```

Parameters

The following parameters are available for the **DirectoryAdmin** command.

-user
The command line option that specifies that this task is to work with users.

-userid *username*
Specifies the name of the user that you want to create.

-password *password*
Specifies the password of the user that you want to create. You can provide the password as plain text or as a string that has been encrypted with the encrypt command.

Resetting the password of a user

If you use the IBM InfoSphere Information Server internal user registry, you can use this command to set or reset the credentials of a user. This command should only be used for troubleshooting or recovery, or if it is specified in other procedures in the documentation.

IBM WebSphere Application Server does not need to be running to run this command.

Syntax

Windows

```
DirectoryAdmin.bat -user -userid username -password password
```

Linux UNIX

```
DirectoryAdmin.sh -user -userid username -password password
```

Parameters

The following options are available for the **DirectoryAdmin** command.

-user
The command line option that specifies that this task is to work with users.

-userid *username*
Specifies the name of the user whose password needs to be reset.

-password *password*
Specifies the user password that you want to set. You can provide the password as plain text or as a string that has been encrypted with the encrypt command.

Assigning the IBM InfoSphere Information Server administrator role to a user

Use the following command to add the IBM InfoSphere Information Server Suite Administrator role to a user. Only use this command if you are fixing your user registry configuration, or if it is specified in other procedures in the documentation.

IBM WebSphere Application Server does not have to be running to run this command unless the -checkid option is also used.

Syntax

Windows

```
DirectoryAdmin.bat -user -userid username  -admin [-checkid]
```

Linux UNIX

```
DirectoryAdmin.sh -user -userid username -admin [-checkid]
```

Parameters

The following parameters are available for the **DirectoryAdmin** command.

-user
The command line option that specifies that this task is to work with users.

-userid *username*
Specifies the name of the user that you want to make a Suite Administrator. Note that the user ID syntax differs depending on the user registry that is configured in IBM WebSphere Application Server (local, operating system, LDAP, or custom).

Local OS on UNIX
Provide the UNIX user ID, such as "isadmin."

Local OS on Windows
COMPUTER_NAME\userid, such as MYSERVER\isadmin where MYSERVER is the name of the Microsoft Windows computer. If the Microsoft Windows computer is registered in a domain, the syntax might also be DOMAIN_NAME\userid. The name must be uppercase.

LDAP The full distinguished name (DN) must be provided in the proper case. For more information on retrieving the DN, refer to “LDAP distinguished name (DN) determination” on page 49.

Note: To add users with long and composed user IDs, like LDAP fully qualified names, surround the user IDs with double quotation marks when using the command.

-admin
Assigns the InfoSphere Information Server Suite Administrator role to the user.

-checkid
(Optional) Ensures that the given user ID exists before applying the Suite Administrator role to that user.

Checking to see if a user exists in the configured user registry

Use this command to see if a user name exists in the configured user registry. Use this command only for troubleshooting or recovery, or if it is specified in other procedures in the documentation.

- IBM WebSphere Application Server must be running to run this command.

Syntax

Windows

```
DirectoryAdmin.bat -user -userid username -checkid [-admin]
```

Linux UNIX

```
DirectoryAdmin.sh -user -userid username -checkid [-admin]
```

Parameters

The following options are available for the **DirectoryAdmin** command.

-user
The command line option that specifies that this task is to work with users.

-userid *username*
Specifies the name of the user to search for. Note that the user ID syntax differs depending on the user registry that is configured in IBM WebSphere Application Server (local, OS, LDAP, or custom).

Local OS on UNIX
Provide the UNIX user ID, such as "isadmin."

Local OS on Windows
COMPUTER_NAME\userid, such as MYSERVER\isadmin where MYSERVER is the name of the Microsoft Windows computer. If the Microsoft Windows computer is registered in a domain, the syntax might also be DOMAIN_NAME\userid. The name must be uppercase.

LDAP The full distinguished name (DN) must be provided in the proper case. For more information on retrieving the DN, refer to "LDAP distinguished name (DN) determination" on page 49.

Note: To include users with long and composed user IDs, like LDAP fully qualified names, surround the user IDs with double quotation marks when using the command.

-checkid
Ensures that the given user ID already exists in the configured directory before creating or updating the user in the security directory.

-admin
(Optional) Assigns theIBM InfoSphere Information Server Suite Administrator role to the user, if the user exists.

Configuring the IBM InfoSphere Information Server user registry to use the internal user registry

Use this command to point the IBM InfoSphere Information Server user registry to the internal user registry.

IBM WebSphere Application Server does not need to be running to run this command. If IBM WebSphere Application Server is up and running, it must be restarted for these changes to take effect.

Use this command only for troubleshooting. If there are some errors in the auto-configuration mechanism during IBM WebSphere Application Server startup, you can use the **DirectoryAdmin** command to force the provider change. This command can be used as a recovery or resolution mechanism.

Syntax

Windows

```
DirectoryAdmin.bat -set_provider ISF
```

Linux UNIX

```
DirectoryAdmin.sh -set_provider ISF
```

Parameters

The following options are available for the **DirectoryAdmin** command.

-set_provider
The command line option that sets a provider to active.

ISF
Indicates that the tool should configure the InfoSphere Information Server user registry to use the internal user registry.

Configuring the IBM InfoSphere Information Server user registry to use the application server registry

Use this command to point the IBM InfoSphere Information Server user registry to the application server registry.

The application server does not need to be running to run this command. If it is running, it must be restarted for these changes to take effect.

Use this command only for troubleshooting. If there are errors in the auto-configuration mechanism during application server startup, you can use the **DirectoryAdmin** command to force the provider change. This command can be used as a recovery or resolution mechanism.

Syntax

Windows

```
DirectoryAdmin.bat -set_provider J2EE
```

Linux UNIX

```
DirectoryAdmin.sh -set_provider J2EE
```

Parameters

The following options are available for the **DirectoryAdmin** command.

-set_provider
The command line option that sets a provider to active.

J2EE
Indicates that the tool should configure the InfoSphere Information Server user registry to use the IBM WebSphere Application Server user registry.

Deleting users from the IBM InfoSphere Information Server user registry

Use this command to delete users from the IBM InfoSphere Information Server user registry. This command deletes all the users in the InfoSphere Information Server user registry. If you are using an external user registry, such as LDAP or a local operating system user registry, this command deletes only the proxies of the users that were created in the internal repository and their role assignments.

IBM WebSphere Application Server does not need to be running to run this command. This command should only be used for troubleshooting or recovery.

You can use this command when changing the user registry configuration after the system has been in production. This command removes all security settings for all users. You can then safely switch to a different user registry.

Attention: This command deletes all the users in the InfoSphere Information Server user registry. From the IBM InfoSphere Information Server Web console, you can delete users selectively.

Use this command only for troubleshooting.

Syntax

Windows

```
DirectoryAdmin.bat -delete_users
```

Linux UNIX

```
DirectoryAdmin.sh -delete_users
```

Parameters

The following options are available for the **DirectoryAdmin** command.

-delete_users
Deletes all the users in the IBM InfoSphere Information Server user registry.

Deleting groups from the IBM InfoSphere Information Server user registry

Use this command to delete groups from the IBM InfoSphere Information Server user registry. This command deletes all the groups in the InfoSphere Information Server user registry. If you are using an external registry, such as LDAP or a local operating system user registry, this command deletes only the proxies of the groups that were created in the internal repository and their role assignments.

IBM WebSphere Application Server does not need to be running to run this command. This command should only be used for troubleshooting or recovery.

You can use this command when changing the user registry configuration after the system has been in production. This command removes all security settings for all groups which allows for a safe switch to a different registry.

Attention: This command deletes all the groups in the InfoSphere Information Server user registry. From the IBM InfoSphere Information Server Web console, you can delete groups selectively.

Use this command only for troubleshooting.

Syntax

Windows

```
DirectoryAdmin.bat -delete_groups
```

Linux UNIX

```
DirectoryAdmin.sh -delete_groups
```

Parameters

The following options are available for the **DirectoryAdmin** command.

-delete_groups

Deletes all the groups in the InfoSphere Information Server user registry.

Searching for users in the configured user registry

Use this command to specify a user name criterion and return a list of users that meet that criterion in the configured user registry. This command should only be used for troubleshooting or recovery.

IBM WebSphere Application Server must be running to run this command.

Syntax

Windows

```
DirectoryAdmin.bat -user -search -idp userid_pattern -max_count maxcount
```

Linux UNIX

```
DirectoryAdmin.sh -user -search -idp userid_pattern -max_count maxcount
```

Parameters

The following options are available for the **DirectoryAdmin** command.

-user

The command line option that specifies that this task is to work with users.

-search

Specifies that the **DirectoryAdmin** command should perform a search.

-idp

Specifies the user name pattern to search for. The pattern must contain either the full user name or, if the full user name is not used, a part of the user name with a prepended or appended asterisk (*). For example, you might want to use `DirectoryAdmin -user -search -idp a* -max_count 4` to search for all users whose user names start with "a".

-max_count

Limits the number of users that are returned as part of the search.

Searching for groups in the configured user registry

Use this command to specify a group name criterion and return a list of groups that meet that criterion in the configured user registry. This command should only be used for troubleshooting or recovery.

IBM WebSphere Application Server must be running to run this command.

Syntax

Windows

```
DirectoryAdmin.bat -group -search -idp groupid_pattern -max_count maxcount
```

Linux UNIX

```
DirectoryAdmin.sh -group -search -idp groupid_pattern -max_count maxcount
```

Parameters

The following options are available for the **DirectoryAdmin** command.

-group
The command line option that specifies that this task is to work with groups.

-search
Specifies that the **DirectoryAdmin** command should perform a search.

-idp
Specifies the group ID pattern to search for. The pattern must contain either the full group name or, if the full group name is not used, a part of the group name with a prepended or appended asterisk (*). For example, you might want to set `-idp group*` to return all groups that start with group, such as "groupname" or "grouplogin".

-max_count
Limits the number of groups that are returned as part of the search.

Displaying user details

Use this command to query for detailed information about a user, such as the security roles that are assigned to the user name or the groups that the user belongs to. This command should only be used for troubleshooting or recovery.

IBM WebSphere Application Server must be running to run this command.

Syntax

Windows

```
DirectoryAdmin.bat -user -userid username -display
```

Linux UNIX

```
DirectoryAdmin.sh -user -userid username -display
```

Parameters

The following options are available for the **DirectoryAdmin** command.

-user
The command line option that specifies that this task is to work with users.

-userid *username*
Specifies the name of the user to look up the details for. Note that the user ID syntax differs depending on the user registry that is configured in IBM WebSphere Application Server (local, OS, LDAP, or custom).

Local OS on UNIX
Provide the UNIX user ID, such as "isadmin."

Local OS on Windows
COMPUTER_NAME\userid, such as MYSERVER\isadmin where MYSERVER is the name of the Microsoft Windows computer. If the Microsoft Windows computer is registered in a domain, the syntax might also be DOMAIN_NAME\userid. The name must be uppercase.

LDAP The full distinguished name (DN) must be provided in the proper case. For more information on retrieving the DN, refer to “LDAP distinguished name (DN) determination” on page 49.

Note: To add users with long and composed user ids, like LDAP fully qualified names, surround the user IDs with double quotation marks when using the tool.

-display
Displays the detailed information associated with that user name.

Troubleshooting examples that use the DirectoryAdmin tool

If you run into the following problems while administering IBM InfoSphere Information Server, you can use the **DirectoryAdmin** tool to help you determine and address the problem.

Lost user password

This example is only applicable to internal user registry configuration. From the command line, enter the following command:

```
DirectoryAdmin.bat -user -userid admin_user_id -password new_password
```

You can provide the password as plain text or as a string that has been encrypted with the encrypt command.

Note: If you have multiple InfoSphere Information Server Suite Administrators, you could instead ask one of these administrators to log in to the IBM InfoSphere Information Server Web console and reset the lost user password in the IBM InfoSphere Information Server Web console.

User registry configuration is not working and you cannot log in to the IBM InfoSphere Information Server Web console

To reset the user registry configuration to use the IBM InfoSphere Information Server internal user registry:

1. From the command line, set the InfoSphere Information Server to use the InfoSphere Information Server internal user registry by entering the following command:
   ```
   DirectoryAdmin.bat -set_provider ISF
   ```
2. Create the default InfoSphere Information Server Suite administrator user by using the following command:
   ```
   DirectoryAdmin.bat -user -userid default_isadmin_userid -password password
    -admin
   ```
   You can provide the password as plain text or as a string that has been encrypted with the encrypt command.
3. Log in to the IBM WebSphere Application Server Administrator console and set the IBM WebSphere Application Server user registry to the InfoSphere Information Server internal user registry.

To reset the user registry configuration to use the IBM WebSphere Application Server user registry:

1. Ensure that the IBM WebSphere Application Server user registry is configured to use the local operating system user registry or LDAP user registry of your choice.
2. From the command line, set InfoSphere Information Server to use the IBM WebSphere Application Server user registry by entering the following command:
   ```
   DirectoryAdmin.bat -set_provider J2EE
   ```
3. Assign a user the necessary security roles to make that user the default InfoSphere Information Server Suite Administrator by entering the following command:
   ```
   DirectoryAdmin.bat -user -userid default_isadmin -admin
   ```

The default InfoSphere Information Server administrator user syntax differs depending on the user registry that is configured in IBM WebSphere Application Server.

Local OS on UNIX
Provide the UNIX user ID, such as "isadmin."

Local OS on Windows
COMPUTER_NAME\userid, such as MYSERVER\isadmin where MYSERVER is the name of the Microsoft Windows computer. If the Microsoft Windows computer is registered in a domain, the syntax might also be DOMAIN_NAME\userid. The name must be uppercase.

LDAP The full distinguished name (DN) must be provided in the proper case. For more information on retrieving the DN, refer to "LDAP distinguished name (DN) determination" on page 49.

DirectoryCommand tool

You can use the DirectoryCommand tool to run some of the same operations that can be from the Web Console. With the tool, you can add users, add groups, add users to groups, add roles to users, add roles to groups, and so on.

Usage

On the services tier, the command is installed in the following location:

- Linux UNIX *IS_install_path*`/ASBServer/bin/DirectoryCommand.sh`
- Windows *IS_install_path*`\ASBServer\bin\DirectoryCommand.bat`

On the client, the command is installed in the following location:

- Linux UNIX *IS_install_path*`/ASBNode/bin/DirectoryCommand.sh`
- Windows *IS_install_path*`\ASBNode\bin\DirectoryCommand.bat`

The command has many options that control a separate operation. The tool supports multiple operations to be specified at the same time. For example, you could specify both the -add_user and the -add_group options in the same run of the tool. The operations can be run in batch by using the -file option, or they can be run in a script. See the examples at the bottom of this topic.

Syntax

```
DirectoryCommand
  [-{add_ds_credentials | ds_cred} value]
  [-{add_group | a_grp} value]*
  [-{add_user | a_usr} value]*
  [-{add_users_group | a_usr_grp} value]*
  [-{assign_group_roles | grp_roles} value]*
  [-{assign_user_roles | usr_roles} value]*
  [-{assign_project_group_roles | proj_grp_roles} value]
  [-{assign_project_user_roles | proj_usr_roles} value]
  [-authfile value]
  [-{datastage_server | ds_svr} value]
  [-{delete_group | del_grp} value]
  [-{delete_user | del_usr} value]
  [-{details | det}]
  [-{file | f} value]
  [-force]
  [-{get_default_ds_credentials | get_dflt_ds_cred}]
  [-{help | ?}]
  [-host value]
```

```
[-list value]
[-{log | l} value]
[-{logerror | error} value]
[-{loginfo | info} value]
[-{loglevel | level} value]
[-{password | pwd} value]
[-port value]
[-primary]
[-{remove_group_roles | rm_grp_roles} value]
[-{remove_project_group_roles | rm_proj_grp_roles} value]
[-{remove_project_user_roles | rm_proj_usr_roles} value]
[-{remove_user_roles | rm_usr_roles} value]
[-{remove_users_group | rm_usr_grp} value]
[-{results | res} value]
[-{separator | sep} value]
[-{set_default_ds_credentials | set_dflt_ds_cred} value]
[-{set_shared_registry | shr_reg} value]
[-{sub_list_separator | sub_list_sep} value]
[-{update_group | upd_grp} value]
[-{update_user | upd_usr} value]
[-{user | usr} value]
[-{verbose | v}]
```

Value lists and sublists

Most of the operational parameters have values that consist of lists and sublists.

- A list is a set of values separated by a character, a tilde (~) by default. In some lists, the actual value assigned is determined by the position of the value in the list, such as in the -add_group and -add_user options. For each value in the list, if not all values are assigned, at least the separator character must be specified so that the position can be determined:

  ```
  ListValue1~ListValue2~~~ListValue5~~~~
  ```

  For example, the following list is used to assign add user ID, with password, job title, and email address:

  ```
  -add_user dsadm~dsadmpassword~~~DataStage administrator~~~~~~~~~dsadm@localhost
  ```

- A sublist is a set of values also separated by a character, a tilde (~) by default. Sublists differ from lists in that they are accompanied by another sublist, separated by a different character, a dollar sign ($) by default. For sublists, the values are not positional. The values of each sublist are assigned to the values of the accompanying sublists.

  ```
  Sublist1Value1~Sublist1Value2$Sublist2Value1$Sublist3Value1~Sublist3Value2
  ```

  For example, the following sublists are used to assign the roles in the right sublist to the user in the left sublist:

  ```
  -assign_user_roles adminUser$SuiteUser~DataStageAdmin
  ```

Parameters

[-{add_ds_credentials | ds_cred} *value* **]**

Maps one or more user credentials to the specified operating system user credentials for the engine, which is specified with the -datastage_server option. Specify the value as one string with the following syntax:

```
userID[~userID]*$credUserID~credPassword
```

The value must contain at least one sublist separator character ($). If multiple user IDs are specified, they are all assigned the specified credentials. The password value can be specified as plain text or as text encrypted with the encrypt command.

[-{add_group | a_grp} *value***]***

Create a group. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

```
groupId~name~groupType~webAddress
~location~officePhoneNumber~cellPhoneNumber
~pagerNumber~faxNumber~emailAddress
~businessAddress~organization
```

Each entry in the value must contain at least one separator character (~).

[-{add_user | a_usr} *value***]***

Create a user. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

```
userId~password~firstName~lastName
~title~jobTitle~homePhoneNumber~imName
~location~officePhoneNumber~cellPhoneNumber
~pagerNumber~faxNumber~emailAddress
~businessAddress~organization
```

Each entry in the value must contain at least one separator character (~). The password value can be specified as plain text or as text encrypted with the encrypt command.

[-{add_users_group | a_usr_grp} *value***]***

Add users to groups. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

```
userId[~userId]*$groupId[~groupId]*
```

The value must contain at least one sublist separator character ($). For sublists that contain multiple entries, each entry of one sublist is assigned to each entry of the other sublist.

[-{assign_group_roles | grp_roles} *value***]***

Assign roles to groups. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

```
groupId[~groupID]*$roleID[~roleID]*
```

The value must contain at least one sublist separator character ($). For sublists that contain multiple entries, each entry of one sublist is assigned to each entry of the other sublist.

[-{assign_user_roles | usr_roles} *value***]***

Assign roles to users. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

```
userId[~userId]*$roleId[~roleId]*
```

The value must contain at least one sublist separator character ($). For sublists that contain multiple entries, each entry of one sublist is assigned to each entry of the other sublist.

[-{assign_project_group_roles | proj_grp_roles} *value***]**

Assign project group roles. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

```
projectName[~projectName]*$groupId[~groupId]*$roleId[~roleId]*
```

The value must contain at least one sublist separator character ($). For sublists that contain multiple entries, each entry of each sublist is assigned to each entry of the other sublists. The projectName values are case sensitive and must be in the format of *DSServer/projectID*. You can see a list of project names by using the -list DSPROJECTS option.

[-{assign_project_user_roles | proj_usr_roles} *value***]**
Assign project user roles. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

```
projectName[~projectName]*$userId[~userId]*$roleId[~roleId]*
```

The value must contain at least one sublist separator character ($). For sublists that contain multiple entries, each entry of each sublist is assigned to each entry of the other sublists. The projectName values are case sensitive and must be in the format of *DSServer/projectID*. You can see a list of project names by using the -list DSPROJECTS option.

[-authfile *value***]**
Use the specified credentials file for the credentials of the administrator user ID running this command. Either the -authfile option or the -user and -password options are required.

[-{datastage_server | ds_svr} *value***]**
Specifies the host name of the InfoSphere Information Server engine to use when setting the shared registry and when setting and getting the default engine credentials. The value cannot contain a forward slash character (/). The value is validated against the engines that are registered with IBM InfoSphere Information Server. If the engine is not found and the -force option is not specified, then the DirectoryCommand tool cancels and exits.

[-{delete_group | del_grp} *value***]**
Delete existing groups. Specify the value as one string with the following syntax:

```
groupID[~groupID]*
```

You will be prompted to confirm the delete unless the -force option is specified. If a specified group does not exist, it will be ignored.

[-{delete_user | del_usr} *value***]**
Delete existing users. Specify the value as one string with the following syntax:

```
userID[~userID]*
```

You will be prompted to confirm the delete unless the -force option is specified. If a specified user does not exist, it will be ignored.

[-{details | det}]
Provides additional information in the output when used with the -list option for USERS and GROUPS.

[-{file | f} *value***]**
Read the commands from a file. When you specify the -file option, other specified command options are ignored. See the end of this topic for an example of how to use the -file option. If you intend to load a large number of users with the file option, break them up so that each file contains about 100 users to avoid server time outs.

[-force]
Forces operations that do not pass validation checks to continue. The following validation checks are omitted when the -force option is specified:

- The check of the value specified by the -datastage_server option.

- The check of the engine host name specified with the -get_default_ds_credentials option.
- The check of the engine host name specified with the -set_default_ds_credentials option.
- The check of the engine host name specified with the -set_shared_registry option.

The -force option also suppresses confirmation for the -delete_user and -delete_group options.

[-{get_default_ds_credentials | get_dflt_ds_cred}]
Retrieve the default credentials for the InfoSphere Information Server engine that is specified with the -datastage_server option.

[-{help | ?}]
Display usage information.

[-host *value***]**
The host computer name. The default value is localhost.

[-list *value***]**
List the existing users, groups, or roles. Specify the value as one string with the following syntax:

```
type[~type]*
```

The type values can be USERS, GROUPS, ROLES, DSPROJECTS, or ALL.

[-{log | l} *value***]**
Print all runtime output to the specified file.

[-{logerror | error} *value***]**
Print all ERROR and FATAL runtime logging messages to the specified file.

[-{loginfo | info} *value***]**
Print all INFO, WARN, DEBUG, and TRACE runtime logging messages to the specified file.

[-{loglevel | level} *value***]**
The level at which runtime logging messages are enabled.

[-{password | pwd} *value***]**
The password for the administrator user ID running this command.

[-port *value***]**
The HTTP port of the host computer. The default value is 9080.

[-primary]
Log in to the primary services host if one is available. If this option is used, the -host and -port options are ignored.

[-{remove_group_roles | rm_grp_roles} *value***]**
Removes roles from groups. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

```
groupId[~groupId]*$roleId[~roleId]*
```

The value must contain at least one sublist separator character ($). For sublists that contain multiple entries, each entry of the role sublist is removed from each entry of the group sublist.

[-{remove_project_group_roles | rm_proj_grp_roles} *value***]**
Removes project user roles. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

projectName[~*projectName*]**$groupId*[~*groupId*]**$roleId*[~*roleId*]*

For sublists that contain multiple entries, each entry of the group and role sublists are removed from each entry of the project sublist. The projectName values are case sensitive and must be in the format of *DSServer/projectID*. You can see the list of project names by using the -list DSPROJECTS option.

[-{remove_project_user_roles | rm_proj_usr_roles} *value***]**
Removes project user roles. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

projectName[~*projectName*]**$userId*[~*userId*]**$roleId*[~*roleId*]*

For sublists that contain multiple entries, each entry of the user and role sublists are removed from each entry of the project sublist. The projectName values are case sensitive and must be in the format of *DSServer/projectID*. You can see the list of project names by using the -list DSPROJECTS option.

[-{remove_user_roles | rm_usr_roles} *value***]**
Removes roles from users. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

userId[~*userId*]**$roleId*[~*roleId*]*

The value must contain at least one sublist separator character ($). For sublists that contain multiple entries, each entry of the role sublist is removed from each entry of the user sublist.

[-{remove_users_group | rm_usr_grp} *value***]**
Removes roles from groups. Multiple instances of this option can be specified. Specify the value as one string with the following syntax:

groupId[~*groupId*]**$roleId*[~*roleId*]*

The value must contain at least one sublist separator character ($). For sublists that contain multiple entries, each entry of the role sublist is removed from each entry of the group sublist.

[-{results | res} *value***]**
Print all the runtime output to the specified file.

[-{separator | sep} *value***]**
Overrides the default list separator (~). The value can be any single character.

[-{set_default_ds_credentials | set_dflt_ds_cred} *value***]**
Sets the default InfoSphere Information Server engine credentials. Specify the value as one string with the following syntax:

credUserId~credPassword

The value must contain at least one separator character (~). If only one parameter is specified, the default credentials are cleared. The credentials are set for the server specified by the -datastage_server option. The specified engine must be registered with InfoSphere Information Server. The password value can be specified as plain text or as text encrypted with the encrypt command.

[-{set_shared_registry | shr_reg} *value***]**
Sets the flag that indicates whether InfoSphere Information Server and InfoSphere DataStage share the same user registry.

[-{sub_list_separator | sub_list_sep} *value***]**
Overrides the default list separator ($). The value can be any single character.

[-{update_group | upd_grp} *value***]***

Update an existing group. Multiple instances of this option can be specified. The group being updated must exist. Specify the value as one string with the following syntax:

groupId~name~groupType~webAddress
~location~officePhoneNumber~cellPhoneNumber
~pagerNumber~faxNumber~emailAddress
~businessAddress~organization

Each entry in the value must contain at least one separator character (~). A value of '!' specified for a group setting will clear the setting.

[-{update_user | upd_usr} *value***]**

Update an existing user. Multiple instances of this option can be specified. The user being updated must exist. Specify the value as one string with the following syntax:

userId~password~firstName~lastName
~title~jobTitle~homePhoneNumber~imName
~location~officePhoneNumber~cellPhoneNumber
~pagerNumber~faxNumber~emailAddress
~businessAddress~organization

Each entry in the value must contain at least one separator character (~). A value of '!' specified for a user setting other than password will clear the setting. The password value can be specified as plain text or as text encrypted with the encrypt command.

[-{user | usr} *value***]**

The administrator user ID running this command. Either the -authfile option or the -user and -password options are required.

[-{verbose | v}]

Display detailed runtime output other than logging messages.

Writing a script to quickly add users to a typically used project

Suppose you regularly add new InfoSphere DataStage users to multiple projects with various group assignments. You could create a script for these operations:

UNIX Linux

```
#!/bin/sh
echo Adding a typical DataStage user with the default password.

npass={iisenc}HEf6s6cG+Ee6NdGDQppQNg==
nrole=DataStageUser
cmd=/opt/IBM/InformationServer/ASBNode/bin/DirectoryCommand.sh
af=/opt/IBM/InformationServer/ASBNode/conf/isadmin.credentials

echo New user ID to create:
read nuser

$cmd -authfile $af -a_usr $nuser~$npass~~~~~~~~~~~~~~
$cmd -authfile $af -usr_roles $nuser\$$nrole
$cmd -authfile $af -a_usr_grp $nuser\$dsusr~qsusr
$cmd -authfile $af -proj_usr_roles \
HOSTNAME/DSProd~HOSTNAME/DSDev~\$$nuser\$$nrole
```

Windows

```
@echo off
setlocal
```

```
echo Adding a typical DataStage user with the default password.

set npass={iisenc}HEf6s6cG+Ee6NdGDQppQNg==
set nrole=DataStageUser
set cmd=C:\IBM\InformationServer\ASBNode\bin\DirectoryCommand.bat
set af=C:\IBM\InformationServer\ASBNode\conf\isadmin.credentials

echo New user ID to create
set /p nuser="--> "

call %cmd% -authfile %af% -a_usr %nuser%~%npass%~~~~~~~~~~~~~~
call %cmd% -authfile %af% -usr_roles %nuser%$%nrole%
call %cmd% -authfile %af% -a_usr_grp %nuser%$dsusr~qsusr
call %cmd% -authfile %af% ^
-proj_usr_roles HOSTNAME/DSProd~HOSTNAME/DSDev$%nuser%$%nrole%
```

This script would create the specified user ID and assign the default password, which has been encrypted with the encrypt command and pasted into the script. (You could send e-mail with the plain text password to the user with a request to change it upon first login.) The DirectoryCommand then assigns the user to the DataStageAndQualityStageUser role. It assigns it to the dsusr and qsusr groups. And, it assigns it to the DSProd and DSDev projects on the specified InfoSphere Information Server engine. The role, groups, and projects must all have been previously created.

Using the -file option to migrate users

1. Create the list of users:

   ```
   DirectoryCommand -authfile admin.creds -host original_server
    -list ALL -results userlist.txt
   ```

2. Edit the list of users into a format that the -file option can use:

   ```
   -add_user TestOper~TempP4ss~TestOperFirst~TestOperLast~~~~~~~~~~~~;
   -add_user TestSuOper~TempP4ss~TestSuOperFirst~TestSuOperLast~~~~~~~~~~~~;
   -add_user TestProMan~TempP4ss~TestProManFirst~TestProManLast~~~~~~~~~~~~;
   -add_user adminUser~TempP4ss~adminUserFirst~adminUserLast~~~~~~~~~~~~;
   -add_user wasUser~TempP4ss~wasUserFirst~wasUserLast~~~~~~~~~~~;
   -assign_user_roles TestOper$SuiteUser~DataStageUser~FastTrackUser~GlossaryUser;
   -assign_user_roles TestSuOper$SuiteUser~DataStageUser;
   -assign_user_roles TestProMan$SuiteUser~DataStageUser;
   -assign_user_roles adminUser$SuiteUser~DataStageAdmin;
   -assign_user_roles wasUser$SuiteAdmin~DataStageAdmin;
   -add_group TestGroup~TestGroup~TestGroup~~~~~~~~~;
   -add_users_group TestOper~TestSuOper~TestProMan~adminUser$TestGroup;
   ```

3. Run the directory command to migrate the users to the new server:

   ```
   DirectoryCommand -authfile admin.creds -host new_server -file userlist.txt
   ```

Encrypt command

The encrypt command provides a method to encrypt user credentials. The encrypted strings can be stored in a credentials file or used on the command line with many IBM InfoSphere Information Server tools.

The command uses Advanced Encryption Standard (AES) 128-bit encryption as the default provider, which meets US export regulation requirements. You might also choose to provide your own password encryption algorithm.

Running the encrypt command

You run the encrypt command in a command window to encrypt text strings. The encrypted and encoded strings can then be used for user credentials in a credentials file for later use. You can also use the command to encrypt any data that you want to encrypt. You can use the provided default encryption provider, or you can set up your own custom encryption provider.

About this task

You run the encrypt command with no parameters or with the text to encrypt as the first and only parameter. The second option is less secure, especially if your shell command history is enabled. When you run the encrypt command with no parameter, you are prompted for a text string, which is hidden from the terminal.

The string that you provide is encrypted with the configured encryption provider, and the encrypted output is displayed in base64-encoded format, prefixed with an alias. You then copy and paste the encoded string–including the alias prefix–to your desired location. The location could be a credentials file or a value for the password parameter in some commands. When the string is decrypted, the alias name is used to determine the type of encryption provider that was used.

When you run the encrypt command, use the full path name. The encrypt command is located in the following locations, depending on which tiers are installed on your computer:

- Linux UNIX
  - *install_root*/InformationServer/ASBNode/bin/encrypt.sh
  - *install_root*/InformationServer/ASBServer/bin/encrypt.sh
- Windows
  - *install_root*\InformationServer\ASBNode\bin\encrypt.bat
  - *install_root*\InformationServer\ASBServer\bin\encrypt.bat

Procedure

1. Optional: If you have configured your own custom encryption provider, ensure that you have specified the provider in the appropriate `iis.crypto.site.properties` file. You must create the properties file in the `conf` directory, under the same parent directory as the encrypt command that you will run.

   Command location:
   install_root\InformationServer\ASBNode\bin\encrypt.bat
   Its properties file location:
   install_root\InformationServer\ASBNode\conf\iis.crypto.site.properties

   Command location:
   install_root\InformationServer\ASBServer\bin\encrypt.bat
   Its properties file location:
   install_root\InformationServer\ASBServer\conf\iis.crypto.site.properties

   The contents of the `iis.crypto.site.properties` file is one entry:

   ```
   iis.crypto.default.provider=class_of_custom_provider
   ```
2. Using the full path name, run the encrypt command, with or without the text to be encrypted as a parameter. If the text contains spaces, enclose it in quotation marks.
   - Running the encrypt command with the text provided on the command line:

     ```
     bash$: /opt/IBM/InformationServer/ASBNode/bin/encrypt.sh myPa$$w0rd
     bash$: {iisenc}PvqKLr7z3QOLJCQ4QhbrrA==
     ```
   - Running the encrypt command with a prompt to hide the text:

```
bash$: /opt/IBM/InformationServer/ASBNode/bin/encrypt.sh
bash$: Enter the text to encrypt:
bash$: Enter the text again to confirm:
bash$: {iisenc}PvqKLr7z3QOLJCQ4QhbrrA==
```

3. Copy the encrypted string to a credentials file or as a value to the password parameter for any of the commands that support it. For example:
   - Used in a credentials file:

     ```
     user=dsadm
     password={iisenc}PvqKLr7z3QOLJCQ4QhbrrA==
     ```

   - Used on the command line:

     ```
     AppServerAdmin -username isadmin -password {iisenc}YJD9OKOxT2otQvTQFcA1qg==
     ```

The credentials file

The credentials file contains user credentials that can be used by many IBM InfoSphere Information Server commands that support the **`-authfile`** option, such as dsjob, DirectoryCommand, and others.

Attention: Because the credentials file is used to run commands that require a password, it is essential to store the credentials file in a secure location and hide its contents. The file must not be readable, writeable, or executable by anyone other than a user or group with administrator access. Also, users that run commands that use the credentials file must have the same access as the file.

The credentials file has the following format:

- It must be encoded with your platform default character set or ASCII characters only.
- Each entry must occupy a whole line without leading and trailing white space.
- The file must contain a user and password entry, although some tools, such as **`dsjob`** support additional name-value pairs, such as domain and server.
- The name and value pairs are separated by an equals sign (=). For example:

  `name=value`
- When a value is specified in encrypted text, it must have been encrypted with the encrypt command. The encrypted string is prefixed with '{*alias*}', where *alias* is the alias of the encryption provider.
- When a value is specified in plain, non-encrypted text, the value must not start with an opening brace ({) nor contain a closing brace (}) in the plain text string.
- The value can be up to 1024 characters in length.
- You can add comment lines, which must start with the number sign (#).
- If the same key name exists multiple times in the file, the first name-value pair is used.

A sample credentials file:

```
# dsadm credentials
user=dsadm
password={iisenc}HEf6s6cG+Ee6NdGDQppQNg==
domain=[2002:920:c000:217:9:32:217:32]:9080
server=RemoteServer
```

Adding a custom encryption provider

You can create and configure your own encryption provider. If you want to provide your own encryption, you can do so by creating an implementation of the EncryptionProvider interface.

Procedure

1. In the JAR file containing your custom class, create a file named `META-INF\services\com.ibm.iis.spi.security.crypto.EncryptionProvider`, which must list the class name of your encryption provider implementation. The encryption provider is loaded as a service provider. See the Java documentation for information about service providers.
2. Deploy your class files in the class path of the Java runtime environment.
   a. Copy your JAR file to the following directories, depending on the tiers installed on the computer.
      - *install_root*/InformationServer/ASBNode/lib/java
      - *install_root*/InformationServer/ASBServer/lib/java

   b. Add the full paths to these JAR files to the ISF_UTIL_EXT_CP environment variable. The value of this environment variable is added to the class path when the encrypt command is run from either of these directories:
      - *install_root*/InformationServer/ASBNode/bin
      - *install_root*/InformationServer/ASBServer/bin
3. To use your new custom encryption provider when you run the encrypt command, create a file named `iis.crypto.site.properties` in the following directories, depending on the tiers installed on the computer.

   install_root/InformationServer/ASBNode/conf
   install_root/InformationServer/ASBServer/conf

   Include the following one-line entry in the file:

   ```
   iis.crypto.default.provider=class_name_of_your_custom_provider
   ```

Results

With these changes, when you run the encrypt command, your custom encryption provider is used to encrypt the text.

Note: If you have previously created a different custom encryption provider, then it can still be used to decrypt text that has been encrypted with it. To continue to use a previous provider along with the new one, you must keep both sets of JAR files in the class path. You must also ensure that the providers use unique aliases.

EncryptionProvider interface:

Reference for the interface implemented by encryption providers.

```
public interface com.ibm.iis.spi.security.crypto.EncryptionProvider
```

The encrypt and decrypt methods are the encryption and decryption methods for the provider.

The getAlias method must return a short name (usually an acronym) that uniquely identifies the encryption provider. This alias can be used by callers to mark the encrypted data with a prefix in braces ({}) to determine which provider was used to encrypt the data.IBM InfoSphere Information Server uses the standard Java service provider mechanism to load the encryption provider from the classpath. Therefore, the `META-INF/services/com.ibm.iis.spi.security.crypto.EncryptionProvider` configuration file must be created and bundled. The location of the JAR file to use for compilation is *installation_directory*/InformationServer/ASBNode/eclipse/plugins/ com.ibm.isf.client/iis_util.jar. See the Java documentation for information about service providers.

Method summary

Returns	Method
`byte[]`	**decrypt**(byte[] encryptedBytes) The decrypt method takes an encrypted array of bytes and returns a decrypted array of bytes.
`byte[]`	**encrypt**(byte[] clearBytes) The encrypt method takes an array of bytes and returns an encrypted array of bytes.
`java.lang.String`	**getAlias**() Returns the encryption provider alias.
`void`	**initialize**(java.util.HashMap initData) Reserved for future use.

Method detail

getAlias

getAlias()

Returns the encryption provider alias. The encryption provider alias is alphanumeric ASCII characters, which can contain only [0-9][a-z][A-Z]. It must uniquely identify the encryption provider. The return value of this method is used by callers to prefix the encrypted data with {*alias_value*}. The alias itself cannot contain opening brace ({) or closing brace (}) characters.

Returns:

String

initialize

initialize(java.util.HashMap initData) throws InitializationException

Reserved for future use.

Parameters:

`java.util.HashMap - initData`

Throws:

InitializationException

encrypt

encrypt(byte[] clearBytes)

The encrypt method takes an array of bytes and returns an encrypted array of bytes.

Parameters:

`byte[] - clearBytes`

Returns:

`byte[]`

decrypt

decrypt(byte[] encryptedBytes)

The decrypt method takes an encrypted array of bytes and returns a decrypted array of bytes.

Parameters:

`byte[] - encryptedBytes`

Returns:

`byte[]`

Enabling stronger encryption:

IBM provides Java Cryptography Extension (JCE) unlimited jurisdiction policy files that allow the use of stronger (longer) key sizes for Java encryption. If you want to create a custom encryption provider using these stronger key sizes, download and install the IBM unlimited jurisdiction policy files using the following steps.

About this task

These Java JCE unlimited jurisdiction policy files contain keys that are longer than 128 bits. You can find more information about the encryption algorithms and key sizes of the IBM JRE and these policy files in Appendixes A, B, and E of the JCE API Specification & Reference at developerWorks® (http://www.ibm.com/developerworks/java/jdk/security/60/secguides/JceDocs/api_users_guide.html#AppA).

Procedure

1. From the Security information page on the developerWorks site (http://www.ibm.com/developerworks/java/jdk/security/60/), click the IBM SDK Policy files link.
2. Click the IBM SDK Policy files link.
3. Log in with your IBM user ID and password.
4. Select Unrestricted JCE Policy files for SDK 1.4.2 and click **Continue**.
5. Select Unrestricted JCE Policy files for SDK for all newer versions and click **Continue**.
6. If you accept the license, download unrestrict142.zip and extract the local_policy.jar and US_export_policy.jar files.
7. Save these two files to the *root_directory*/InformationServer/ASBNode/apps/jre/lib/security directory and *root_directory*/InformationServer/ASBServer/apps/jdk/jre/lib/security directories, and replace the existing files of the same names.
8. Restart the JRE for the new policy to be effective.

What to do next

Create and add a custom implementation of the EncryptionProvider interface that uses these policy files.

Chapter 7. Activating entitled IBM InfoSphere DataStage editions and feature packs

If your entitlement to IBM InfoSphere DataStage editions, trade-up, or feature packs changes after you have installed IBM InfoSphere Information Server, you must activate any newly entitled items before you can use them. If you no longer have entitlements for items, you must deactivate them.

When you install IBM InfoSphere DataStage by using the InfoSphere Information Server installation program, the program prompts you to select the InfoSphere DataStage editions and feature packs to install and activate. Each item in the selection list enables associated InfoSphere DataStage canvases and job features. Select the items for which you have a valid Proof of Entitlement from IBM. The installation program activates the features that are associated with the items that you select. Any other editions or feature packs are deactivated and cannot be used.

If you later acquire entitlements for an additional InfoSphere DataStage edition or feature pack, to use the features that are included in the item you must activate the item within InfoSphere Information Server. If you no longer have entitlement for an item, you must deactivate it. When you deactivate the edition or feature pack, the features within the item are no longer available for use.

To activate or deactivate an edition or feature pack, run the **LicensingServiceAdmin** command-line tool.

If you installed InfoSphere DataStage, the full product with all optional features was installed. However, the installation program activated only the features that are associated with the edition and features that you selected at install time. If you acquire entitlements for additional InfoSphere DataStage features, enable them by using the **LicensingServiceAdmin** tool. Also use the tool if you are entitled to an additional edition or trade up to a different edition.

For example, a company is entitled to IBM InfoSphere DataStage Server, and enables this item. At a later time, they become entitled to the IBM InfoSphere DataStage from DataStage Server Trade Up. They use the **LicensingServiceAdmin** tool to enable the full functionality of the InfoSphere DataStage product.

As another example, a company is entitled to InfoSphere DataStage, and enables this item. At a later time, they become entitled to the IBM InfoSphere DataStage Balanced Optimization feature pack and add the IBM InfoSphere DataStage MVS Edition. They enable these editions and features by using the **LicensingServiceAdmin** tool.

The following table lists the InfoSphere DataStage editions and feature packs that the InfoSphere Information Server installation program can install. The table also lists the features that are included within each item.

Table 9. InfoSphere DataStage editions and feature packs

Installable item	Features
IBM InfoSphere DataStage	• InfoSphere DataStage job features • Parallel canvas • Server canvas
IBM InfoSphere DataStage Server Edition	• InfoSphere DataStage job features • Server canvas
IBM InfoSphere DataStage MVS Edition	• InfoSphere DataStage job features • MVS (mainframe) canvas
IBM InfoSphere DataStage Pack for SAS	• SAS features
IBM InfoSphere DataStage Balanced Optimization	• InfoSphere DataStage balanced optimization features

If jobs are created that depend upon certain editions or feature packs, and those editions or feature packs are deactivated, the jobs remain in the repository. However, they cannot be opened, or cause an error message when opened.

Viewing a list of activated IBM InfoSphere DataStage editions and feature packs

Run the **LicensingServiceAdmin** command line tool to list the activated IBM InfoSphere DataStage editions and feature packs within your suite.

Before you begin

You must have at least Suite User authority.

Procedure

1. Log in to the computer on which the **LicensingServiceAdmin** tool is installed:
   - If you have implemented IBM WebSphere Application Server clustering within your installation, log in to the computer that hosts the WebSphere Application Server Deployment Manager.
   - If you have not implement clustering, log in to the services tier computer.

   In either case, use an account that has execution permission for the tools in the `ASBServer/bin` directory, as described in the next step.
2. Change to the `ASBServer/bin` directory within the directory in which IBM InfoSphere Information Server is installed. For example:
   - Linux UNIX `cd /opt/IBM/InformationServer/ASBServer/bin`
   - Windows `cd C:\IBM\InformationServer\ASBServer\bin`
3. Run the **LicensingServiceAdmin** command with the `-list_features` option.

   Instead of the -user and -password options, you can provide a credentials file with the -authfile option. If you do not provide a user, password, or credentials file, you are prompted for a user ID and password. Linux UNIX

   ```
   ./LicensingServiceAdmin.sh -user iauser -password iapswd -list_features
   ```

   Windows

   ```
   LicensingServiceAdmin -user iauser -password iapswd -list_features
   ```

In the command,

- *iauser* is the name of a user that has suite user authority.
- *iapswd* is the user password.

The command lists the features that are activated. Deactivated features are not listed. For example:

```
DS,DSServer,DSMVS,BalOpt,SAS,QS
Enabled components:
   IBM InfoSphere DataStage
   IBM InfoSphere DataStage Server
   IBM InfoSphere DataStage MVS Edition
   IBM InfoSphere DataStage Balanced Optimization
   IBM InfoSphere DataStage Pack for SAS
   IBM InfoSphere QualityStage
   DataStage and QualityStage Administrator
   DataStage and QualityStage Director
   DataStage and QualityStage Designer
Enabled features:
   job-type = DataStage
   job-type = QualityStage
   licensed-feature = BAL_OPT
   licensed-feature = SAS_PACK
   canvas = Parallel
   canvas = Server
   canvas = MVS
```

Since IBM InfoSphere QualityStage shares the InfoSphere DataStage components and client applications, it is also listed as one of the activated features if InfoSphere QualityStage is installed. Even though it is listed as one of the features, InfoSphere QualityStage cannot be activated or deactivated with the **LicensingServiceAdmin** tool. To activate InfoSphere QualityStage, install InfoSphere QualityStage by using the installation program. To deactivate InfoSphere QualityStage, uninstall InfoSphere QualityStage by using the software removal program.

The list of enabled InfoSphere DataStage and InfoSphere QualityStage client applications is also shown. All three applications are enabled when InfoSphere QualityStage or any version of InfoSphere DataStage is installed. If IBM InfoSphere Information Analyzer is installed without InfoSphere DataStage or InfoSphere QualityStage, then only the InfoSphere DataStage and QualityStage Administrator client is enabled.

Activating and deactivating IBM InfoSphere DataStage editions and feature packs

Run the **LicensingServiceAdmin** command-line tool to change the InfoSphere DataStage features that were activated when the services tier was installed. The tool can activate or deactivate InfoSphere DataStage editions and feature packs within your suite if InfoSphere DataStage is installed.

Before you begin

You must have suite administrator authority.

About this task

To activate or deactivate InfoSphere DataStage editions and feature packs in the suite, run the **LicensingServiceAdmin** command. Each time you run the command, specify all items that you want to activate. Any editions or feature packs that you do not specify are deactivated by the command. The actual features enabled depend on the combination of editions and features that you specify. For this reason, they must all be provided in a single command.

The tool cannot be used to activate InfoSphere DataStage features if InfoSphere DataStage is not installed. Also the tool cannot be used to deactivate all InfoSphere DataStage features. To remove all InfoSphere DataStage features, remove InfoSphere DataStage by using the IBM InfoSphere Information Server software removal program.

Procedure

1. Log in to the computer on which the **`LicensingServiceAdmin`** tool is installed:
   - If you have implemented IBM WebSphere Application Server clustering within your installation, log in to the computer that hosts the WebSphere Application Server Deployment Manager.
   - If you have not implemented clustering, log in to the services tier computer.

   In either case, use an account that has execution permission for the tools in the `ASBServer/bin` directory, as described in the next step.
2. Change to the `ASBServer/bin` directory within the directory in which InfoSphere Information Server is installed. For example:
   - Linux UNIX `cd /opt/IBM/InformationServer/ASBServer/bin`
   - Windows `cd C:\IBM\InformationServer\ASBServer\bin`
3. Run the **`LicensingServiceAdmin`** command with the `-set_features` option.

   Instead of the -user and -password options, you can provide a credentials file with the -authfile option. If you do not provide a user, password, or credentials file, you are prompted for a user ID and password. Linux UNIX

   ```
   ./LicensingServiceAdmin.sh -user isadmin -password ispswd -set_features codes
   ```

   Windows

   ```
   LicensingServiceAdmin -user isadmin -password ispwd -set_features codes
   ```

   In the command,
   - *isadmin* is the name of a user that has suite administrator authority.
   - *ispwd* is the user password.
   - *codes* is a comma-separated list of codes that specify the editions and feature packs to activate. The following table describes valid feature codes:

Table 10. Feature codes for LicensingServiceAdmin

Feature code	Description
DS	Activates IBM InfoSphere DataStage
DSServer	Activates IBM InfoSphere DataStage Server
DSMVS	Activates IBM InfoSphere DataStage MVS Edition
SAS	Activates IBM InfoSphere DataStage Pack for SAS
BalOpt	Activates IBM InfoSphere DataStage Balanced Optimization

Each time you run the command, specify the feature codes for all editions and feature packs to activate. Include any editions and feature packs that are already activated, that you want to remain activated. Any editions and feature packs that you do not list in the command are deactivated.

If you are entitled to both IBM InfoSphere DataStage Server and IBM InfoSphere DataStage from DataStage Server Trade Up, specify the DS feature code only. Do not specify the DSServer feature code.

Feature codes are not case sensitive. To include white space within the feature code list, enclose the list in quotation marks.

For example, to activate InfoSphere DataStage, InfoSphere DataStage Balanced Optimization, and the InfoSphere DataStage Pack for SAS, run the following command.

```
LicensingServiceAdmin -user isadmin -password ispwd -set_features DS,SAS,BalOpt
```

The command activates the features. In this example, the Mainframe canvas is not enabled within the InfoSphere DataStage client applications. The command then lists the results:

```
DS,SAS,BalOpt,QS
Enabled components:
   IBM InfoSphere DataStage
   IBM InfoSphere DataStage Pack for SAS
   IBM InfoSphere DataStage Balanced Optimization
   IBM InfoSphere QualityStage
   DataStage and QualityStage Administrator
   DataStage and QualityStage Director
   DataStage and QualityStage Designer
Enabled features:
   job-type = DataStage
   job-type = QualityStage
   licensed-feature = BAL_OPT
   licensed-feature = SAS_PACK
   canvas = Parallel
   canvas = Server
```

Since IBM InfoSphere QualityStage shares the InfoSphere DataStage components and client applications, it is also listed as one of the activated features if InfoSphere QualityStage is installed. Even though it is listed as one of the features, InfoSphere QualityStage cannot be activated or deactivated with the **LicensingServiceAdmin** tool. To activate InfoSphere QualityStage, install InfoSphere QualityStage by using the installation program. To deactivate InfoSphere QualityStage, uninstall InfoSphere QualityStage by using the software removal program.

The list of enabled InfoSphere DataStage and InfoSphere QualityStage client applications is also shown. All three applications are enabled when InfoSphere QualityStage or any version of InfoSphere DataStage is installed. If IBM InfoSphere Information Analyzer is installed without InfoSphere DataStage or InfoSphere QualityStage, then only the InfoSphere DataStage and QualityStage Administrator client is enabled.

LicensingServiceAdmin command reference

Run the **LicensingServiceAdmin** command to manage activation and deactivation of IBM InfoSphere DataStage editions and feature packs after InfoSphere DataStage is installed.

Purpose

If you are entitled to certain InfoSphere DataStage editions or feature packs after you run the IBM InfoSphere Information Server installation program, run this command to activate the newly entitled items. If you no longer have entitlements for the items, run this command to deactivate them.

If you no longer have entitlement to any InfoSphere DataStage edition or feature, you must remove InfoSphere DataStage by using the InfoSphere Information Server software removal program. You cannot use the tool to deactivate all InfoSphere DataStage editions and features.

If you have implemented IBM WebSphere Application Server clustering within your installation, the command is located on the computer that hosts the WebSphere Application Server Deployment Manager. If you have not implemented clustering, the command is located on the services tier computer.

The command can be found on the services tier computer, in the `ASBServer/bin` subdirectory of the directory in which InfoSphere Information Server is installed. For example:

- Linux UNIX `/opt/IBM/InformationServer/ASBServer/bin`
- Windows `C:\IBM\InformationServer\ASBServer\bin`

To use the tool, log in by using an account that has execution permission for the tools in this directory.

Command syntax

Linux UNIX **`LicensingServiceAdmin.sh`** [**-help**] [**-authfile** *credentials_filename* | [**-user** *user*] [**-password** *password*]] [**-set_features** *featurecodes*] [**-list_features**]

Windows **`LicensingServiceAdmin`** [**-help**] [**-user** *user*] [**-password** *password*] [**-authfile** *credentials_filename* | [**-set_features** *featurecodes*] [**-list_features**]

Parameters

`help`
Displays usage information for the tool.

`authfile` *`credentials_filename`*
The name of the credentials file that contains the user ID and password of a user that has suite administrator authority. You can use this option in place of the user and password options.

`user` *`user`*
The name of a user that has suite administrator authority. You can use the `-user` option or its short form: `-u`.

`password` *`password`*
The password for the user. You can use the `-password` option or its short form: `-p`.

`set_features` *`featurecodes`*
Specifies a list of InfoSphere DataStage editions and feature packs to activate. The items are specified as a comma-separated list of codes. The following table describes valid feature codes. Feature codes are not case sensitive.

Table 11. Feature codes for LicensingServiceAdmin

Feature code	Description
DS	Activates IBM InfoSphere DataStage
DSServer	Activates IBM InfoSphere DataStage Server

Table 11. Feature codes for LicensingServiceAdmin (continued)

Feature code	Description
DSMVS	Activates IBM InfoSphere DataStage MVS Edition
SAS	Activates IBM InfoSphere DataStage Pack for SAS
BalOpt	Activates IBM InfoSphere DataStage Balanced Optimization

Each time you run the command, specify the feature codes for all editions and feature packs to activate. Include any editions and feature packs that are already activated, that you want to remain activated. Any editions and feature packs that you do not listed in the command are deactivated.

If you are entitled to both IBM InfoSphere DataStage Server and IBM InfoSphere DataStage from DataStage Server Trade Up, specify the DS feature code but not the DSServer feature code.

You can use the `-set_features` option or its short form: `-sf`.

`list_features`

Causes **`LicensingServiceAdmin`** to output a list of activated editions and feature packs. If the `-set_features` option is also specified, the **`LicensingServiceAdmin`** command activates the specified editions and feature packs and then outputs the list. The list is output to stdout.

You can use the `-list_features` option or its short form: `-lf`.

The following command activates all editions and feature packs, and lists the activated items on a Linux or UNIX computer:

```
/opt/IBM/InformationServer/ASBServer/bin/LicensingServiceAdmin.sh
   -u myadmin -p myadminpwd -lf -sf DS,DSMVS,BalOpt,SAS,DSServer
```

Chapter 8. Managing active sessions

In the IBM InfoSphere Information Server Web console, you can view a list of all the users that are currently connected to the server that you logged in to.

About this task

You can view the starting time of each session and the timestamp of the most recent action that each user performed. You can force active sessions to end immediately, which is useful when preparing to stop the system.

Viewing all active sessions

In the IBM InfoSphere Information Server Web console, you can view and manage the active user sessions.

Before you begin

You must have suite administrator authority.

About this task

A user session is an instance of a user with a connection to the IBM InfoSphere Information Server. You might want to view all of the active sessions to determine if you need to set thresholds for the maximum amount of user sessions to allow, to disconnect one or more users, or to view details about the user who is connecting.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Session Management** > **Active Sessions**. The Active Sessions pane shows the users who are currently connected to the server.

Setting session limits

You can set the maximum number of active sessions on the server. You can also specify how long a session can remain inactive before it is automatically disconnected and how often the sessions are polled for inactivity.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Session Management** > **Active Sessions**.
3. In the Active Sessions pane, click **Global Session Properties**.
4. Optional: Specify settings for inactive sessions and maximum number of sessions.

5. Click **Save and Close**.

Opening user details

To view information about a current session that includes the user record, the duration of the session, and the security roles that are assigned to the user, you can open the details of a user session.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Session Management** > **Active Sessions**.
3. In the Active Sessions pane, select a user session.
4. Click **Open**. The Open User Details pane shows detailed information about the user session.

Disconnecting all sessions

To force all of the active sessions to end immediately, you can disconnect all of the user sessions. You might want to disconnect all users to prepare for a system shutdown.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Session Management** > **Active Sessions**.
3. In the Active Sessions pane, click **Disconnect All**.
4. In the Disconnect All window, click **Yes** to immediately end all sessions.

Disconnecting a session

You can disconnect an individual user session.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Session Management** > **Active Sessions**.
3. In the Active Sessions pane, select a session. If multiple users signed in with the same user account, only the selected session is disconnected.
4. Click **Disconnect**.

5. Click **Yes** to immediately end the session.

Chapter 9. Managing clusters and high availability configurations

If you have implemented clustering or other high availability configurations within your IBM InfoSphere Information Server installation, administer them by using administration tools.

Active-passive configuration administration

If your engine tier (or all tiers) is set up in an active-passive configuration, administer the cluster by using the administration tools that are provided with your high availability software.

For more information about active-passive configurations, see "Creating a two-server active-passive high availability topology" in the IBM InfoSphere Information Server Planning, Installation, and Configuration Guide.

Administering an active-passive configuration based on Tivoli System Automation for Multiplatforms

For information about managing an active-passive configuration that is based on Tivoli® System Automation for Multiplatforms, refer to the Tivoli documentation.

For documentation for Tivoli System Automation for Multiplatforms, see the Tivoli System Automation for Multiplatforms documentation page at www.ibm.com/developerworks/wikis/display/tivolidoccentral/Tivoli+System+Automation+for+Multiplatforms.

WebSphere Application Server cluster administration

Administer and maintain your IBM WebSphere Application Server clusters after you have installed or updated IBM InfoSphere Information Server in a clustered environment. This documentation assumes that you understand WebSphere Application Server clustering.

Important: The IBM InfoSphere Information Server documentation assumes that you are already familiar with distributed computing, particularly with WebSphere Application Server clustering. You must familiarize yourself with the IBM WebSphere Application Server Network Deployment documentation.

WebSphere Application Server cluster administration tools

You use the following tools to install, configure, and administer IBM WebSphere Application Server clusters.

This information assumes that you have completed the required procedures for installing a highly available clustered configuration. For more information, refer to the *IBM InfoSphere Information Server Planning, Installation, and Configuration Guide*.

WebSphere Application Server administrative console

The WebSphere Application Server administrative console is a Web interface that provides configuration, operation, and administration capabilities. You can use the administrative console to start and stop an application, deploy an application, configure resources, and implement security configurations.

Use this tool to create a cluster and configure its members, nodes, and processes. If you are interested in using scripts to accomplish these tasks, see the IBM WebSphere Application Server Network Deployment documentation:

- For IBM WebSphere Application Server Network Deployment, Version 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/welc6topscripting.html
- For IBM WebSphere Application Server Network Deployment, Version 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/welc6topscripting.html

WebSphere Application Server Launchpad

The WebSphere Application Server Launchpad identifies components on the WebSphere Application Server product media (disk or download) that you can install. It is the single point of reference for installing the WebSphere Application Server environment, an integrated platform that contains an application server, a Web server, a set of Web development tools, and additional supporting software and documentation.

Use this tool to install WebSphere Application Server and a front-end Web server if you are creating a clustered WebSphere Application Server configuration.

WebSphere Edge Components Launchpad

The WebSphere Application Server Edge Components Launchpad contains a software load balancer. You can use this tool to front an IBM WebSphere Application Server Network Deployment cluster instead of using the IBM HTTP Server.

For information about WebSphere Edge Components, Version 7.0, refer to: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.edge.doc/lb/info/ae/welcome_edge.html

For information about WebSphere Edge Components, Version 8.0, refer to: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.edge.doc/lb/info/ae/welcome_edge.html

Profile Management tool

The Profile Management tool performs the initial setup of WebSphere Application Server cells and nodes. The Profile Management tool creates batch jobs, scripts, and data files that you can use to do WebSphere Application Server customization tasks.

Use this tool to create a deployment manager profile and a custom profile.

InfoSphere Information Server installation program

The InfoSphere Information Server installation program detects the deployment manager process that is installed as a prerequisite on your computer and prompts you for the information that it needs to run a cluster installation.

Use this tool during the installation process to specify the WebSphere Application Server directory location, deployment manager profile, and the host name and port number of the front-end Web server or load balancer.

For more information about WebSphere Application Server, see the WebSphere Application Server documentation:

- IBM WebSphere Application Server 7.0: publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/welcome_ndmp.html
- IBM WebSphere Application Server 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/welcome_ndmp.html

Propagating the plugin-cfg.xml file to the front-end Web server

The `plugin-cfg.xml` file is used by the front-end Web server at runtime to perform workload management across the cluster. You must update and propagate this file to the Web server when a new member is added to the cluster or when a new J2EE application is deployed in the cluster.

Before you begin

If you are unfamiliar with HTTP servers in an IBM WebSphere Application Server Network Deployment environment, read the following IBM WebSphere Application Server Network Deployment information center topics and subsections for the version that applies to you:

- For IBM WebSphere Application Server Network Deployment, Version 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/twsv_plugin.html
- For IBM WebSphere Application Server Network Deployment, Version 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/twsv_plugin.html

About this task

The `plugin-cfg.xml` file is a configuration file that is generated by IBM WebSphere Application Server Network Deployment. It is in the `<`*`webserver_plugin_install_path`*`>/config/<`*`webserver_definition`*`>` path, for example, `C:/IBM/HTTPServer/Plugins/config/webserver1`.

It is used at run time by the front-end Web server to perform workload management across the cluster. The file is on the computer where the Web server is installed. This file must be kept up-to-date at all times in order for Workload Management to be correctly implemented at the Web level. Regenerate and propagate the `plugin-cfg.xml` file when the following events occur:

- The domain tier of the suite is newly installed (installed for the time).
- A product of the suite is newly installed as an add-on.
- A product of the suite is removed after an uninstallation.
- A new member is added to the cluster.
- A new IBM InfoSphere Information Services Director application is generated and deployed in the cluster.
- The front-end Web server is replaced by another Web server.

To facilitate the management of this configuration file, IBM WebSphere Application Server Network Deployment can automatically propagate the `plugin-cfg.xml` file to the Web server. Depending on your Web server topology, this automation might not always be possible. You might have to regenerate and propagate this file to the Web server computer manually. There are three possible scenarios:

- Scenario 1: The Web server is installed in a managed node.

  In this case, the `plugin-cfg.xml` file is automatically regenerated and propagated by the IBM WebSphere Application Server Network Deployment to the managed node hosting the Web server. It might take a few minutes for WebSphere Application Server to regenerate and propagate the plugin file to the Web server. You do not need to propagate the `plugin-cfg.xml` file because this step is completed for you.
- Scenario 2: The Web server is installed in an unmanaged node (in other words, there is no node agent to manage the Web server definition).

  In this case, IBM WebSphere Application Server Network Deployment can not automatically propagate the `plugin-cfg.xml` file to the Web server, so you need to manually propagate it.
- Scenario 3: The Web server is installed in an unmanaged node and is the IBM HTTP Server (IHS).

  In this special case, the `plugin-cfg.xml` file also is automatically propagated by IBM WebSphere Application Server Network Deployment to the unmanaged node that hosts IHS. This functionality is achieved because of the IHS administration process that runs on the Web server computer, which can act as a node agent for the Web server.

Procedure

To manually propagate the `plugin-cfg.xml` file:

For the appropriate topology (either a remote distributed installation scenario or a local distributed installation scenario), refer to the sections about regenerating the `plugin-cfg.xml` file and propagating the `plugin-cfg.xml` file in the following topics:

- IBM WebSphere Application Server Network Deployment 6.1: http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/tins_road_plugins.html
- IBM WebSphere Application Server Network Deployment 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/tins_road_plugins.html

For more information about managed and unmanaged nodes in IBM WebSphere Application Server Network Deployment, see the following resources:

- The IBM Redbooks publication, *WebSphere Application Server V6 Scalability and Performance Handbook*: http://www.redbooks.ibm.com/abstracts/sg246392.html
- Information about *Nodes* in the IBM WebSphere Application Server Network Deployment 6.1 information center: http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/cagt_node.html
- Information about *Managed and unmanaged nodes* in the IBM WebSphere Application Server Network Deployment 7.0 information center: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/cagt_node.html
- The IBM Redbooks publication tip, *New Web Server Support in WebSphere Application Server V6*: http://www.redbooks.ibm.com/abstracts/tips0552.html

Adding a new cluster member

You can create additional cluster members from the IBM WebSphere Application Server administrative console. Additional cluster members are essentially copies of the existing cluster members. This procedure is referred to as vertical clustering or scaling up.

Before you begin

You must have an existing node agent and at least one cluster member running on the machine where you want to create a new cluster member. If you want to create a new cluster member on a machine that does not already host a node agent, then refer to the *Adding a new managed node* section.

Procedure

1. Follow these instructions to create a new cluster member on an existing managed node, directly from the IBM WebSphere Application Server administrative console. You will be asked to specify the node on which to create the new cluster member. Optionally, you can also specify a server weight that will be used for load balancing at run time and whether to generate unique HTTP ports.
   - Adding members to a cluster in IBM WebSphere Application Server Network Deployment 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/trun_wlm_member.html
   - Adding members to a cluster in IBM WebSphere Application Server Network Deployment 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/trun_wlm_member.html
2. If you are using an HTTP server as the front-end dispatcher for your cluster, regenerate and propagate the `plugin-cfg.xml` file.

   You need this in order for the front-end web server workload management plugin to take into account the new cluster member. Regenerate and propagate the `plugin-cfg.xml` file to the front-end Web server as described in *Propagating the `plugin-cfg.xml` file to the front-end web server*.

Adding a new managed node

You create a new managed node to expand the scope of a cluster.This procedure is *horizontal clustering* or *scaling out*.

Before you begin

- Ensure that the Deployment Manager is running. If it is not running, start it as described in “Starting the IBM WebSphere Application Server Deployment Manager (Windows)” on page 205 or “Starting the IBM WebSphere Application Server Deployment Manager (Linux, UNIX)” on page 208.

  Important: Ensure that the clock of the system where you want to create a new managed node is synchronized with the Deployment Manager system clock and the other node systems. When the clocks of the various node computers are not synchronized, multiple problems can arise at run time. Verify that the clocks on all systems are synchronized by using the universal date and time.

About this task

This procedure is the same procedure on IBM WebSphere Application Server Network Deployment 7.0 and 8.0.

Procedure

1. Linux Configure file descriptor resources on the node as described in “Configuring file descriptor resources for IBM WebSphere Application Server (Linux)” on page 208.
2. AIX Unset the LDR_CNTRL variable on the node as described in “Configuring memory allocation for IBM WebSphere Application Server (AIX)” on page 209.
3. Create a custom profile on the node agent computer by using the Profile Management Tool. Follow the steps in the *IBM InfoSphere Information Server Planning, Installation, and Configuration Guide*.

   Remember: When you create a custom profile, on the Federation page, specify a WebSphere Application Server administrator user name and password to connect to the Deployment Manager.

   Note: Do not select the **Federate this node later** check box.
4. Create a cluster member (for example, "server3") on the node agent machine. Follow the steps in the *IBM InfoSphere Information Server Planning, Installation, and Configuration Guide*.

   Note: When selecting the node to create the cluster member, on the Create additional cluster members page, make sure to select the new managed node that you created in the previous step.
5. Synchronize the new managed node. Run the **syncNode** WebSphere Application Server command from the computer that hosts the managed node. You must specify the host name and port of the Deployment Manager and the WebSphere Application Server administrator user name and password as input arguments.

   Note: Do not start the node agents yet. The syncNode operation takes a couple of minutes to complete.

   Refer to the IBM WebSphere Application Server Network Deployment documentation for complete reference information about the **syncNode** command.

   - For 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_syncnode.html
   - For 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_syncnode.html

   The following shows the syntax for the **syncNode** command, followed by an example of the **syncNode** command log file found under the custom profile directory.

```
syncNode dmgr_hostname dmgr_port -username was_admin_username
-password was_admin_password

C:\IBM\WebSphereND70\AppServer\profiles\Custom01\bin>syncNode myDmgr01 8879
   -username wasadmin -password *******

ADMU0116I: Tool information is being logged in file
           C:\IBM\WebSphereND70\AppServer\profiles\Custom01\logs\syncNode.log
ADMU0128I: Starting tool with the Custom01 profile
ADMU0401I: Begin syncNode operation for node myNode01 with Deployment
```

```
          Manager localhost: 8879
ADMU0016I: Synchronizing configuration between node and cell.
ADMU0402I: The configuration for node myNode01 has been synchronized
          with Deployment Manager myDmgr01: 8879
```

When the synchronization is complete, verify that the custom profile contains both newly created directories: the `classes` directory and the `informationServer` directory. These two directories and the files they contain are the result of the synchronization operation.

Note: If the synchronization fails, you can review the **`syncNode`** command log file (`syncNode.log`) in the custom profile directory.

6. Start the new node agent on the node agent computer by using the **`startNode`** WebSphere Application Server command.

   Refer to the IBM WebSphere Application Server Network Deployment documentation for information about the **`startNode`** command.

   - For 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startnode.html
   - For 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startnode.html
7. Start the newly created cluster member from the WebSphere Application Server administrative console.
8. Propagate the `plugin-cfg.xml` to the front-end Web server WLM plug-in to take into account the new cluster member. See "Propagating the plugin-cfg.xml file to the front-end Web server" on page 155.

Synchronizing nodes after changing the master repository configuration

When you change the master repository configuration, synchronize the nodes to ensure that changes are propagated to all nodes in the cell. This procedure is the same for IBM WebSphere Application Server Network Deployment Versions 7.0 and 8.0.

About this task

WebSphere Application Server synchronizes nodes internally on a regular and automatic basis. However, you can also synchronize the nodes whenever you need to, instead of waiting for WebSphere Application Server. For example, change the master repository configuration when you add a new cluster member or change a security setting.

Important: Nodes need to be synchronized whenever there is a change to the master repository configuration, including updates to the topology or cell configurations.

Procedure

1. Log in to the WebSphere Application Server administrative console.
2. Expand the **System administration** section and then click **Nodes**.
3. Select the nodes that you want to synchronize (most likely all of them).
4. Click **Synchronize** or **Full Synchronize**.

For information about the difference between Synchronize and Full Synchronize, refer to the IBM WebSphere Application Server Network Deployment section about synchronizing the node configuration:

- 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/tagt_svr_conf_nodes.html
- 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/tagt_svr_conf_nodes.html

Restarting application server processes

When you change a configuration at the cell-level, you must restart all IBM WebSphere Application Server Network Deployment processes to make the changes effective. You should restart the application servers, node agents, and deployment manager on each machine in a specific order.

About this task

You must restart all IBM WebSphere Application Server Network Deployment processes when you modify anything at the cell-level (deployment manager-level). For example, restart application server processes after you do any of the following tasks:

- Change security at the cell-level (for example, when you enable SSL, replace SSL certificates, or switch user registry)
- Modify configurations for a data source
- Change other cell-level settings

For information about how to do the tasks involved in each of these steps in this topic, refer to the following tables.

Note: The simplest way to restart node agents and application servers (clusters) is through the WebSphere Application Server administrative console. If you use the command line tools instead, make sure to specify a WebSphere Application Server administrator user name and password.

Procedure

1. Stop all WebSphere Application Server processes in the following order:
   a. Stop all application servers on every computer.
   b. Stop all node agents on every computer.
   c. Stop the deployment manager.

   To stop application servers, node agents, and deployment managers for IBM WebSphere Application Server Network Deployment, Versions 7.0 and 8.0, refer to the following table.

Table 12. Stopping WebSphere Application Server processes

WebSphere Application Server Process	Stopping the process in Version 7.0	Stopping the process in Version 8.0
Application server (stopping)	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/trun_wlm_cluster_stop.html	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/trun_wlm_cluster_stop.html
Node agent (stopping)	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_stopnode.html	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_stopnode.html

Table 12. Stopping WebSphere Application Server processes (continued)

WebSphere Application Server Process	Stopping the process in Version 7.0	Stopping the process in Version 8.0
Deployment manager (stopping)	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_stopmanager.html	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_stopmanager.html

2. After you have stopped all WebSphere Application Server processes, you can proceed to restart them. Start all WebSphere Application Server processes in the following order:
   a. Start the deployment manager.
   b. Start all node agents on every machine.
   c. Start all application servers on every machine.

      Note: When you restart the application server, you restart the cluster.

   To start application servers, node agents, and deployment managers for IBM WebSphere Application Server Network Deployment, Versions 7.0 and 8.0, refer to the following table.

Table 13. Starting WebSphere Application Server processes

WebSphere Application Server Process	Starting the process in Version 7.0	Starting the process in Version 8.0
Deployment manager (starting)	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startmanager.html	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startmanager.html
Node agent (starting)	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startnode.html	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startnode.html
Application server (starting)	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/trun_wlm_cluster_start.html	Go to:http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/trun_wlm_cluster_start.html

Note: For more information about node agents:

- For 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/uagt_rnodeagent.html.
- For 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/uagt_rnodeagent.html.

Setting up HTTP session database persistence

When you install IBM InfoSphere Information Server in a cluster environment, HTTP session management is configured to use memory-to-memory replication.

If you want to use a database persistence approach, configure IBM WebSphere Application Server Network Deployment as described in Section 6.8.5 of the IBM Redbooks publication, *WebSphere Application Server V6 Scalability and Performance Handbook*: http://www.redbooks.ibm.com/abstracts/sg246392.html. Refer to section 6.8 for more information about the advantages and drawbacks of the two mechanisms.

To configure for database session persistence, use the instructions in the IBM WebSphere Application Server information center:

- For WebSphere Application Server, Version 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.base.doc/info/aes/ae/tprs_cnfp.html
- For WebSphere Application Server, Version 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.base.doc/info/aes/ae/tprs_cnfp.html

IBM DB2 high availability configuration administration

These tasks outline how to administer an IBM InfoSphere Information Server database in an IBM DB2 cluster or high availability disaster recovery (HADR) configuration.

Use these procedures if your metadata repository or IBM InfoSphere Information Analyzer analysis database is set up in one of these configurations.

For detailed information about DB2 cluster or HADR administration, see the following resources:

- DB2 9.5: publib.boulder.ibm.com/infocenter/db2luw/v9r5/topic/com.ibm.db2.luw.admin.ha.doc/doc/t0051382.html
- DB2 9.7: publib.boulder.ibm.com/infocenter/db2luw/v9r7/topic/com.ibm.db2.luw.admin.ha.doc/doc/t0051382.html
- IBM Redbooks® publication: *High Availability and Disaster Recovery Options for DB2 on Linux, UNIX, and Windows* available at www.redbooks.ibm.com/abstracts/SG247363.html

Failover in an IBM DB2 HADR configuration

If the primary database fails in a DB2 HADR configuration, IBM InfoSphere Information Server can continue functioning by using the standby database.

To start using the standby database, the following things must occur:

- The services tier (IBM WebSphere Application Server) must reconnect to the standby server. The DB2 automatic client reroute (ACR) feature automatically reconnects the services tier to the standby server.
- The database administrator must run the TAKEOVER HADR command on the standby database.

Attention: A failure might cause a loss of data.

If a user writes data to a database and a failure occurs during the data replication to the backup server, the updates might be lost. In most cases, the user can redo the edit or import operation to restore the data after the switchover to the standby database is complete.

The likelihood and extent of transaction loss depends on the synchronization mode in which HADR is configured. The following table lists synchronization modes and data loss scenarios.

Table 14. HADR synchronization modes and data loss scenarios

HADR synchronization mode	Data loss scenarios
SYNC	Least risk of data loss.

Table 14. HADR synchronization modes and data loss scenarios (continued)

HADR synchronization mode	Data loss scenarios
NEARSYNC	The standby database can lose transactions if both the primary and standby databases fail at the same time.
ASYNC	The standby database can lose transactions in cases like these: • The standby database does not receive all the log records for the transactions before the takeover operation is performed. • Both the primary and standby databases fail at the same time.

If the primary database fails while in remote catchup pending state, transactions that the standby database has not processed are lost.

Note: Any log gap shown in the database snapshot represents the gap at the last time the primary and standby databases communicated. The primary database might have processed many transactions since that time.

Recovering from failover in a DB2 HADR scenario

If your installation includes an IBM DB2 database that is configured with high availability disaster recovery (HADR), the database administrator must complete the failover process manually.

About this task

If the primary HADR database fails, follow this procedure to restore service.

Attention: A failure might cause a loss of data.

Procedure

1. If the DB2 fault monitor feature (**db2fm**) is enabled on the primary database server, the database might automatically restart on the primary server. Direct the user to try the transaction again to see if the database is operational. If the database is operational, no further action is required.
2. Deactivate the primary database or stop its instance, if possible. If the primary database is still running, but cannot communicate with the standby database, running the takeover operation could result in two primary databases (a "split-brain" scenario).
3. Start the takeover operation by using one of the following administration interfaces:
   - The DB2 command-line processor (CLP).
   - The Manage High Availability Disaster Recovery window in the DB2 Control Center.
   - The db2HADRTakeover application programming interface (API).

Recovering from a failover in a DB2 clustered configuration

If your IBM InfoSphere Information Server databases are set up in an IBM DB2 clustered configuration, failover is automatic.

If the primary node fails in such a configuration, the passive node connects to the database file system, and continues. If you have automatic client reroute (ACR) configured, the services tier (IBM WebSphere Application Server) reconnects to the passive node. No database administrator intervention is required.

Any transactions other than read-only transactions are stopped and rolled back. Users must resubmit the transactions.

Refer to the DB2 documentation for more detailed information.

Engine tier failover recovery

If the engine tier (and possibly other tier software as well) is set up in an active-passive configuration, hardware or network errors cause a failover to the passive server. You can also force a failover to occur to free the active server for maintenance or upgrade tasks.

The high availability (HA) software that is installed on the servers manages the fault detection and failover process.

During a failover, the sequence of events differs depending on whether the failover is due to a failure or is forced.

Failover due to a failure

When the active server hardware or network fails, the heartbeat mechanism between the nodes signals the passive server that the active server has failed. The HA software restores service on the passive server by doing the following actions:

- Ensures that the primary server is no longer running.
- Assigns the IP address that is associated with the resource group to the new server.
- Mounts the floating mount point for the software on the new server.
- Starts the engine tier software on the new server by calling the **`InfoSvrEngine`** script with the `start` option.
- If other tier software is installed on the server, the HA software starts it by calling the **`InfoSvrServices`** script with the `start` option. This script starts the services tier. It also starts the metadata repository tier if the tier is installed with the engine tier.

Forced failover

When you force a failover, the HA software shuts down the software before starting it up on the other node. The HA software does the following steps:

- If software is installed for tiers other than the engine tier, the HA software stops it by calling the **`InfoSvrServices`** script with the `stop` option. This script stops the services tier. It also stops the metadata repository tier if the tier is installed with the engine tier.
- Stops the engine tier software on the server by calling the **`InfoSvrEngine`** script with the `stop` option.
- Unmounts the floating mount point for the software.
- Unmounts the data files mount point.
- Unassigns the IP address associated with the resource group from the old server.
- Reassigns the resource group IP address and mounts the floating mount point.
- Starts the engine tier software on the new server by calling the **`InfoSvrEngine`** script with the `start` option.

- If other tier software is installed on the server, the HA software starts it by calling the **InfoSvrServices** script with the `start` option. This script starts the services tier. It also starts the metadata repository tier if the tier is installed with the engine tier.

Recovery process

In a production system, if server engine services did not shut down normally, the **DSHARestart** tool starts automatically on the passive server. The tool checks and repairs dynamic files that are associated with any jobs that were running on the primary server when the failover occurred. The state of these jobs is set to *crashed* for easy identification.

In a development system where users were creating, editing, or compiling projects when a failover occurred, the restart might leave projects in an inconsistent state. You can use the **SyncProject** tool to resolve any inconsistencies in these projects.

Recovering from an engine tier failover

When an engine tier failover occurs, follow this procedure to recover projects and restart any interrupted jobs.

If IBM InfoSphere Information Server engine services did not shut down normally (for example, if a failover occurred due to a failure), the **DSHARestart** tool starts automatically on the passive server. The tool checks and repairs dynamic files that are associated with any jobs that were running on the primary server when the failover occurred. The state of these jobs is set to *crashed* for easy identification.

The tool is intended to handle unattended failover events on a production system. No user interaction is required to ensure that running jobs can be restarted.

InfoSphere Information Server engine services do not start up fully until the **DSHARestart** tool has completed its tasks. While the tool is running, users cannot connect and use the InfoSphere Information Server engine. This design ensures that jobs are not further corrupted during the recovery process.

While the **DSHARestart** tool runs, it records its actions in the `HARestart.log` file. If an issue arises during the recovery process, refer to this file for more information. This file is located in the following directory:

- Linux UNIX `/opt/IBM/InformationServer/Server/DSEngine`
- Windows `C:\IBM\InformationServer\Server\DSEngine`

After the **DSHARestart** tool has finished, recover projects by using the **SyncProject** tool. Then restart any interrupted jobs. Replace the server and bring the new server online.

Recovering projects by using the SyncProject tool

After a failover, you can run the **SyncProject** tool to repair inconsistencies in your projects.

About this task

After a failure, the repository that holds design-time assets for a project can be left out of step with the repository that holds the runtime assets. This situation can cause the project, or assets contained with the project, to become unusable. You can run the **SyncProject** tool to check for inconsistencies, and repair inconsistencies if any are detected.

Procedure

Run the **SyncProject** tool to analyze and recover projects.

Example

The following example command displays a consistency report for all projects. The **SyncProject** tool also writes the report to the /tmp/myprojrep.txt file.

```
SyncProject -ISHost R101:9080 -IAUser admin -IAPassword pword -project
-report /tmp/myprojrep.txt
```

In this case, the **SyncProject** tool returns results for four projects. It finds two inconsistencies in the project named dstage9, as shown in the following example.

```
DSEngine Restorer Report
Feb 05, 2009 9:39:00 AM
IS Host = R101
IS Port = 9080
IS User = admin
DS Host = R101
DS Port = 31538
DataStage Project: dstage3
--------------------------
0 Issues Found.
DataStage Project: dstage4
--------------------------
0 Issues Found.
DataStage Project: dstage5
--------------------------
0 Issues Found.
DataStage Project = dstage9
---------------------------
2 Issues Found.
DS Engine Job 'testJob' is missing.
DS Engine Job 'testJob2' category 'incorrectCategory' should be 'correctCategory'
Overall Summary
---------------
2 Issues found.
```

The following command causes the **SyncProject** tool to try to fix the dstage9 project.

```
SyncProject -ISFile islogin -project dstage9 -Fix
```

The command makes the necessary repairs and outputs the following report:

```
DSEngine Restorer Fix Results
Feb 05, 2009 9:39:00 AM
IS Host = R101
IS Port = 9080
IS User = admin
DS Host = R101
DS Port = 31538
DataStage Project: dstage9
--------------------------
RESOLVED: DS Engine Job 'testJob' is missing.
RESOLVED: DS Engine Job 'testJob2' category 'incorrectCategory' should be 'correctCategory'.
2 Issues resolved.
0 Issues remaining.
Overall Summary
---------------
2 Issues resolved.
0 Issues remaining.
```

Identifying and restarting crashed jobs

After the **DSHARestart** tool finishes, restart jobs by using the **dsjob** tool.

About this task

After the **DSHARestart** tool finishes, recovered job sequences are left in one of two states:

- Crashed/Restartable. You can run these job sequences from where they stopped, or reset and run them.
- Crashed. You must reset these jobs before you can run them.

Procedure

Use any of the following tools to identify jobs that are in a *crashed/restartable* or *crashed* state.

The dsjob tool

To use the **dsjob** tool:

1. Log in to the computer that hosts the engine tier. Use an account with administrator or IBM InfoSphere DataStage user privileges.
2. Change to the directory that contains the dsenv file. This directory is specified in the $DSHOME environment variable. By default, the directory is /opt/IBM/InformationServer/Server/DSEngine.
3. Source the dsenv file:

   ```
   . dsenv
   ```
4. Run the **dsjob** tool. Specify the -status option with a value of 96.

   ```
   dsjob –ljobs –status 96 project
   ```
5. To restart checkpointed job sequences that are in the *crashed/restartable* state, specify the -mode option with a value of RESTART, and specify the job sequence.

   ```
   dsjob –run –mode RESTART project jobsequence
   ```

The IBM InfoSphere DataStage and QualityStage Director client

To use the InfoSphere DataStage and QualityStage Director client, start the client and view jobs. Look for jobs where the Status column reads Crashed or Crashed/Restartable.

The C or DSBasic Job Control API DSRunJob function.

For information about the C or DSBasic Job Control API **DSRunJob** function, see the IBM InfoSphere DataStage documentation.

What to do next

After you identify and restart crashed jobs, investigate and resolve the cause of the primary server failure.

Chapter 10. Managing logs

You can access logged events from a view, which filters the events based on criteria that you set. You can also create multiple views, each of which shows a different set of events.

You can manage logs across all of the IBM InfoSphere Information Server suite components. The console and the Web console provide a central place to view logs and resolve problems. Logs are stored in the metadata repository, and each InfoSphere Information Server suite component defines relevant logging categories.

Logging

You can configure log views to manage the log messages that are generated when activities run in the suite.

You create log views to query log messages. Log messages show details about the activities that run in the suite. After you create a log view, you use filters to restrict the information in the log view. Only a suite administrator can delete log messages. If you want to delete log messages, you select the log view that contains the information that you want to remove.

You can restrict access to a log view by making the log view private. Private log views are available only to the user who created the log view. If you want a log view to be available to all users, you can share the log view. Shared log views can be edited only by the user who created the shared log view or by a suite administrator.

Logging components

A logging component is a named entity that represents a suite component in IBM InfoSphere Information Server or a shared service, such as reporting, that uses the logging service.

A logging component defines one or more logging categories. Each logging category is a group of logged messages that represent one functional aspect of the component.

For example, the category ISF-REPORTING-ENGINE has one set of logged messages for the reporting engine, which is a functional aspect of the logging component called the Reporting Services.

Logging configurations

You can use a logging configuration to set the criteria for logging events for a suite component.

Both the configuration and the individual categories that belong to a configuration set severity level filters for saving events in the metadata repository. At runtime, the severity level for the configuration overrides the filters of the categories.

Each logging component can have multiple logging configurations. The active configuration determines which events are saved in the metadata repository.

Severity levels

Severity levels specify the threshold for saving events in the metadata repository.

In a configuration, you set the lowest threshold for inclusion, which also captures all of the higher levels. For example, if you select the **`Warning`** level, warning, error, and fatal events are logged. The levels are ordered from the highest level (fatal) to the lowest level (trace):

- Fatal
- Error
- Warn
- Info (information only)
- Debug
- Trace

You can use the debug level and trace level to troubleshoot problems at runtime that involve specific logging categories. But, unless you want to troubleshoot a specific issue, leave the logging threshold at its default value. At the default value, only critical errors are logged and disk space usage does not grow unnecessarily.

Each logging component can have multiple logging configurations. The active configuration determines which events are saved in the metadata repository.

Views of logged events

You access logged events from a view. The view filters the events based on criteria that you select.

You can create multiple views, each of which shows a different set of events.

You can filter messages by the following criteria:

Message strings
You can filter messages by full or partial message text. Two wildcard characters are supported:
- An asterisk (*) finds one or more characters.
- A question mark (?) finds any single character at the current position.

Categories
You can filter messages by category name.

Severity level
You can filter messages by severity level.

Time frame
A view can capture activity in a date range or show the latest events. You can specify the number of events to include in the initial view and the refresh rate. The logging service automatically refreshes the view.

Shared and private views

A view can be private or shared. A suite administrator or suite user who creates a private view has exclusive access to the view.

The following table describes the levels of access, based on the creator and type of view.

Table 15. Access to views

Type of view	Created by	Who can access
Private	Suite administrator	Creator can edit, view, and delete.
Shared	Suite administrator	Creator and other suite administrators can edit, view, and delete. Suite users can view.
Private	Suite user	Creator can edit, view, and delete.
Shared	Suite user	Creator can edit, view, and delete. Suite administrators can view and delete. Other suite users can view.

Managing logging views in the console

In the console, you can create logging views, access logged events from a view, edit a log view, and purge log events.

Creating a view of logged events in the console

You can create views of events that suite component users and shared services initiate. These events are stored in the metadata repository.

Before you begin

You must have suite administrator or suite user authority.

Procedure

1. On the **Operate** navigator menu in the console, select **Log View**.
2. In the Tasks pane, click **New Log View**.
3. Specify a name and a description for the log view.
4. In the **Access** menu, select the access level.
5. Specify the parameters of the log view.
   a. In the **Message** field, type a pattern for filtering message text. Two wildcard characters are supported:
      - An asterisk (*) finds one or more characters.
      - A question mark (?) finds any single character at the current position.

   b. In the Severity Levels pane, select one or more severity levels to filter the messages.
   c. Select one or more categories to filter on.
   d. In the Timestamp pane, specify a date range, event count, or the elapsed time.
   e. In the Context pane, select from the available list to include only the logging events that are generated by the selected components. Each component defines its own logging message fields.
6. Click **View Log** to view the results of the log view before saving.
7. Click **Save** > **Save and Close** to save the view.

Viewing logged events

You can open a log view to inspect the events that the view captured.

Procedure

1. On the **Operate** navigator menu in the console, select **Log View**.
2. In the Log View workspace, select the log view that you want to open.
3. In the Tasks pane, click **View Log**.
4. In the View Log pane, select an event to view the detailed log events. You can view the details of the logging view by clicking **Open Properties**.

Editing a log view

You can edit a view of logged events to modify which events are included in the log view.

Procedure

1. On the **Operate** navigator menu, select **Log View**.
2. In the Log View workspace, select the log view that you want to edit.
3. In the Tasks pane, click **Open**.
4. In the Open pane, modify the criteria for the view.
5. Click **View Log** to view the results of the modified log view before saving.
6. Click **Save** > **Save and Close** to save the view.

Copying a log view

To create a new log view that is based on the configuration details of a previous log view, you can create a copy of a log view.

Procedure

1. On the **Operate** navigator menu, select **Log View**.
2. In the Log View workspace, select the log view that you want to copy.
3. In the Tasks pane, click **Copy**.
4. Type a new name and a new description for the log view.
5. Optional: Modify the filters of the view.
6. Click **Save** > **Save and Close** to save the view.

Purging logged messages

The logged messages that are in the metadata repository have no expiration. You can delete the logged messages for the events that a logging view captures. This action is useful for managing large volumes of events.

Before you begin

You must have suite administrator authority.

Procedure

1. On the **Operate** navigator menu, select **Log View**.
2. In the Log View workspace, select one or more log views.
3. In the Tasks pane, click **Purge Log**.
4. In the confirmation window, click **OK** to confirm that you want to purge the log events. The logged messages for the selected views are deleted from the metadata repository.

Results

Logged messages are deleted in the background to allow you to continue to work on other tasks. When you delete a large number of logged messages, the events for logged messages that have yet to be deleted might still be displayed after the screen is refreshed. These events are no longer displayed after all the logged messages are deleted from the metadata repository.

Managing logging views in the IBM InfoSphere Information Server Web console

In the **Administration** tab of the IBM InfoSphere Information Server Web console, you can create logging views, access logged events from a view, edit a log view, purge log events, and delete logging views. You can also manage log views by logging component.

Creating a view of logged events in the IBM InfoSphere Information Server Web console

You can create views of events that suite component users and shared services initiate. These events are stored in the metadata repository.

Before you begin

You must have suite administrator or suite user authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Log Views**.
3. In the Log Views pane, click **New**.
4. Specify a name and a description for the log view.
5. In the **Log View Access** list, select the access level.
6. Optional: In the **Message** field, type a pattern for filtering message text. Two wildcard characters are supported:
   - An asterisk (*) finds one or more characters.
   - A question mark (?) finds any single character at the current position.
7. Optional: In the Severity Level group, select one or more severity levels to filter the messages.
8. Optional: Filter on the logging category.
   a. In the Categories pane, click **Browse**.
   b. In the Browse Categories window, select one or more categories.
   c. Click **OK** to close the window.
9. Optional: In the Timestamp pane, specify a date range, event count, or the elapsed time.

Option	Description
To specify a date range:	1. Select **Range**. 2. Type a start date and time and an end date and time or use the calendar to specify a starting date and optionally an ending date.
To schedule real-time update:	1. Select **Real-Time Logging**. 2. Specify the number of events to include and the refresh rate, in seconds.
To specify elapsed time:	1. Select **Interval**. 2. Specify an interval number and select the type of interval, such as 5 days.

10. Optional: In the Context pane, select from the available list to include only the logging events that are generated by the selected components. Each component defines its own logging message fields.
11. Optional: Specify the table columns that will show in the log view.
12. Click **Save and Close** to save the view.

Viewing log events in the IBM InfoSphere Information Server Web console

You can open a log view to inspect the events that the view captured.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Log Views**.
3. In the Log Views pane, select the log view that you want to open.
4. Click **View Log**. The View Logs pane shows a list of the logged events.
5. Select an event to view the detailed log events.
6. Optional: Click **Export Log** to save a copy of the log view on your computer.
7. Optional: Click **Purge Log** to purge the log events that are currently shown.

Editing a log view in the IBM InfoSphere Information Server Web console

You can edit a view of logged events to modify which events are included in the log view.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Log Views**.
3. In the Log Views pane, select the log view that you want to edit.
4. Click **Open**.
5. In the Open pane, change the criteria for the view.
6. Click **Save and Close** to save the view.

Copying a log view in the IBM InfoSphere Information Server Web console

To create a log view that is based on the configuration details of a previous log view, you can create a copy of a log view.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Log Views**.
3. In the Log Views pane, select the view that you want to copy.
4. Click **Copy**.
5. Type a new name and a new description for the log view.
6. Optional: Modify the filters of the view.
7. Click **Save and Close** to save the view.

Purging logged messages in the IBM InfoSphere Information Server Web console

The logged messages that are in the metadata repository have no expiration. You can delete the logged messages for the events that a logging view captures. This action is useful for managing large volumes of events.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Log Views**.
3. In the Log Views pane, select one or more views.
4. Click **Purge Log**.
5. In the confirmation window, click **Yes** to confirm that you want to purge the log events. The logged messages for the selected views are deleted from the metadata repository.

Results

Logged messages are deleted in the background to allow you continue to work on other tasks. When you delete a large number of logged messages, the events for logged messages that have yet to be deleted might still display after the screen is refreshed. These events are no longer displayed after all the logged messages are deleted from the metadata repository.

Managing logging by component

For each logging component in IBM InfoSphere Information Server, you can manage logging by modifying the thresholds at which events are logged in the metadata repository, specifying that a logging configuration is active, specifying that a logging configuration is the default, or deleting a logging configuration.

About this task

A logging component is a named entity that represents a suite component in InfoSphere Information Server or a shared service, such as the session or monitoring service, that uses the logging service.

Creating a logging configuration

You can create a logging configuration to set the criteria for logging events in a suite component.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Logging Components**.
3. In the Logging Components pane, select one of the logging components.
4. Click **Manage Configurations**.
5. Click **New Logging Configuration**.
6. In the New pane, type a name for the configuration.
7. In the **Threshold** menu, select a threshold level for writing logging events to the metadata repository. The threshold value has precedence over individual category severity levels (below) and will limit what is logged. If the threshold is set to **Off**, nothing will be logged for this configuration. To troubleshoot a specific issue, set the threshold value to **All** and use the category severity levels to specify what is logged.
8. Add logging categories to the configuration.
   a. Click **Browse**.
   b. In the Browse Categories window, select the categories that you want to include in the configuration.
   c. Click **OK** to close the window.
9. Optional: Modify the severity levels for the included categories. Leave the setting to **Warn** unless you want to debug a specific issue.
10. Click **Save and Close** to save the configuration in the metadata repository.

Results

The logging configuration displays the names of the logging categories specified in the preceding task and the root logging category for the component that you are working with. Always specify the root logging category in the logging configuration.

Editing a logging configuration

If you want to change the logging categories and the filtering of the views, you can edit a logging configuration.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Logging Components**.
3. In the Logging Components pane, select one of the logging components.
4. Click **Manage Configurations**.
5. Select a configuration.
6. Click **Open**.
7. Modify the details of the configuration.
8. Click **Save and Close** to save the configuration.

Copying a logging configuration

To create a new logging configuration that is based on the configuration details of another logging configuration, you can create a copy of a logging configuration.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Logging Components**.
3. In the Logging Components pane, select one of the logging components.
4. Click **Manage Configurations**.
5. Select a configuration.
6. Click **Copy**.
7. Optional: In the Copy pane, type a new name for the logging configuration.
8. Modify the configuration details.
9. Click **Save and Close** to save the configuration.

Setting a default logging configuration

You can set a default logging configuration. A default configuration is the active configuration if no other configuration is activated.

Before you begin

You must have suite administrator authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Logging Components**.
3. In the Logging Components pane, select one of the logging components.
4. Click **Manage Configurations**.
5. Select a configuration.
6. Click **Set as Default**.

Activating a logging configuration

You activate a logging configuration to log events in the metadata repository that uses that configuration.

Before you begin

You must have suite administrator authority.

About this task

You can create multiple logging configurations for each suite component. Only active logging configurations log events in the metadata repository.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Log Management** > **Logging Components**.
3. In the Logging Components pane, select one of the logging components.
4. Click **Manage Configurations**.
5. Select a configuration.
6. Click **Set as Active**.

Chapter 11. Managing schedules

In the IBM InfoSphere Information Server Web console, you can query all of the schedules that are defined across all of the suite components, check their status, history, and forecast, perform maintenance tasks such as purging the schedule execution history, and stop or start existing schedules to prevent system overload.

Many of the suite components use scheduling capabilities. For example, a report run and an analysis job in IBM InfoSphere Information Analyzer are scheduled tasks. Typically, you create, update, and manage these schedules in the suite component. For example, you create a schedule for a column analysis job to run weekly in an InfoSphere Information Analyzer project in the IBM InfoSphere Information Server console.

As a suite administrator, you might also want to have a global view of all of the scheduled activities that are created by each of the suite components to ensure that enough resources are available to process these schedules and to monitor who is scheduling tasks and with what frequency.

Criteria for schedule views

You access schedules from a view, which filters the events based on criteria that you set.

To create views, you can filter messages by the following criteria:

Name You can filter tasks of a schedule by their names. Two wild cards are supported:

- An asterisk (*) finds one or more characters.
- A question mark (?) finds any single character at the current position.

Description
You can filter tasks of a schedule by their descriptions.

Schedule status
A schedule has three statuses: Complete, Started, and Paused.

Task Run status
Each task instance can have one of four statuses: Abnormally Ended, Finished, Canceled by User, or Running.

Creators
You can filter schedules by users.

Dates You can filter schedules by three sets of dates:

- The dates on which schedules are created.
- The dates on which any task executions of the schedule were started.
- The updates, such as run start or completion, of any task executions for the schedule.

Origin
You can filter tasks based on the application components that originated the tasks.

Shared and private views

A view can be private or shared. A suite administrator or suite user who creates a private view has exclusive access to the view.

The following table describes the levels of access, based on the creator and type of view.

Table 16. Access to views

Type of view	Created by	Who can access
Private	Suite administrator	Creator can edit, view, and delete.
Shared	Suite administrator	Creator and other suite administrators can edit, view, and delete. Suite users can view.
Private	Suite user	Creator can edit, view, and delete.
Shared	Suite user	Creator can edit, view, and delete. Suite administrators can view and delete. Other suite users can view.

Creating a schedule view

You create a schedule view to access and manage a list of schedules and scheduled tasks.

Before you begin

You must have suite administrator or suite user authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Schedule Monitoring** > **Views of Schedules**.
3. In the Views of Schedules pane, click **New Scheduling View**.
4. Specify the name, description, and access level of the view.
5. In the Filters pane, specify criteria for filtering schedules.
6. Click **Save and Close** to save the schedule view.

What to do next

You can now view all of the schedules that are captured by this schedule view.

Creating a schedule view from a copy

To create a schedule view that is based on the configuration details of another schedule, you can create a copy of a schedule view.

Before you begin

You must have suite administrator or suite user authority.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Schedule Monitoring** > **Views of Schedules**.
3. In the Views of Schedules pane, select a view.
4. Click **Copy**.
5. In the Copy pane, type a new name and description for the schedule view.
6. Change the criteria of the view.
7. Click **Save and Close**.

Viewing the schedules that are captured by a schedule view

You can view the schedules that are captured by a schedule view. From this view, you can then manage the schedules and scheduled tasks.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Schedule Monitoring** > **Views of Schedules**.
3. In the Views of Schedules pane, select a view.
4. Click **View Schedules**. A list of schedules that fit the criteria of the view opens.

Pausing all the schedules in a view

To pause a set of schedules, you can pause all of the schedules that are captured by a schedule view.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Schedule Monitoring** > **Views of Schedules**.
3. In the Views of Schedules pane, select a view.
4. Click **Pause**. The schedules that are captured by the view are paused. All tasks in them will not run until the schedules are resumed.

Resuming all the schedules in a view

After you pause all of the schedules in a schedule view, you can resume all of the schedules that are captured by the scheduled view.

Procedure

To reuse all of the schedules in a schedule view:

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Schedule Monitoring** > **Views of Schedules**.
3. In the Views of Schedules pane, select a view.
4. Click **Resume**. The schedules that are captured by the view are resumed.

Purging the history for all the schedules in a view

To quickly purge the run history of a number of schedules, you can purge the history of a schedule view. The run history for all of the schedules that are captured by the schedule view are purged from the metadata repository.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Schedule Monitoring** > **Views of Schedules**.
3. In the Views of Schedules pane, select a view.
4. Click **Purge Run History**.
5. In the Purge window, specify an action.

Option	Description
Purge all run history	Select **All**.
Purge run history in a date range	1. Select **Range**. 2. Type dates and times or use the calendar to specify a start date and an end date.

6. Click **Yes**. The run history is deleted from the metadata repository.

Working with the scheduled tasks in a view

After you create a schedule view, you can access the individual schedules and scheduled tasks that are captured by the view. You can stop and start the individual tasks. You can also view a summary of the completed tasks, the running tasks, or the future tasks that are captured by that view.

Stopping a scheduled task

While you are viewing the schedules that are captured by a schedule view, you can stop a scheduled task.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Schedule Monitoring** > **Views of Schedules**.
3. In the Views of Schedules tab, select a view.
4. Click **View Schedules**.
5. In the View Schedules pane, select a scheduled task.
6. Click **Stop**. The task is stopped.

Purging the history of a scheduled task

You can remove the run history of a scheduled task from the metadata repository. The task and its schedule remain in the metadata repository.

Procedure

1. In the IBM InfoSphere Information Server Web console, click the **Administration** tab.
2. In the Navigation pane, select **Schedule Monitoring** > **Views of Schedules**.

3. In the Views of Schedules pane, select a view.
4. Click **View Schedules**.
5. In the View Schedules pane, select a task.
6. Click **Purge**. The run history of the scheduled task is deleted from the metadata repository.

Viewing a list of completed schedules

If you are viewing an ongoing scheduled task, you can view a summary of all instances of this scheduled task that have completed.

Procedure

1. In the View Schedules pane, select a schedule.
2. Click **View Complete**.

Viewing a list of running schedules

For a scheduled task, you can view which instances of the schedule are currently running.

Procedure

1. In the View Schedules pane, select a schedule.
2. Click **View Running**.

Viewing a list of upcoming scheduled tasks

If you are viewing an ongoing scheduled task, you can view the tasks that will run in the future.

Procedure

1. In the View Schedules pane, select a schedule.
2. Click **View Forecast**.

Chapter 12. Backing up and restoring IBM InfoSphere Information Server

To prevent the loss of data and to prepare for disaster recovery, you can back up and restore the databases, profiles, and directories that are associated with IBM InfoSphere Information Server.

About this task

The services tier, engine tier, and metadata repository tier consist of various elements that require backup. The procedures documented here do not cover backing up and restoring InfoSphere Information Server clients that are running on Microsoft Windows computers. Backup and restore is typically not required for client-only installations as only local, user-specific customizations are stored on client computers. To recover a client-only installation, you can reinstall the clients.

The isrecovery automated tool is provided to help you backup and restore the services, engine, and metadata repository tiers. When you run a backup or recovery, all tiers installed on the computer are backed up simultaneously. If your system is dispersed across computers, back them all up.

The engine tier installation contains files and configuration data that are linked to elements stored in the metadata repository. IBM InfoSphere DataStage and IBM InfoSphere QualityStage projects are stored in the engine tier installation directory or elsewhere on the same computer. They are linked to elements stored in the metadata repository. There is also information stored in files in the IBM WebSphere Application Server directory that is linked to elements stored in the metadata repository. Finally, while the IBM InfoSphere Information Analyzer analysis databases and InfoSphere QualityStage Match Designer databases are separate from the metadata repository database, there are cross-database references between them.

Because of these interdependencies, to guarantee a successful backup, the metadata repository, the InfoSphere QualityStage Match Designer database, the InfoSphere Information Analyzer analysis databases, the IBM InfoSphere DataStage and InfoSphere QualityStage projects, and all of the file system-based elements that change after installation must be backed up simultaneously and the backup must occur while all services and IBM WebSphere Application Server are shut down. If you do not shut them down manually, the isrecovery tool shuts them down.

When you restore an installation, all of the same elements that were backed up need to be restored during the same restore session. Restore all elements before you start IBM WebSphere Application Server or InfoSphere Information Server.

Backing up IBM InfoSphere Information Server components

To back up IBM InfoSphere Information Server components, you use the isrecovery tool with the -backup option. Some components must be backed up manually.

Before you begin

Before running a backup operation, ensure that there are no active client connections. The backup operation shuts down all active services, which might cause unexpected errors if clients are connected.

Restrictions:

- The isrecovery tool backs up data and metadata, not the product installation. Before a restore operation, InfoSphere Information Server must be reinstalled at the exact version and patch level as the backed up system. Also, the installation topology and operating systems must be the same as the original. For example, you cannot back up two engines on Microsoft Windows computers and restore them to a single Linux computer.
- The services tier, engine tier, and metadata repository tier must all be backed up for a successful restore. If all tier archives from a backup session are not available during a restore session, the restore results in a system that is in an inconsistent state.

About this task

You can determine if there are active connections and optionally terminate the connections in the IBM InfoSphere Information Server Web console. For more information, see Managing active sessions.

Although clients might not be connected, the server might still be in use if jobs are running or might start running before all server components can be stopped. The jobs might belong to IBM InfoSphere DataStage, IBM InfoSphere QualityStage, or IBM InfoSphere Information Analyzer. You can use the IBM InfoSphere Information Server Web console to determine if any jobs are running or are scheduled to run soon. For more information, see Managing schedules.

Procedure

Complete the following steps on each computer where the services tier, engine tier, or metadata repository tier are installed for backup.

1. Create and edit a recovery.properties file based on the template.
   a. Copy `*installation_directory*/InformationServer/Recovery/conf/recovery.properties.reference` to `*installation_directory*/InformationServer/Recovery/conf/recovery.properties`
   b. Edit the `recovery.properties` file, providing values relevant to your computer. You can use encrypted strings for the values, particularly passwords, by first creating them using the encrypt command.
2. Run the isrecovery tool with the **`-backup`** and **`-archive`** options. The tool runs some validation, shuts down running services, creates the archive and work directories, and backs up the components into the archive directory. See the scenarios for examples.
3. If IBM InfoSphere Information Analyzer or the metadata repository are installed on the same computer as the engine tier or services tier, they are backed up by the isrecovery tool. If they are on a separate computer, the isrecovery tool provides database backup scripts for you. Run these backup scripts on the computers on which InfoSphere Information Analyzer or the metadata repository are installed.
4. Optional: If InfoSphere QualityStage is installed, you might want to back up the results database used for the InfoSphere QualityStage Match Designer

output. Or, you can recreate the Match Designer database when you restore InfoSphere Information Server components. You might choose the latter option if you want to continue to refine or develop match specifications after a restore operation.

5. Back up any system elements that are listed in the `installation_directory/InformationServer/Recovery/recovery.todo.txt` file and any files located in the `installation_directory/InformationServer/Recovery/todo` directory.
6. Back up external files or libraries that are used by InfoSphere DataStage and InfoSphere QualityStage jobs. External files are data sets, file sets, sequential files, hashed files, and other similar files that are required to run InfoSphere Information Server tasks, such as InfoSphere DataStage jobs. External libraries can be custom-written C++ functions that are called by the parallel engine.
7. Restart the InfoSphere Information Server services and WebSphere Application Server services. For more information, see Chapter 13, “Administering IBM InfoSphere Information Server and IBM WebSphere Application Server services,” on page 195.

Restoring IBM InfoSphere Information Server components

To restore IBM InfoSphere Information Server components, you use the isrecovery tool with the -restore option. Some components must be restored manually, and in some installation topologies, the manual restoration steps interrupt the restore operation of the tool. In such cases, the tool can be run again with the -restart option.

Before you begin

Before running a restore operation, ensure that there are no active client connections. This task assumes that your backup topology has been out of operation and has no active client connections. Ensure that users are restricted from logging in during the entire restore session. Otherwise, the restore operation might fail or users might lose data in that it would be overwritten when the metadata repository is restored.

Restrictions:

- The isrecovery tool restores data and metadata, not the product installation. If you are restoring InfoSphere Information Server to different computers, the components must first be installed at the exact version and patch level as the backed up system. Also, the installation topology and operating systems must be the same as the original. For example, you cannot back up two engines on Microsoft Windows computers and restore them to a single Linux computer.
- The services, engine, and metadata repository tiers must have all been backed up for a successful restore. If all tier archives from a backup session are not available during a restore session, the restore operation would result in a system in an inconsistent state.
- It is possible to restore to computers with different host names. Additional configuration steps are required and are described.

Procedure

Complete the following steps on each computer where the services tier, engine tier, or metadata repository tier are installed for restore.

1. Disconnect all user sessions.

2. Copy the tier-respective archive that was created from the backup operation to the target computer to be restored.
3. Create and edit a recovery.properties file based on the template for each target computer to be restored.
   a. Copy *installation_directory*/InformationServer/Recovery/conf/recovery.properties.reference to *installation_directory*/InformationServer/Recovery/conf/recovery.properties.
   b. Edit each recovery.properties file, providing values relevant to each target computer to be restored. You can use encrypted strings for the values, particularly passwords, by first creating them using the encrypt command.
4. If you are restoring to computers with different host names, you must create a *host change file*. (You can create a template of this file by running the isrecovery tool with the **-validateonly** option.) Name the file HostChangeConfig.xml and put it in the InfoSphere Information Server conf directory. (Or, provide the name of the file with the **-host-name-change** parameter when you run the isrecovery tool.) The format of the host change file is as shown. Because of the interdependencies specified in each archive, the file must contain the host names of every tier in your topology, even if they will reside on the same computer.

```
<HostConfig>
  <Host tier="SERVICES"
    name="backedupsvcs_hostname"
    newName="restoredsvcs_hostname"/>
  <Host tier="ENGINE"
    name="backedupeng_hostname"
    newName="restoredeng_hostname"/>
</HostConfig>
```

5. Use the HostChangeConfig.xml file to also specify the locations of your projects if you want to create projects in non-default locations on the target computer. You might do this to maintain the same non-default locations that were on the original computer, or you might want to use different locations on the target computer to take advantage of a different disk configuration.

```
<HostConfig>
  <Host tier="SERVICES"
    name="backedupsvcs_hostname"
    newName="restoredsvcs_hostname"/>
  <Host tier="ENGINE"
    name="backedupeng_hostname"
    newName="restoredeng_hostname">
    <ProjectLocation name="nonstandard_project_name"
      directory="nonstandard_project_directory"/>
  </Host>
</HostConfig>
```

   If you are restoring projects in non-default locations to the same computer, you still use the HostChangeConfig.xml file, but specify the same host name for the name and newName attributes of the Host element. Example:

```
<HostConfig>
  <Host tier="SERVICES" name="vmsys01" newName="vmsys01"/>
  <Host tier="ENGINE" name="vmsys02" newName="vmsys02">
    <ProjectLocation name="Connectivity"
      directory="/home/dsdev1/Projects/Connectivity"/>
    <ProjectLocation name="DSDeliver"
      directory="/home/dsdev1/Projects/DSDeliver"/>
  </Host>
</HostConfig>
```

6. Run the isrecovery tool with the **`-restore`** and **`-archive`** options. The tool runs some validation, shuts down any running services, and restores the components from the archive directory. See the scenarios for examples.
7. If IBM InfoSphere Information Analyzer or the metadata repository are installed on the same computer as the engine or services tier, they are restored by the isrecovery tool. If they are on a separate computer, run the database restore scripts provided by the isrecovery tool during the backup session.
8. Restore the system elements that were listed in the *`installation_directory`*`/InformationServer/recovery.todo.txt` file and any files located in the *`installation_directory`*`/InformationServer/Recovery/todo` directory during the backup session.
9. Restore any external files or libraries that were used by InfoSphere DataStage and InfoSphere QualityStage jobs and backed up.
10. If you use IBM InfoSphere QualityStage Match Designer and want to continue to refine or develop match specifications, recreate the Match Designer database.
11. Restore external files or libraries that are used by IBM InfoSphere DataStage and InfoSphere QualityStage jobs.
12. Restart the InfoSphere Information Server services and WebSphere Application Server services. For more information, see Chapter 13, “Administering IBM InfoSphere Information Server and IBM WebSphere Application Server services,” on page 195.

Backup and restore scenarios

To help illustrate the use of the isrecovery tool in your backup and restore sessions, consider these typical scenarios.

Wherever the isrecovery tool is shown in the examples that follow, the full path must be specified.

- Windows `C:\IBM\InformationServer\Recovery\bin\isrecovery.bat`
- Linux UNIX `/opt/IBM/InformationServer/Recovery/bin/isrecovery.sh`

Scenario 1: Simple installation restored to the same computers

In this scenario, the tiers are restored to the same computers from which they are backed up. The services tier and metadata repository tier are installed on the same Microsoft Windows computer, and the engine tier is installed on another.

Backup

1. Create and edit a `recovery.properties` file for the first computer, based on the `recovery.properties.reference` template file.
2. Back up the installation on the first computer, which contains the services tier and metadata repository tier.
   ```
   isrecovery.bat -backup -archive C:\Users\dsadm\archive
   ```
3. Create and edit a `recovery.properties` file for the second computer, based on the `recovery.properties.reference` template file.
4. Back up the installation on the second computer, which contains the engine tier.
   ```
   isrecovery.bat -backup -archive C:\Users\dsadm\archive
   ```

Restore

A reason you might restore to the same computers is if your installation has become corrupted.

1. Reinstall the IBM InfoSphere Information Server services tier, then install the engine tier. Be sure to install all the same fix packs and patches as the original.
2. Create and edit a `recovery.properties` file for the first computer, based on the `recovery.properties.reference` template file.
3. Restore the services tier and metadata repository tier to the first computer.
   ```
   isrecovery.bat -restore -archive C:\Users\dsadm\archive
   ```
4. Create and edit a `recovery.properties` file for the second computer, based on the `recovery.properties.reference` template file.
5. Restore the engine to the second computer.
   ```
   isrecovery.bat -restore -archive C:\Users\dsadm\archive
   ```

Scenario 2: Tiers installed on separate computers with a separate database restore

In this scenario the tiers are restored to different computers with different host names. The services tier, metadata repository tier, and engine tier are installed on separate Linux computers.

Backup

1. Create and edit a `recovery.properties` file for the first computer, based on the `recovery.properties.reference` template file.
2. Back up the installation on the first computer, which contains the services tier.
   ```
   isrecovery.sh -backup -archive /home/dsadm/archive
   ```
3. Because the metadata repository tier is installed on a computer separate from the engine tier and services tiers, the isrecovery tool creates a script that you can use to back up the metadata repository. Copy the script to the computer that contains the metadata repository tier. Back up the installation on the second computer.
4. Create and edit a `recovery.properties` file for the third computer, based on the `recovery.properties.reference` template file.
5. Back up the installation on the third computer, which contains the engine tier.
   ```
   isrecovery.sh -backup -archive /home/dsadm/archive
   ```

Restore

1. If not done already, install the services tier, metadata repository tier, and engine tier on the three new computers. Be sure to install all the same fix packs and patches as the original.
2. Copy the archives to the new computers. For example:
   a. Copy /home/dsadm/archive/SystemA_services_20110505_114500.iar from the first backed up computer to /tmp/archive on the new first computer.
   b. Copy the database backup file from the second backed up computer to the new second computer.
   c. Copy /home/dsadm/archive/SystemC_engine_20110505_123000.iar from the third backed up computer to /tmp/archive on the new third computer.
3. Create and edit a `recovery.properties` file for the first new computer, based on the `recovery.properties.reference` template file.
4. Restore the archive to the first new computer. Because the metadata repository tier is on a separate computer, this recovery operation stops midway.
   ```
   isrecovery.sh -restore -archive /tmp/archive
   ```

5. Run the database restore scripts to restore the metadata repository to the second new computer.
6. Return to the first new computer and resume the restore of the services tier.

   ```
   isrecovery.sh -restart
   ```
7. Create and edit a `recovery.properties` file for the third computer, based on the `recovery.properties.reference` template file.
8. Restore the engine.

   ```
   isrecovery.sh -restore -archive /tmp/archive
   ```

Scenario 3: Multiple engines restored to different computers with host name changes

In this scenario the tiers are restored to different computers with different host names. The topology contains two engines, and thus the restore operation requires the use of a host name change file. The services tier, repository tier, and one engine are on one Linux computer. The other engine is on another Linux computer.

Backup

1. Create and edit a `recovery.properties` file for the first computer, based on the `recovery.properties.reference` template file.
2. Back up the installation on the first computer, which contains the services tier, repository tier, and one engine.

   ```
   isrecovery.sh -backup -archive /home/dsadm/archive
   ```
3. Create and edit a `recovery.properties` file for the second computer, based on the `recovery.properties.reference` template file.
4. Back up the installation on the second computer, which contains the second engine.

   ```
   isrecovery.sh -backup -archive /home/dsadm/archive
   ```

Restore

1. If not done already, install the InfoSphere Information Server services tier, repository tier, and engine on the new first computer. And, install the second engine on the second new computer. Be sure to install all the same fix packs and patches as the original.
2. Copy the archives to the new computers. For example:
   a. Copy /home/dsadm/archive/SystemA_services_20110505_114500.iar from the first backed up computer to /tmp/archive on the new first computer.
   b. Copy /home/dsadm/archive/SystemA_engine_20110505_121500.iar from the first backed up computer to /tmp/archive on the new first computer.
   c. Copy /home/dsadm/archive/SystemA_engine_20110505_123000.iar from the second backed up computer to /tmp/archive on the new second computer.
3. Create a host change file and copy it to both new computers. For example:

   ```
   <HostConfig>
     <Host tier="SERVICES" name="SystemA" newName="SystemY"/>
     <Host tier="ENGINE" name="SystemA" newName=" SystemY"/>
     <Host tier="ENGINE" name="SystemB" newName=" SystemZ"/>
   </HostConfig>
   ```
4. Create and edit a `recovery.properties` file for the first new computer, based on the `recovery.properties.reference` template file.
5. Restore the archive to the first new computer.

   ```
   isrecovery.sh -restore -archive /tmp/archive -host-change-config /tmp/host.chg
   ```

6. Create and edit a `recovery.properties` file for the second new computer, based on the `recovery.properties.reference` template file.
7. Restore the archive to the engine on the second new computer.

   ```
   isrecovery.sh -restore -archive /tmp/archive -host-change-config /tmp/host.chg
   ```

The isrecovery tool

Use the isrecovery tool to back up and restore the services tier, engine tier, and metadata repository tier.

Syntax

```
isrecovery
    -help
  | {
       -backup [-gen-config [-advanced]] -archive directory
     | -restore [-gen-config [-advanced]] -archive directory
    }
    [optional_parameters]
  | -restart
  | -clean
```

Parameters

-help
Displays the syntax of the tool. Optional and implied when no command-line options are specified.

-backup
Specifies to run a backup operation.

-restore
Specifies to run a restore operation.

-gen-config [-advanced]
Specifies to generate a `recovery.properties.template` file, which you can use as a template to create the `recovery.properties` file. If the keyword advanced is specified, optional properties are also included in the file. The `recovery.properties` file contains runtime user properties that are used during a backup or restore.

The generated template file is an alternative template to the `recovery.properties.reference` file, which is located in the `installation_directory/Recovery/conf` directory.

-archive *directory_name*
The name of the directory that contains the backed-up archive files.

-restart
Specifies that the backup or restore operation resume from a previous checkpoint.

-clean
Specifies to delete any existing checkpoint files and the work directory, so that the backup or restore process can be started from the beginning. You cannot run a restart immediately after you run a clean operation.

Optional parameters

-config *filename*
Specifies the name of a file that contains user properties needed by the

modules. By default, a file called recovery.properties under the conf directory is used, if it exists. Specifying this option overrides that file.

-host-change-config *filename*
Specifies the name of a file that describes host name changes. This parameter is only allowed during a restore operation. By default, a file called HostChangeConfig.xml under the conf directory is used, if it exists. Specifying this option overrides that file. Such a file is required when restoring to computers with different host names.

-gen-app-server *directory_name*
Specifies that the isrecovery tool not directly modify the configuration of an application server. Instead, configuration scripts must be written to the specified directory, so that they can be run manually. This option is only applicable when the internal user registry is not used. If specified when the internal user registry is used, the option is ignored.

-userfiles *filename*
The name of a file that contains a list of files to be included in the backup. By default, a file called UserFiles under the conf directory is used, if it exists. Specifying this option overrides that file.

-work *directory_name*
Provides a directory where all work files are stored. By default, the system temporary directory is used. Specifying this option overrides that location.

-validateonly
Specifies that only validation of the properties and command-line options is to be done. If your topology has tiers on separate computers, a sample `HostChangeConfig.xml` is created that you can use.

Chapter 13. Administering IBM InfoSphere Information Server and IBM WebSphere Application Server services

Follow these procedures to administer IBM InfoSphere Information Server services and IBM WebSphere Application Server services. For example, check the status of services and stop and restart them when you back up or restore your system, or to do other maintenance tasks.

For further information about the WebSphere Application Server tools and processes mentioned in these procedures, see the WebSphere Application Server Information Center:

- IBM WebSphere Application Server Network Deployment 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp
- IBM WebSphere Application Server Network Deployment 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp

For further information about various tools to use to manage a WebSphere Application Server, see the following topics in the WebSphere Application Server documentation:

WebSphere Application Server 7.0

Starting the Deployment Manager by using the **startManager** tool: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startmanager.html

Stopping the Deployment Manager by using the **stopManager** tool: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_stopmanager.html

Starting a node agent by using the **startNode** tool: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startnode.html

Stopping a node agent by using the **stopNode** tool: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_stopnode.html

Starting cluster members: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/trun_wlm_cluster_start.html

Stopping cluster members: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/trun_wlm_cluster_stop.html

Starting stand-alone application servers and cluster members by using the **startServer** tool: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_startserver.html

WebSphere Application Server 8.0

Starting the Deployment Manager by using the **startManager** tool:

http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startmanager.html

Stopping the Deployment Manager by using the **stopManager** tool: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_stopmanager.html

Starting a node agent by using the **startNode** tool: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_startnode.html

Stopping a node agent by using the **stopNode** tool: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/rxml_stopnode.html

Starting cluster members: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/trun_wlm_cluster_start.html

Stopping cluster members: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/trun_wlm_cluster_stop.html

Starting stand-alone application servers and cluster members by using the **startServer** tool: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_startserver.html

Maintenance mode

To prevent users from authenticating to IBM InfoSphere Information Server during maintenance, you can place it into maintenance mode with the SessionAdmin command. Use the same command to take InfoSphere Information Server out of maintenance mode and to determine the current maintenance mode.

Placing InfoSphere Information Server in maintenance mode is useful when you do routine maintenance such as applying a fix pack or backing up the system. When in maintenance mode, only users with the suite administrator role and system users can authenticate. Note also that in the Web admin console, **Maximum Sessions** is not editable while InfoSphere Information Server is in maintenance mode.

Usage

Use the SessionAdmin command to set the maintenance mode for InfoSphere Information Server. You must have suite administrator authority to run this command. The command is in the following locations:

- UNIX Linux

```
IS_install_dir/ASBServer/bin/SessionAdmin.sh
IS_install_dir/ASBNode/bin/SessionAdmin.sh
```

- Windows

```
IS_install_dir\ASBServer\bin\SessionAdmin.bat
IS_install_dir\ASBNode\bin\SessionAdmin.bat
```

Tip: In the following usage examples, you can choose to use the -authfile option instead of -user and -password.

Placing InfoSphere Information Server in maintenance mode

```
SessionAdmin -user username -password plaintext_password -kill-user-sessions
SessionAdmin -user username -password plaintext_password -set-maint-mode ON
```

Taking InfoSphere Information Server out of maintenance mode

```
SessionAdmin -user username -password plaintext_password -set-maint-mode OFF
```

Determining the current maintenance mode

```
SessionAdmin -user username -password plaintext_password -get-maint-mode
```

Syntax

```
SessionAdmin
  [-{verbose | v}]
  [-{results | res} value ]
  [-{log | l} value ]
  [-{logerror | error} value ]
  [-{loginfo | info} value ]
  [-{loglevel | level} value ]
  [-{help | ?} ]
  [-{host | h} value ]
  [-{port | p} value ]
  [-{user | ur} value ]
  [-{password | pw} value ]
  [-{authfile | af} value ]
  [-{kill-user-sessions | kus} ]
  [-{get-maint-mode | gmm}]
  [-{set-maint-mode | smm} value ]
```

Parameters

[-{verbose | v}]
Display detailed runtime output, except for the runtime logging messages.

[-{results | res} *value* **]**
Print all the enabled runtime output to the specified file.

[-{log | l} *value* **]**
Print the runtime logging messages to the specified file. This option is used with loglevel.

[-{logerror | error} *value* **]**
Print all ERROR and FATAL runtime logging messages to the specified file.

[-{loginfo | info} *value* **]**
print all INFO, WARN, DEBUG, and TRACE runtime logging messages to the specified file.

[-{loglevel | level} *value***]**
The level at which runtime logging messages are enabled.

[-{help | ?}]
Displays the usage message.

[-{host | h} *value***]**
Host machine name. The default value is localhost.

[-{port | p} *value***]**
Host machine HTTP port. The default value is 9080.

[-{user | ur} *value* **]**
The administrator user ID to run this command. If not specified and if the -authfile parameter is not specified, you are prompted for a user ID.

[-{password | pw} *value* **]**
The password of the administrator user ID specified in the -user parameter. This parameter cannot be specified without the -user parameter. If the -user parameter is specified without the -password parameter, you are prompted for a password.

[-{authfile | af} *value* **]**
The path for the credentials file that contains the administrator user ID and password to run this command. If the -user parameter is also specified, the credentials file is ignored and you are prompted for a password.

[-{kill-user-sessions | kus}]
Stop all user sessions.

[-{get-maint-mode | gmm}]
Display the current maintenance mode setting.

[-{set-maint-mode | smm} *value* **]**
Set the maintenance mode. Acceptable values are ON or OFF.

Shutting down services (Windows)

Follow this procedure to shut down the IBM InfoSphere Information Server services and IBM WebSphere Application Server services in a Microsoft Windows installation. Shut down services before you back up or restore your system, or do other maintenance tasks.

Before you begin

If your metadata repository tier is set up in a clustered configuration, make sure that the databases are shut down last, if you shut them down at all.

Note: To perform a cold backup, you must shut down the databases.

About this task

The paths shown in this task assume that WebSphere Application Server and InfoSphere Information Server are installed in the default locations. Your paths and profile names are different if you installed these products in different locations.

Procedure

1. Stop the following services: InfoSphere DataStage Engine Resource Service, IBM InfoSphere DataStage Telnet Service, DSRPC Service, ASB Agent, and Logging Agent. To stop the services:
   a. On each computer that hosts an engine tier, log in as a user that has local administrator privileges.
   b. Use the Services Administrative Tool or the `sc` command-line tool to stop the services. Stop the services in the order in which they appear in the table.

Table 17. Services to stop, in the order in which they must be stopped

Service full name	Service short name	Process name
DataStage Engine Resource Service	DSEngine	`dsservice.exe`

Table 17. Services to stop, in the order in which they must be stopped (continued)

Service full name	Service short name	Process name
DataStage Telnet Service	dstelnet	`tl_dsservice.exe`
DSRPC Service	dsrpc	`dsrpcd.exe`
ASB Agent	ASBAgent	`ASBAgent.exe`
Logging Agent	LoggingAgent	`LoggingAgent.exe`

2. Stop WebSphere Application Server.

Stopping IBM WebSphere Application Server (Windows)

Follow this procedure to shut down WebSphere Application Server services in a Microsoft Windows installation.

Procedure

Do either of the following tasks, depending on whether you have a stand-alone or clustered configuration:

Stopping a stand-alone WebSphere Application Server configuration:

1. On the computer that hosts the services tier, log in as a user that has local administrator privileges.
2. On the Windows desktop, click **All Programs** > **IBM WebSphere** > **Application Server** > **Profiles** > **InfoSphere** > **Stop the server**. *InfoSphere* is the profile name where InfoSphere Information Server is installed.
3. When prompted, enter a user name and password for an account that has WebSphere Application Server administrator privileges.
4. Verify that WebSphere Application Server processes have stopped. See "Checking the status of IBM WebSphere Application Server (stand-alone installation)" on page 210.

Stopping a clustered WebSphere Application Server configuration:

1. Start the WebSphere Application Server administrative console.
2. In the console navigation tree, click **Servers** > **Clusters**. The Server Cluster page appears.

   Note: Depending on the WebSphere Application Server version, you might have to click **Servers** > **Clusters** > **WebSphere Application Server clusters** to access the Server Cluster page.
3. Select the cluster.
4. Click **Stop**. This command allows each application server to finish existing requests and allows failover to another member of the cluster. When the stop operation begins, the cluster status changes to *partially stopped*. After all application servers stop, the cluster status becomes *Stopped*.
5. On each node, log in as a user with local administrator privileges.
6. On the node, run the **stopNode** command to stop the node agent:

   ```
   C:\IBM\WebSphere\AppServer\profiles\Custom01\bin\stopNode -user wasadmin
      -password password
   ```

   In the command, *Custom01* is the WebSphere Application Server custom profile that hosts a node of theIBM InfoSphere Information Server cluster. *wasadmin* and *password* are the WebSphere Application Server administrator user name and password.

Control returns to the command line after the node agent shuts down.

Note: If the node agent runs as a Windows service, the **stopNode** command stops the associated Windows service and the node agent.

7. Verify that all cluster members and node agents are stopped. See "Checking the status of IBM WebSphere Application Server cluster members" on page 212 and "Checking the status of IBM WebSphere Application Server node agents" on page 213.
8. Stop the Network Deployment manager process. See "Stopping the IBM WebSphere Application Server Deployment Manager (Windows)."

Stopping the IBM WebSphere Application Server Deployment Manager (Windows)

Follow this procedure to stop the IBM WebSphere Application Server Network Deployment Deployment Manager in a Microsoft Windows installation with WebSphere Application Server clustering.

Procedure

1. On the node that hosts the Deployment Manager, log in as a user with local administrator privileges.
2. On the node, run the **stopManager** command to stop the Network Deployment manager process:

   ```
   C:\IBM\WebSphere\AppServer\profiles\Dmgr01\bin\stopManager
      -user wasadmin -password password
   ```

   Dmgr01 is the WebSphere Application Server Deployment Manager profile. *wasadmin* and *password* are the WebSphere Application Server administrator user name and password.

   Note: If the Deployment Manager is running as a Windows service, the **stopManager** command stops the associated Windows service and also stops the Deployment Manager.
3. Verify that the Deployment Manager has stopped by using the WebSphere Application Server **serverStatus** command-line tool.

   For more information, see the **serverStatus** documentation:
   - WebSphere Application Server 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_serverstatus.html
   - WebSphere Application Server 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_serverstatus.html

Shutting down services (Linux, UNIX)

Follow this procedure to shut down the IBM InfoSphere Information Server services and IBM WebSphere Application Server services in a Linux or UNIX installation. Shut down services before you back up or restore your system, or do other maintenance tasks.

Before you begin

If your metadata repository tier is set up in a clustered configuration, make sure that the databases are shut down last, if you shut them down at all.

Note: To perform a cold backup, you must shut down the databases.

About this task

The paths shown in this task assume that WebSphere Application Server and InfoSphere Information Server are installed in the default locations. Your paths and profile names are different if you installed these products in different locations.

Procedure

1. Stop the following services: Metadata Server services, ASB Agent, Logging Agent, and DSRPC Server.
   a. Log in to each computer that hosts an engine tier. Use the following credentials:
      - If you have configured the InfoSphere Information Server agents for non-root administration, and the services were started and are currently running under this non-root user, use the credentials for the administrator user that you previously configured.
      - If you have not configured the agents in this manner, log in as root.

   b. Run the following command to source the `dsenv` file:

      ```
      . /opt/IBM/InformationServer/Server/DSEngine/dsenv
      ```

   c. Make sure that the `/.dshome` file contains the current engine location. UNIX systems support multiple instances of InfoSphere DataStage.

   d. Run the following commands to stop the InfoSphere DataStage services. The `bin/uv -admin -stop` command stops the instance of InfoSphere DataStage that is in the `/.dshome` file.

      ```
      cd /opt/IBM/InformationServer/Server/DSEngine
      bin/uv –admin –stop
      ```

   e. Run the following commands to stop the agents:

      ```
      cd /opt/IBM/InformationServer/ASBNode/bin
      ./NodeAgents.sh stop
      ```

   f. Run the **`top`** command to verify that the processes have stopped.
2. Stop WebSphere Application Server.

Stopping IBM WebSphere Application Server (Linux, UNIX)

Follow this procedure to shut down WebSphere Application Server services in a Linux or UNIX installation.

Procedure

Do either of the following tasks, depending on whether you have a stand-alone or clustered configuration:

Stopping a stand-alone WebSphere Application Server configuration:

1. Log in to the computer that hosts the services tier. Use the following credentials:
   - If you have configured WebSphere Application Server for non-root administration, use the credentials for the non-root user that is configured to administer WebSphere Application Server.

- If you have not configured WebSphere Application Server in this manner, log in as root.

2. Run the following commands:

```
cd /opt/IBM/InformationServer/ASBServer/bin
./MetadataServer.sh stop
```

3. Verify that WebSphere Application Server processes have stopped. See "Checking the status of IBM WebSphere Application Server (stand-alone installation)" on page 210.

Stopping a clustered WebSphere Application Server configuration:

1. Log in to the node that hosts the Deployment Manager. Use the WebSphere Application Server administrator credentials.
2. In the console navigation tree, click **Servers** > **Clusters** to access the Server Cluster page.

   Note: Depending on your WebSphere Application Server version, you might have to click **Servers** > **Clusters** > **WebSphere Application Server clusters** to access the Server Cluster page.
3. Select the cluster.
4. Click **Stop**. This command allows each application server to finish existing requests and allows failover to another member of the cluster. When the stop operation begins, the cluster status changes to *partially stopped*. After all application servers stop, the cluster status becomes *Stopped*.
5. On each node, log in by using WebSphere Application Server administrator credentials.
6. On the node, run the **stopNode** command to stop the node agent. Specify the correct profile:

   ```
   /opt/IBM/WebSphere/AppServer/profiles/Custom01/bin/stopNode.sh
      -user wasadmin -password mypassword
   ```

   Custom01 is the WebSphere Application Server custom profile that hosts a node of the IBM InfoSphere Information Server cluster. *wasadmin* is the user name of the WebSphere Application Server administrator. *password* is the password.
7. Verify that all cluster members and node agents are stopped. See "Checking the status of IBM WebSphere Application Server cluster members" on page 212 and "Checking the status of IBM WebSphere Application Server node agents" on page 213.
8. Stop the Deployment Manager. See "Stopping the IBM WebSphere Application Server Deployment Manager (Linux, UNIX)."

Stopping the IBM WebSphere Application Server Deployment Manager (Linux, UNIX)

Follow this procedure to stop the WebSphere Application Server Deployment Manager in a Linux or UNIX installation with WebSphere Application Server clustering.

Procedure

1. Log in to the node that hosts the Deployment Manager by using WebSphere Application Server administrator credentials.
2. On the node, run the **stopManager** command to stop the Deployment Manager process:

```
/opt/IBM/WebSphere/AppServer/profiles/Dmgr01/bin/stopManager.sh -user wasadmin
   -password password
```

In the command, *Dmgr01* is the WebSphere Application Server Deployment Manager profile. *wasadmin* is the user name of the WebSphere Application Server administrator. *password* is the password.

Control returns to the command line after the Deployment Manager process shuts down.

3. Verify that the Deployment Manager has stopped.

   To verify that the processes have stopped, run the WebSphere Application Server **serverStatus.sh** command. For more information, see the **serverStatus.sh** documentation:

   - WebSphere Application Server 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_serverstatus.html
   - WebSphere Application Server 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_serverstatus.html

Starting services (Windows)

Follow this procedure to start the IBM InfoSphere Information Server services and IBM WebSphere Application Server services in a Microsoft Windows installation.

Before you begin

Make sure that the database is operational before you do this procedure.

About this task

The paths in this task assume that WebSphere Application Server and InfoSphere Information Server are installed in the default location. Your paths and profile names are different if you installed these products in a different location.

Procedure

1. Start WebSphere Application Server. See "Starting IBM WebSphere Application Server (Windows)" on page 204.
2. When WebSphere Application Server is fully started, log in to each computer that hosts an engine tier.
3. On each computer, start the following services: Logging Agent, ASB Agent, DSRPC Service, IBM InfoSphere DataStage Telnet Service, and InfoSphere DataStage Engine Resource Service. You can use the Services Administrative Tool or the **sc** command-line tool to start the services.

   Start these services in the order shown in the following table.

Table 18. Order in which services must be started

Service full name	Service short name
Logging Agent	LoggingAgent
ASB Agent	ASBAgent
DSRPC Service	dsrpc
InfoSphere DataStage Telnet Service	dstelnet

Table 18. Order in which services must be started (continued)

Service full name	Service short name
InfoSphere DataStage Engine Resource Service	DSEngine

Starting IBM WebSphere Application Server (Windows)

Follow this procedure to start the IBM WebSphere Application Server services in a Microsoft Windows installation.

Procedure

Do either of the following tasks, depending on whether you have a stand-alone or clustered configuration:

Starting a stand-alone WebSphere Application Server configuration:

1. On the computer that hosts the services tier, log in as a user with local administrator privileges.
2. On the Windows desktop, click **All Programs** > **IBM WebSphere** > **Application Server** > **Profiles** > **InfoSphere** > **Start the server**. *InfoSphere* is the profile name where InfoSphere Information Server is installed.
3. Even though the status of a might show as Started within the IBM InfoSphere Information Server Web console, it might still not be available for use by InfoSphere Information Server until the InfoSphere Information Server applications are fully initialized. To verify that WebSphere Application Server has started, monitor the log files. See "Checking the status of IBM WebSphere Application Server startup (stand-alone installation)" on page 210.

Starting a clustered WebSphere Application Server configuration:

1. Start the Deployment Manager. See "Starting the IBM WebSphere Application Server Deployment Manager (Windows)" on page 205.
2. On each node, run the **startNode** command to start the node agent:

   ```
   C:\IBM\WebSphere\AppServer\profiles\Custom01\bin\startNode
   ```

   where *Custom01* is the WebSphere Application Server custom profile that hosts a node of the IBM InfoSphere Information Server cluster.
3. Start the WebSphere Application Server administrative console.
4. In the console navigation tree, click **Servers** > **Clusters** to access the Server Cluster page.

   Note: Depending on the WebSphere Application Server version, you might have to click **Servers** > **Clusters** > **WebSphere Application Server clusters** to access the Server Cluster page.
5. Select the cluster.
6. Click **Start**. This command starts the server process of each member of the cluster by calling the node agent for each server to start the application servers. After all application servers are running, the state of the cluster changes to *running*. If the call to a node agent for an application server fails, the application server does not start.
7. Even though the status returned by the **serverStatus** command indicates STARTED, it might still not be available for use by InfoSphere

Information Server until the InfoSphere Information Server applications are fully initialized. To verify that WebSphere Application Server has started, monitor the log files. See "Checking the status of IBM WebSphere Application Server startup (clustered installation)" on page 211.

Starting the IBM WebSphere Application Server Deployment Manager (Windows)

Follow this procedure to start the IBM WebSphere Application Server Deployment Manager in a Microsoft Windows installation with WebSphere Application Server clustering.

Procedure

1. On the node that hosts the Deployment Manager, log in as a user with local administrator privileges.
2. On the node that hosts the Deployment Manager, run the **startManager** command to start the Network Deployment manager process:

   ```
   C:\IBM\WebSphere\AppServer\profiles\Dmgr01\bin\startManager
   ```

   where *Dmgr01* is the WebSphere Application Server Deployment Manager profile.

   If the Deployment Manager runs as a Windows service, the **startManager** command starts the associated Windows service and the Deployment Manager.

Starting services (Linux, UNIX)

Follow this procedure to start the IBM InfoSphere Information Server services and IBM WebSphere Application Server services in a Linux or UNIX installation.

Before you begin

Make sure that the database is operational before you do this procedure.

The paths in this task assume that WebSphere Application Server and InfoSphere Information Server are installed in the default location. Your paths are different if you installed these products in a different location.

Procedure

1. Start WebSphere Application Server. See "Starting IBM WebSphere Application Server (Linux, UNIX)" on page 206.
2. On each computer, start the following services: ASB Agent, Logging Agent, and DataStage Service.
   a. Wait until WebSphere Application Server is fully started.
   b. Log in to each computer that hosts an engine tier. Use the following credentials:
      - If you configured the InfoSphere Information Server agents for non-root administration, use the credentials for the administrator user that you selected.
      - If you did not configure the agents in this manner, log in as root.

   c. Run the following command as the InfoSphere DataStage administrator (dsadm by default) to source the dsenv file:

      ```
      su - dsadm
      . /opt/IBM/InformationServer/Server/DSEngine/dsenv
      ```

d. Make sure that the /.dshome file contains the current engine location. UNIX systems support multiple instances of InfoSphere DataStage. The bin/uv -admin -start command starts the instance of InfoSphere DataStage that is in the /.dshome file.

e. As the InfoSphere DataStage administrator user, run the following commands to start the InfoSphere DataStage services. Then, exit the su session for theInfoSphere DataStage administrator:

```
cd /opt/IBM/InformationServer/Server/DSEngine
./bin/uv -admin -start
exit
```

f. Run the following commands to start the ASB Agent and the Logging Agent:

```
cd /opt/IBM/InformationServer/ASBNode/bin
./NodeAgents.sh start
```

Starting IBM WebSphere Application Server (Linux, UNIX)

Follow this procedure to start the IBM WebSphere Application Server services in a Linux or UNIX installation.

Before you begin

For cluster environments:

- Linux If you did not configure file descriptor resources for WebSphere Application Server before you installed IBM InfoSphere Information Server, make sure that WebSphere Application Server is stopped and configure your managed nodes as described in "Configuring file descriptor resources for IBM WebSphere Application Server (Linux)" on page 208.
- AIX If you did not unset the LDR_CNTRL variable before you installed IBM InfoSphere Information Server, make sure that WebSphere Application Server is stopped and configure your cluster computers as described in "Configuring memory allocation for IBM WebSphere Application Server (AIX)" on page 209.

For stand-alone environments, these settings are automatically configured by the **MetadataServer** script.

Procedure

Do either of the following tasks, depending upon whether you have a stand-alone or clustered configuration:

Starting a stand-alone WebSphere Application Server configuration:

1. Log in to the computer that hosts the services tier. Use the following credentials:
   - If you configured WebSphere Application Server for non-root administration, use the credentials for the non-root user that is configured to administer WebSphere Application Server.
   - If you did not configure WebSphere Application Server in this manner, log in as root.
2. Run the following commands:

```
cd /opt/IBM/InformationServer/ASBServer/bin
./MetadataServer.sh run
```

Note: The `run` argument echoes all output to the console. Alternatively, if you want to embed this script in another script, use the **MetatdataServer.sh start** command to launch the start process in the background:

```
cd /opt/IBM/InformationServer/ASBServer/bin
./MetadataServer.sh start
```

If you configured WebSphere Application Server for non-root administration, you can use this line in your script:

```
/usr/bin/su - wasadmin -c "/opt/IBM/InformationServer/ASBServer/bin/
   MetadataServer.sh start"
```

where *wasadmin* is the non-root user that is configured to administer WebSphere Application Server.

3. Even though the WebSphere Application Server status might show as Started within the IBM InfoSphere Information Server Web console, it might still not be available for use by InfoSphere Information Server until the InfoSphere Information Server applications are fully initialized. To verify that WebSphere Application Server has started, monitor the log files. See "Checking the status of IBM WebSphere Application Server startup (stand-alone installation)" on page 210.

Starting a cluster WebSphere Application Server configuration:

1. Start the Deployment Manager. See "Starting the IBM WebSphere Application Server Deployment Manager (Linux, UNIX)" on page 208.
2. Log in to each node. Use the same credentials that you used to log in to the Deployment Manager node.
3. On each node, run the **startNode** command to start the node agent:

   ```
   /opt/IBM/WebSphere/AppServer/profiles/Custom01/bin/startNode.sh
   ```

   where *Custom01* is the WebSphere Application Server custom profile that hosts a node of the IBM InfoSphere Information Server cluster. Control returns to the command line when the node agent startup is complete.
4. Log in to the WebSphere Application Server administrative console.
5. In the console navigation tree, click **Servers** > **Clusters**. The Server Cluster page appears.

   Note: Depending upon your WebSphere Application Server version, you might need to click **Servers** > **Clusters** > **WebSphere Application Server clusters** to access the Server Cluster page.
6. Select the cluster.
7. Click **Start**. This command starts the server process of each member of the cluster. To do so, it calls the node agent for each server to start the application servers. After all application servers are running, the state of the cluster changes to *running*. If the call to a node agent for an application server fails, the application server does not start.
8. Even though the status returned by the **serverStatus** command indicates STARTED, it might still not be available for use by InfoSphere Information Server until the InfoSphere Information Server applications are fully initialized. To verify that WebSphere Application Server has started, monitor the log files. See "Checking the status of IBM WebSphere Application Server startup (clustered installation)" on page 211.

Starting the IBM WebSphere Application Server Deployment Manager (Linux, UNIX)

Follow this procedure to start the IBM WebSphere Application Server Deployment Manager in a Linux or UNIX installation with WebSphere Application Server clustering.

Procedure

1. Log in to the node that hosts the Deployment Manager. Use the following credentials:
   - If you have configured WebSphere Application Server for non-root administration, use the credentials for the non-root user that is configured to administer WebSphere Application Server.
   - If you have not configured WebSphere Application Server in this manner, log in as root.
2. On the node, run the **startManager** command to start the Network Deployment manager process:

   ```
   /opt/IBM/WebSphere/AppServer/profiles/Dmgr01/bin/startManager.sh
   ```

   where *Dmgr01* is the WebSphere Application Server Deployment Manager profile.

Configuring file descriptor resources for IBM WebSphere Application Server (Linux)

On Linux, the default setting for the maximum number of file descriptors allowed is not sufficient to run WebSphere Application Server. You must configure the file descriptor resources for WebSphere Application Server to run correctly.

About this task

If your installation includes a stand-alone instance of WebSphere Application Server, configure the file descriptor resources on the computer on which WebSphere Application Server is installed. For cluster environments, you must configure the file descriptor resources on each computer where WebSphere Application Server is installed (Deployment Manager and managed nodes). The resources can be permanently configured if appropriate for your environment.

Procedure

1. Make sure all WebSphere Application Server processes are stopped. See “Stopping IBM WebSphere Application Server (Linux, UNIX)” on page 201.
2. Configure the computer to support a large number of file descriptors. Refer to your system administrator if you are unsure about this process.

   The following example shows how to set the number of file descriptors to 10240 if your login shell is /bin/bash. WebSphere Application Server requires a value over 10000 to run properly.
   - To apply the settings to the entire system, add the following to the `/etc/profile` file:

     ```
     ulimit -n 10240
     ```
   - To set the soft and hard limits for all users, add the following to the `/etc/security/limits.conf` file:

     ```
     * soft nofile 10240
     * hard nofile 10240
     ```

   If you do not want to permanently configure these values as shown in the example, you can instead run the **ulimit -n** command just before you start a

WebSphere Application Server process. All WebSphere Application Server processes must be stopped before you run these commands.

3. Start all WebSphere Application Server processes. See “Starting IBM WebSphere Application Server (Linux, UNIX)” on page 206.
4. In a cluster environment, repeat this procedure on all systems where WebSphere Application Server is installed.

Configuring memory allocation for IBM WebSphere Application Server (AIX)

On AIX, the **LDR_CNTRL** environment variable controls the way AIX handles the memory space available to programs and the page sizes used in each segment. To provide sufficient memory allocation for WebSphere Application Server, you must unset this environment variable for WebSphere Application Server to run correctly.

About this task

If your installation includes a stand-alone instance of WebSphere Application Server, unset the **LDR_CNTRL** environment variable on the computer on which WebSphere Application Server is installed. For cluster environments, you must unset the **LDR_CNTRL** environment variable on each computer where WebSphere Application Server is installed (Deployment Manager and managed nodes). The change can be permanently configured if appropriate for your environment.

Procedure

To unset the **LDR_CNTRL** environment variable:

1. Make sure all WebSphere Application Server processes are stopped. See “Stopping IBM WebSphere Application Server (Linux, UNIX)” on page 201.
2. Configure the **LDR_CNTRL** environment variable. Refer to your system administrator if you are unsure about this process.

   The following example shows how to unset the **LDR_CNTRL** environment variable if your login shell is /bin/bash.

   - To apply the setting to all users on the system, add the following line to the `/etc/profile` file:

     ```
     unset LDR_CNTRL
     ```

   - To apply the setting to a specific user, add the line to the `~/.profile` file for the user. The user to configure is typically root unless you reconfigured WebSphere Application Server for non-root administration.

   If you do not want to permanently configure the environment variable as shown in the example, you can run the **unset LDR_CNTRL** command just before you start a WebSphere Application Server process. All WebSphere Application Server processes must be stopped before you run these commands.
3. Start the WebSphere Application Server processes. See “Starting IBM WebSphere Application Server (Linux, UNIX)” on page 206.
4. In a clustered environment, repeat this procedure on all computers where WebSphere Application Server is installed.

IBM WebSphere Application Server process status checking

Follow these procedures to check the status of a WebSphere Application Server stand-alone installation, or of cluster members, node agents, and the Deployment Manager in a clustered installation.

Checking the status of IBM WebSphere Application Server (stand-alone installation)

In a WebSphere Application Server stand-alone installation, use the **serverStatus** command to check the status of the application server startup.

Procedure

For more information about the **serverStatus** command, see the WebSphere Application Server documentation.

- Version 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_serverstatus.html
- Version 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_serverstatus.html

What to do next

When an application server is starting up, even when the status returned by the **serverStatus** command indicates that the application server is STARTED, it is not ready for use by IBM InfoSphere Information Server until all InfoSphere Information Server applications have completed initialization. See “Checking the status of IBM WebSphere Application Server startup (stand-alone installation)” for more information.

Checking the status of IBM WebSphere Application Server startup (stand-alone installation)

Whenever you restart WebSphere Application Server, make sure that the application server is fully started before you take any further action. This procedure applies to a stand-alone installation of WebSphere Application Server.

About this task

Even though the status of an application server might show as STARTED, it might still not be available for use by IBM InfoSphere Information Server because the InfoSphere Information Server applications not yet fully initialized. The InfoSphere Information Server applications typically complete initialization within two to four minutes after the application server status first changes to STARTED.

If you started WebSphere Application Server by running **startServer** or `MetadataServer.sh run`, control returns when WebSphere Application Server has completed starting all applications but before InfoSphere Information Server has completed application initialization. Running **serverStatus** at this point shows a status of STARTED. However, initialization is not yet complete.

If you started WebSphere Application Server by running `MetadataServer.sh start`, control returns immediately before WebSphere Application Server starts any applications. After a delay, running **serverStatus** will show a status of STARTING. After a few minutes, running **serverStatus** will show a status of STARTED. This status indicates that WebSphere Application Server has completed starting all applications. However, it does not indicate that InfoSphere Information Server has completed application initialization.

Procedure

Follow this procedure to determine if the InfoSphere Information Server applications have completed initialization.

1. Log in to the services tier computer.
2. Locate the `SystemOut.log` file. The file is located in the following directory:

   WAS_install_path/profiles/*profile*/logs/*serverx*

   In the directory path:

   - *WAS_install_path* is the location where WebSphere Application Server is installed. The default installation path is:
     - UNIX Linux `/opt/IBM/WebSphere/AppServer`
     - Windows `C:\IBM\WebSphere\AppServer`
   - *profile* is the profile name in which InfoSphere Information Server is running. The default profile name is InfoSphere.
   - *serverx* is the name of the application server instance. The default server name is server1.
3. In the `SystemOut.log` file, in the timeframe in which the application server is being started, look for the following line. This line indicates that InfoSphere Information Server is fully initialized and ready for operation:

   ```
   Initialization: EJB Initializations complete
   ```

   The `SystemOut.log` file might contain log entries that span multiple application server restarts. For this reason, the file might contain multiple lines that read `EJB Initializations complete`. Use the timestamps of the log entries to determine if this message is associated with the application server startup that you want.

Checking the status of IBM WebSphere Application Server startup (clustered installation)

Whenever you start a cluster member, make sure the application server associated with that cluster member is fully started before you take any further action. This procedure applies to a clustered installation of WebSphere Application Server.

About this task

Even though the status of a cluster member might show as Started within the IBM InfoSphere Information Server Web console, or the status returned by the **`serverStatus`** command indicates that the application server is STARTED, it might still not be available for use by InfoSphere Information Server until the InfoSphere Information Server applications are fully initialized. The InfoSphere Information Server applications typically complete initialization within two to four minutes after the application server status first changes to Started.

Procedure

Follow this procedure to determine if the InfoSphere Information Server applications have completed initialization.

1. Log in to each computer that hosts a cluster member.
2. On the computer, locate the `SystemOut.log` file. The file can be found in the following directory:

   WAS_install_path/profiles/*profile*/logs/*serverx*

   In the directory path:

   - *WAS_install_path* is the location where WebSphere Application Server is installed. The default installation path is:
     - UNIX Linux `/opt/IBM/WebSphere/AppServer`
     - Windows `C:\IBM\WebSphere\AppServer`
   - *profile* is the profile name of the managed node in which InfoSphere Information Server is running. The default profile name is Custom01.
   - *serverx* is the name of the application server instance. The default value is server*x*, where *x* is the number of one of the application server instances.
3. Check the `SystemOut.log` file in each server instance:
   a. In the `SystemOut.log` file, in the timeframe in which the application server is being started, look for the following line. This line indicates that InfoSphere Information Server is fully initialized and ready for operation:

      ```
      Initialization: EJB Initializations complete
      ```

      The `SystemOut.log` file might contain log entries that span multiple application server restarts. For this reason, the file might contain multiple lines that read `EJB Initializations complete`. Use the timestamps of the log entries to determine if this message is associated with the application server startup that you want.
4. Repeat this procedure for each computer that hosts a cluster member.

What to do next

InfoSphere Information Server can be used as soon as one cluster member is fully initialized. However, for best performance, wait until all members of the cluster are fully initialized. Allowing all the members of the cluster to initialize fully also maximizes the number of members that can take over in case of a failover.

Checking the status of IBM WebSphere Application Server cluster members

In a WebSphere Application Server cluster installation, use the WebSphere Application Server administrative console to check the status of cluster members.

Procedure

1. Log in to the WebSphere Application Server administrative console.
2. Access the cluster list in the console. In the navigation pane, expand **Servers**, expand **Clusters**, and click **WebSphere application server clusters**.
3. In the workspace, click the cluster name. The cluster page appears.
4. Click **Cluster members**. The Cluster members page appears. Each cluster member is listed on the page. The **Status** column indicates the status of each cluster member.

What to do next

When an application server is starting up, even when the status of the cluster member in the WebSphere Application Server administrative console shows as Started or when the status returned by the **`serverStatus`** command indicates that the application server is STARTED, it is not ready for use by IBM InfoSphere Information Server until all InfoSphere Information Server applications have completed initialization. See Checking the status of IBM WebSphere Application Server startup (clustered installation) for details on how to tell when InfoSphere Information Server applications have completed initialization.

Checking the status of IBM WebSphere Application Server node agents

In a WebSphere Application Server cluster installation, use the WebSphere Application Server administrative console to check the status of node agents.

Procedure

1. Log in to the WebSphere Application Server administrative console.
2. In the navigation pane, expand **System administration** and click **Node agents**. The Node agents page appears. Each node agent is listed on the page. The **Status** column indicates the status of each node agent.

Checking the status of the IBM WebSphere Application Server Deployment Manager

In a WebSphere Application Server cluster installation, use the **`serverStatus`** command to check the status of the deployment manager.

Procedure

Run the serverStatus command. The command is located on the computer on which the Deployment Manager runs, in the following directory:
WAS_install_path/profiles/*profile*/bin
In the directory path:

- *WAS_install_path* is the location where WebSphere Application Server is installed. The default installation path is:
  - UNIX Linux `/opt/IBM/WebSphere/AppServer`
  - Windows `C:\IBM\WebSphere\AppServer`
- *profile* is the name of the Deployment Manager profile.

For more information about the **`serverStatus`** command, see the WebSphere Application Server documentation.

- publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_serverstatus.html
- publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/rxml_serverstatus.html

IBM WebSphere Application Server system log files

The WebSphere Application Server log files contain information that allows you to monitor WebSphere Application Server startup and diagnose errors.

The log files that are most useful for diagnosing IBM InfoSphere Information Server-related issues are:

`SystemOut.log`
WebSphere Application Server messages to STDOUT are redirected to this file.

`SystemErr.log`
WebSphere Application Server messages to STDERR are redirected to this file.

These files are located in the following directories on each node in your WebSphere Application Server installation:

- Linux UNIX

  path/profiles/*profile*/logs/*server1*
- Windows

  path\profiles*profile*\logs*server1*

In the directory path:

- *path* is the WebSphere Application Server installation path. By default, path is one of the following paths:
  - Linux UNIX

    opt/IBM/WebSphere/AppServer
  - Windows

    C:\IBM\WebSphere\AppServer
- *profile* is the profile name where IBM InfoSphere Information Server is installed. For a stand-alone installation, the default value is InfoSphere. For a clustered installation, the default value for a custom profile is Custom*xx*.
- *server1* is the name of the application server. For a stand-alone installation, the default value is server1. For cluster installations, there might be multiple application server directories under the custom profile. The typical value is server*x*, where *x* is the number of the application server instance. For a Deployment Manager profile, the default value is dmgr. For a node agent under the custom profile, the default value is nodeagent.

For more information about WebSphere Application Server log files, see the WebSphere Application Server documentation:

- IBM WebSphere Application Server Network Deployment 7.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.nd.doc/info/ae/ae/ttrb_mglogs.html
- IBM WebSphere Application Server Network Deployment 8.0: http://publib.boulder.ibm.com/infocenter/wasinfo/v8r0/topic/com.ibm.websphere.nd.doc/info/ae/ae/ttrb_mglogs.html

Chapter 14. Managing assets by using the command line

You can use the command line to move assets between different metadata repositories for environments such as development, test, and production. You can also query and delete implemented data resources and business intelligence assets by using the command line.

Using the istool command line

You can use the command line to import and export assets and to query and delete common metadata.

Location of the istool command line

The istool command line is available on the client and engine tiers.

For Windows, the istool command framework is located in: `*installation_directory*\Clients\istools\cli`, where *installation_directory* is the directory where you installed IBM InfoSphere Information Server. For example, `c:\IBM\InformationServer`.

For UNIX or Linux, the istool command framework is located in: `*installation_directory*/Clients/istools/cli`, where *installation_directory* is the directory where you installed InfoSphere Information Server. For example, `/opt/IBM/InformationServer`.

The istool framework is installed on all client and engine tier computers. The framework installation provides the ability to run commands and options for the following tools and components:

- IBM InfoSphere DataStage and QualityStage
- Common metadata assets
- Reporting assets
- Security assets

Command options for each of the following tools are installed with the framework only when the tool is installed:

- IBM InfoSphere Information Analyzer – client and engine
- IBM InfoSphere Metadata Workbench – client and engine
- IBM InfoSphere Business Glossary – client only
- IBM InfoSphere FastTrack – client only

This means, for example, that to move InfoSphere DataStage and QualityStage assets, you can run the build package, deploy package, and send package commands, and the -datastage options from any computer on the client or engine tier. To move InfoSphere FastTrack assets, you must run the istool command line from the client computer where InfoSphere FastTrack is installed.

Commands and common parameters for istool

You can use the istool commands to manage assets that are stored in the metadata repository of IBM InfoSphere Information Server.

For Windows, the istool command framework is located in: *installation_directory*`\Clients\istools\cli`, where *installation_directory* is the directory where you installed InfoSphere Information Server. For example, `c:\IBM\InformationServer`.

For UNIX or Linux, the istool command framework is located in: *installation_directory*`/Clients/istools/cli`, where *installation_directory* is the directory where you installed InfoSphere Information Server. For example, `/opt/IBM/InformationServer`.

The basic syntax of the istool command is:

```
istool command authentication_parameters [generic_parameters] [command_parameters]
```

The commands are given in the following table.

Table 19. istool commands

Command	Description
istool export	Export assets to a file.
istool import	Import assets from a file.
istool glossary export	Export assets from IBM InfoSphere Business Glossary to a file.
istool glossary import	Import glossary assets from a file.
istool build package	Build a package of IBM InfoSphere DataStage and QualityStage assets to be deployed.
istool deploy package	Deploy a package.
istool send package	Send a package to the local client computer.
istool query	Query common metadata (physical data resources or business intelligence assets) and write the results to a file.
istool deletecm	Delete common metadata.

Use the authentication parameters to specify the InfoSphere Information Server services tier to connect to. The authentication parameters are mandatory for all istool commands, and are in the following table.

Table 20. Authentication parameters

Name	Type	Argument	Description
-domain or -dom	String[:Number]	<domain[:port]>	Depends on the configuration of IBM WebSphere Application Server: • If clustering is set up, the name or IP address and the port of the front-end dispatcher (either the web server or the load balancer). Do not use the host name and port of a particular cluster member. • If clustering is not set up, the host name or IP address of the computer where WebSphere Application Server is installed and the port number that is assigned to the IBM InfoSphere Information Server Web console, by default 9080. If you use an IPV6 address, see the note that follows this table for correct formatting. If you use an IPV6 address, you must enclose it in square brackets ([ ]). For example, `istool export –domain [2002:920:c000:217:9:32:217:32]:9080 -username user1 -password pass1 -archive "c:\arc.isx" -datastage '"serv2/Proj/Jobs/Mine/ajob.pjb"'`
-authfile or -af	String	<path to credentials file>	The path to a file that contains encrypted credentials for logging on to InfoSphere Information Server. If you use `-authfile` you do not need to specify `-username` or `-password` on the command line. If you specify both the `-authfile` option and the explicit user name and password options, the explicit options take precedence. For more information see the topic Encrypt command.
-username or -user	String	<user name>	Name of the user account on the services tier
-password or -pass	String	<password>	Password for the account that is specified in the `-username` option. (Optional after the first login).

Note: If you use an IPV6 address, you must enclose it in square brackets ([ ]). For example, `istool export –domain [2002:920:c000:217:9:32:217:32]:9080 -username user1 -password pass1 -archive "c:\arc.isx" -datastage '"serv2/Proj/Jobs/Mine/ajob.pjb"'`

The generic parameters in the following table are optional parameters that can be used with all istool commands.

Table 21. Generic parameters

Option long name	Option short name	Description
-help	-h	Prints the list of command options. To view help for a specific command, enter `istool` *`command`* `-help`.
-verbose	-v	Prints detailed information throughout the operation.
-silent	-s	Silences non-error command output.
-script		Execute commands that are read directly from a text file. The file is read and executed as a series of command lines.

The following table lists parameters that are common to the istool import or export commands for most tools and asset types.

Table 22. Common parameters for the istool import and istool export commands

Name	Type	Argument	Description	Exceptions
-preview or -pre	Boolean	N/A	Optional. Used with istool import and istool export. Previews the import and export tasks without executing the command.	Not supported with glossary export or glossary import commands.
-replace	N/A	N/A	Required only for security and reporting imports, otherwise optional. Used with istool import. Specifies how to resolve an identity conflict. If -replace is specified and an asset to be imported has the same identity as an asset already in the repository, the existing asset is overwritten by the new asset. If -replace is not specified, the asset is not imported.	Not supported for glossary import command. Use `-mergemethod` for glossary imports. Some tools have additional options for replacing assets. The -replace option for the istool send package command has different functionality.
-archive or -ar	string	<archive name>	Require. Used with istool import and istool export. Specifies the archive file to be exported or imported.	Not supported for glossary import and export commands.

Table 22. Common parameters for the istool import and istool export commands (continued)

Name	Type	Argument	Description	Exceptions
-updatearchive or -up	Boolean	N/A	Optional. Used with istool export. Updates the specified archive file by adding new assets or overwriting changed assets. No assets in the archive file are deleted.	Not supported for glossary export command.
-abortIferror or -abort	Integer/ number	<number of errors>	Optional. Used with istool export. Terminate the export after the specified number of errors.	Not supported for glossary export command.
-abortAfter or -abort	Integer/ number	<number of errors>	Optional. Used with istool import. Terminate the import after the specified number of errors.	Not supported for glossary import command.

Command modes for `istool`

You can use the **`istool`** commands in different modes: command line, console, or script.

The **`istool`** commands can be invoked in any of the following modes:

Command mode (in a command prompt)

In the command mode, enter commands one at a time on a command line. Start each command with `istool` followed by a command, then the parameters. You must surround parameter values that contain embedded spaces with double quotation mark characters (").

Console mode (in a command prompt)

Enter **`istool`** on a command line with no parameters to enter console mode.

In console mode, **`istool`** prints a command prompt and waits for a command. Each command is processed without exiting **`istool`**. You must enter authentication details for every command. You can exit the console mode by entering a period character (.), `exit`, or `quit` at the prompt.

The **`istool`** command framework in console mode also has a history feature, which recalls the last 30 commands entered. You can recall and execute each command. To view the most recent commands, enter `history`. To repeat a command, enter `!`*`command_number`*, for example, `!2`.

Script mode

The **`istool`** command can be used to execute commands read directly from a text file. The file is read and executed as a series of command lines.

In script mode, each line in the input file must be formatted the same as a command line entered manually, except for the following stipulations.

- You do not need to include the **istool** string on each command line.
- Multiple commands are separated by a semicolon character (;) at the end of an input line.
- Command lines can cross line boundaries.

Command syntax:

```
istool –script filename
```

Asset interchange

You can use the command line to move assets between the metadata repositories of different installations of IBM InfoSphere Information Server. For example, you can move assets from a development environment to a test, production, or source control environment.

IBM InfoSphere Information Server is a suite of components that together provide a single unified platform that enables companies to understand, cleanse, transform, and deliver information.

Each of the components has a set of assets that are stored in the shared metadata repository. A single asset might be used by more than one of the suite components. For example, security assets are the users defined in the suite and given access to suite components. Asset interchange provides command-line interface commands that you can use to write these assets to an archive. You can then back up the archive to preserve your InfoSphere Information Server assets, or you can move the archive to a different system and import the assets from the archive. You can also submit the archive file to a source code control system to provide version controlling of your assets.

You can use the asset interchange istool command-line interface to move individual assets, or large groups of assets. You can build the Asset interchange commands into scripts to facilitate the routine backup or movement of large groups of assets. The speed of the import or export process depends on the size of the project.

The following table lists the asset categories, and the individual assets they contain.

Table 23. Assets that can be moved by using asset interchange

Asset category	Assets
IBM InfoSphere Business Glossary	• Categories • Terms
IBM InfoSphere FastTrack	• Mapping components • Mapping compositions • Mapping specifications • Project templates • Projects • Role assignments, reports, common metadata, glossary assets, and IBM InfoSphere DataStage and QualityStage assets that are associated with a project

Table 23. Assets that can be moved by using asset interchange (continued)

Asset category	**Assets**
IBM InfoSphere Information Analyzer	• Projects, including the assets that are associated with them, such as analysis results, data rules, and data classes • All data classes, regardless of which project they are associated with • Reports and common metadata that are associated with a project
IBM InfoSphere DataStage and QualityStage	• Custom folders (external files in the project directory) • Data connections • Data elements • Data quality specifications (lookup tables, rule sets, and match specifications) • IMS databases • IMS viewsets • Jobs (mainframe, parallel, sequence, and server) • Job executables • Machine profiles • Parameter sets • Routines (mainframe, parallel, and server) • Shared containers (parallel and server) • Stage types • Table definitions • Transforms • Shared tables and related common metadata assets that are associated with table definitions
Common metadata assets	Physical data resources: • Host computers • Databases • Schemas • Stored procedures • Database tables • Data files • Data file structures • Database connections • Data item definitions Business intelligence (BI) assets: • BI model • BI collection • Cube • BI report • BI report query
Reporting assets	• Reports • Report results

Table 23. Assets that can be moved by using asset interchange (continued)

Asset category	Assets
Security assets	• Users, with or without roles, credentials, and credential mapping • Groups, with or without roles

You can use a GUI-based tool, InfoSphere Information Server Manager, for transferring InfoSphere DataStage and QualityStage assets:

- You can use InfoSphere Information Server Manager to build deployment packages of assets and move these packages between InfoSphere Information Server systems, or submit the packages to a source code control system.
- You can use the InfoSphere Information Server Manager and the asset interchange commands in conjunction with one another by browsing a tree of InfoSphere DataStage and QualityStage assets in InfoSphere Information Server Manager, and selecting which assets to include in a package. You can then define a script of asset interchange commands that regularly rebuilds the specified package and deploys the package to a target system or project, ensuring that the target has an up-to-date version of those assets.

Common asset-interchange scenarios

You can use asset interchange to address scenarios that occur commonly with IBM InfoSphere Information Server.

Moving projects from development to test

In a typical InfoSphere Information Server environment, there is a dedicated development system. This system is used to prototype and perform rudimentary testing on your enterprise data solutions.

When initial development is complete, and your project is ready to test, you can use asset interchange to deploy the entire system to the test system by using the asset interchange commands in a script. It is likely that there will be some iteration between the test and development machines:

1. Faults are discovered on the test system.
2. Fixes made on the development system.
3. Results moved once more to the test system

You could define a script with the following commands:

- One command to export the required assets from the development system
- A second command to import the exported assets to the test system.

You can rerun this script each time fixes are made on the development system.

Moving a subset of items

While you iterate between development and test systems, you might find that you want to move just a subset of assets, rather than your entire project. In this case, you can use asset interchange commands directly on the command line and explicitly specify one or more assets to move. For example, if one InfoSphere DataStage job needs changing, you can change the job on the development system. You can then re-export the job and reimport the job on the test system.

Moving projects from test to production

After the test cycles are complete, the assets can be deployed to the production system, where the system processes real data. You can once again use the asset interchange commands to export the assets to an archive, and to import them to the production system.

InfoSphere Business Glossary assets

Use the glossary command-line interface (CLI) to move glossary assets between different IBM InfoSphere Information Server metadata repositories, to back up the assets, or to convert business intelligence (BI) model elements to terms and categories.

You must have the Business Glossary Administrator role.

You must run the istool glossary commands on a Microsoft Windows computer on the client tier where IBM InfoSphere Business Glossary is installed.

You can use the **istool glossary export** command to export assets to one of the following types of file:

- XML file
- XMI file (glossary archive)
- CSV file

You can export all categories, or you can export specified top-level categories. If you are exporting to an XML or XMI file, you can export links to assets that are assigned to exported terms. If you are exporting to an XML or XMI file, you can optionally include stewardship links of exported categories and terms. (Stewardship links are always included in CSV files.)

Export command for glossary assets

Use the glossary CLI commands to export your glossary assets to a file.

Command syntax

```
istool glossary export
-domain domain[:<port>]
-username <username>
-password <password>
[generic parameters]
-filename "pathname"
[-format XML | XMI | CSV]
[-allcategories] | [-topcategories "cat1, cat2, ... catN"]
[-includeassignedassets]
[-includestewardship]
```

Command options

The following table lists the options specific to the **glossary export** command.

Name	Value, if any	Description
-filename or -f	*pathname*	Specifies the file to export glossary assets to. If the pathname contains space characters, you must enclose the pathname in double quote characters (").

Name	Value, if any	Description
-format or -fm	XML | XMI | CSV	Specifies the format of the export file. By default the format is XML.
-allcategories or -all		Specifies that all categories in the source glossary are exported to the specified file.
-topcategories or -top	*cat1, cat2, ... catN*	Use this parameter to specify a comma-separated list of top-level categories that are exported. Category names can contain spaces.
-includeassignedassets or -incasst		Specifies that links to assets assigned to exported terms are exported. By default this option is false.
-includestewardship or -incstwd		Specifies that stewardship links of exported categories and terms are included in the export. By default this option is false. (Export files in CSV format always contain stewardship links.)

Examples

The following command exports all the categories in the source glossary to the file named `exp_all.xml`. Because no format is explicitly specified, the categories are exported in XML format:

```
istool glossary export –dom ABC:9080 –u xmetauser –p xmetapwd
-filename "c:\exp_all.xml" -allcategories
```

The following command exports the named categories in the source glossary to the glossary archive file named exp_sel.xmi.

```
istool glossary export –dom ABC:9080 –u xmetauser –p xmetapwd -filename
"c:\exp_sel.xmi" -format XMI -topcategories "dept AB, dept XM, dept HR"
```

Import command for glossary assets

Use the istool glossary import command to import your glossary assets from a file of previously archived assets.

Command syntax

You must have the Business Glossary Administrator role to import glossary assets.

You must run the command from a computer on the client tier where IBM InfoSphere Business Glossary is installed.

```
istool glossary import
authentication parameters
[generic parameters]
-filename pathname
[-format XML | XMI | CSV]
[-mergemethod overwrite | ignore | mergeignore | mergeoverwrite]
[-mappingfile pathname]
```

Command options

authentication parameters
Specifies connection details for a specific IBM InfoSphere Information Server.

generic parameters
Use the generic parameters to request help on command syntax, or specify silent or verbose operation.

-filename *pathname* **or -f** *pathname*
Specifies the file to import glossary assets from. If the pathname contains space characters, you must enclose the pathname in double quotation marks (").

-format XML | XMI | CSV or -fm XML | XMI | CSV
Specifies the format of the import file. By default the format is XML.

-mergemethod overwrite | ignore | mergeignore | mergeoverwrite or -mrg overwrite | ignore | mergeignore | mergeoverwrite
Only applies when assets are imported from XML or XMI files. Specifies one of the following merge methods:

overwrite
Specify this option to overwrite assets that exist in the target repository with imported assets.

ignore This is the default option. Assets that exist in the target repository are not overwritten.

mergeignore
Specify this option to merge the asset and ignore imported attributes that cannot be merged.

mergeoverwrite
Specify this option to merge the asset and overwrite existing attributes that cannot be merged.

-mapping *pathname* **or -map** *pathname*
Only applies when assets are imported from XMI files. Specifies a mapping file to use to modify the imported assets. If the pathname contains space characters, you must enclose the pathname in double quotation marks ("). A mapping file enables you to change attributes of exported glossary content before you import it, so that it is suitable for your glossary.

Example

The following command imports all the glossary assets contained in the CSV format file named bgexp.csv:

```
istool glossary import –dom ABC:9080 –u xmetauser –p xmetapwd
-filename c:\bgexp.csv -format CSV
```

The following command imports all the glossary assets contained in the XML format file named bg x imp.xml. If assets with the same name are encountered in the target repository, they are overwritten with the imported assets:

```
istool glossary import –dom ABC:9080 –u xmetauser –p xmetapwd
-filename "c:\bg x imp.xml"  -format XML -mergemethod overwrite
```

Generating glossary content from business intelligence models

You can generate categories and terms from business intelligence (BI) models. For example, you can generate categories and terms from an IBM Cognos® Framework Manager model or from a BusinessObjects Universe.

To generate categories and terms from a BI model, the model must have been previously imported into the metadata repository of IBM InfoSphere Information Server. BI models can be imported into the metadata repository using a bridge.

The **glossary bi2bg** command parses a BI model to create a hierarchy of categories and terms and then creates these categories and terms in InfoSphere Business Glossary. You can specify multiple BI models in a single **glossary bi2bg** command.

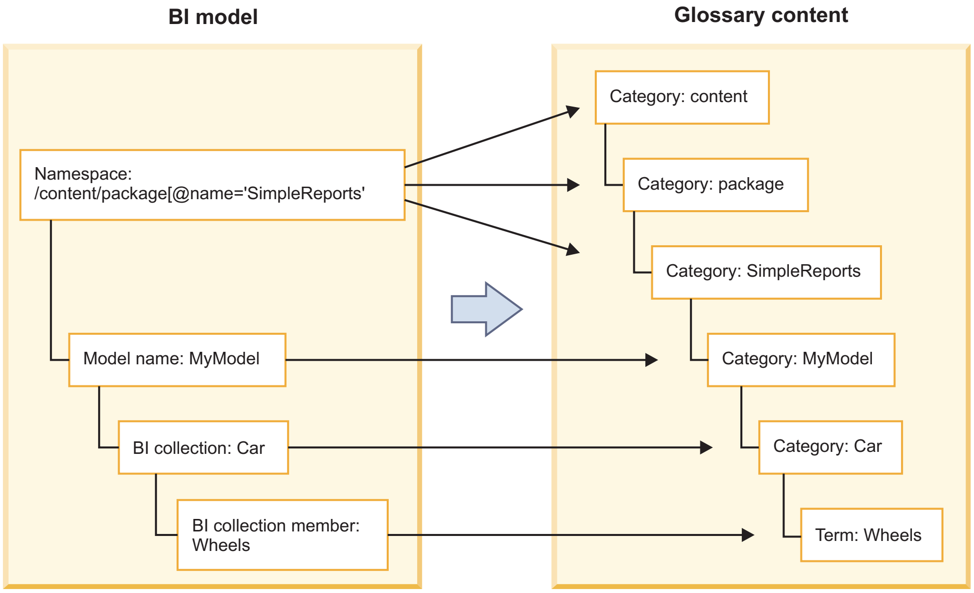
Note:

The glossary content is created in the following way:

- For each model that is specified, a glossary category is created for each token that is separated by a forward slash (/) in the namespace of the model. The top-level category that is created has the same name as the BI model.
- For each BI collection contained in the BI model, a subcategory is created. Each such subcategory has the same name as the name of the BI collection.
- For each BI collection member in the BI collection, a term is created. Each such term has the same name as the BI collection member, and is contained by the category that is created for the BI collection. Other properties of the term (all those properties besides its name and place in the glossary hierarchy) are obtained from a configuration file. The BI collection member that corresponds to the created term can be assigned to the term by a specification in the configuration file.

For example, suppose you have the following BI model:

Namespace: /content/package[@name='SimpleReports'] contains the model MyModel. MyModel contains the BI collection Car and the collection contains the collection member Wheels. The following figure illustrates the results of using the **bi2bg** command:



Before you create terms and categories, you can also use the **glossary bi2bg** command to create a preview of the results. You specify the preview option in the configuration file. This preview is written to a file in CSV (comma-separated values) format or to the log file. The preview shows you what content will be created when you run the command a second time but without the preview option. After you have inspected the preview and are satisfied, run the command again to create categories and terms.

glossary bi2bg command

Use the **istool glossary bi2bg** command to generate categories and terms from business intelligence (BI) models.

Command syntax

```
istool glossary bi2bg
-domain domain[:<port>]
-username <username>
-password <password>
-config-file | -cfg <pathname>
-log <pathname>
```

Command options

The following table shows the **istool glossary bi2bg** command options.

Table 24. Command options for istool glossary bi2bg

Long name	Description
-config-file or -cfg	Specifies the directory path to the configuration file that defines how glossary content is generated from a BI model. If the path contains space characters, enclose the path in double quotation marks (").
-log	Specifies the directory path where you want the log file to be placed. If the path contains space characters, enclose the path in double quotation marks (").

Configuration file

A configuration file defines additional command parameters. The file is a text file with the extension .ini that you create. It can contain the parameters shown in the following table. Each parameter name is a single string with no spaces.

Table 25. Configuration file command parameters

Parameter name	Description	Valid values	Default
ModelsToProcess	Specifies the names of the models to be processed. To process all models set to *	Comma-separated names of models.	*
MemberTypeRegular	When a term is created from BI collection members, a string that indicates the member type is listed in the Example attribute of the term. For BI collection members whose type is "Regular," specifies the string to be displayed.	User-specified string.	Regular
MemberTypeMeasure	For BI collection members whose type is "Measure," specifies the string to be displayed in the Example attribute of the corresponding term.	User-specified string.	Measure

Table 25. Configuration file command parameters (continued)

Parameter name	Description	Valid values	Default
ClassifyMemberTarget Source	If TRUE, BI collection members are assigned to the terms that are created from them.	TRUE/FALSE	TRUE
CategoriesToExclude	Specifies the categories to be excluded. You can choose not to create some of the parent categories that are generated from the namespace. If a category is excluded, its subcategories and terms are also excluded. The configuration file must include this parameter even if you do not specify a value for it.	Comma-separated names of categories. Use the full path of the category, starting from the top-level category. You can obtain the full path of the categories from the preview file.	
MergeOption	Specifies the merge option to use when the categories and terms are imported. **MERGE_TARGET_BIAS** Merge the asset and ignore imported attributes that cannot be merged. **MERGE_SOURCE_BIAS** Merge the asset and overwrite existing attributes that cannot be merged.	MERGE_SOURCE_BIAS/ MERGE_TARGET_BIAS	MERGE_TARGET_BIAS
IsModifier	If TRUE, sets the value of the IsModifier attribute of all imported terms to "Yes".	TRUE/FALSE	FALSE
Status	Specifies the status attribute of all imported terms.	CANDIDATE/ ACCEPTED/ DEPRECATED/ STANDARD	CANDIDATE
Type	Specifies the type attribute of all imported terms.	PRIMARY/SECONDARY/ NONE	NONE
CreateBusinessGlossary Preview	If TRUE, creates a preview of the glossary content in a CSV file or in the log file instead of importing the categories and terms.	TRUE/FALSE	FALSE
BusinessGlossaryPreview Format	Specifies whether to write the preview to a CSV file or to the log file (SYSTEMOUT).	CSV/ SYSTEMOUT	SYSTEMOUT

Table 25. Configuration file command parameters (continued)

Parameter name	Description	Valid values	Default
BusinessGlossaryPreview CSVFilePath	Specifies full path to the preview CSV file to be created. The CSV file cannot be imported. To import the content, run the command again with CreateBusinessGlossary Preview set to FALSE in the configuration file.		c:\\Default.csv
FirstRowColumnNames	If TRUE, the first field on the preview file contains the column names.	TRUE/FALSE	TRUE
ImportToTopCategory	If TRUE, imports the glossary content under a top category that is specified by the TopCategoryName parameter. Use this setting if you want to use an existing top category to contain the imported content, or to avoid merge issues by creating a new top category.	TRUE/FALSE	FALSE
TopCategoryName	If you set ImportToTopCategory to TRUE specifies the name of a top-level category to contain the generated glossary content. You can use an existing category name or specify a new category to be created.	TRUE/FALSE	FALSE
CheckForDuplicateTerms	If TRUE, if terms with duplicate names are created, output the list of duplicates to a text file	TRUE/FALSE	TRUE
DuplicateTermsFileName	Specifies the path of the output file for a list of duplicate terms, if CheckForDuplicateTerms is TRUE,		c:\\Duplicates.txt

Example

The following command creates categories and terms from a BI model that has been imported into the metadata repository that resides on localhost. The command and uses configuration file BIGlossaryBuilder.ini. No preview file is created. The categories and terms are contained by the top category BI.

```
istool glossary bi2bg –domain localhost:9080 –u isadmin –p isadminpwd
-cfg c:\temp\BIGlossaryBuilder.ini -log c:\temp\bi.log
```

The configuration file BGLossaryBuilder.ini contains the following text:

```
ModelsToProcess = *
MemberTypeRegular = Dimension
MemberTypeMeasure = Measure
CategoriesToExclude = test


ClassifyMemberTargetSource = FALSE

MergeOption = MERGE_SOURCE_BIAS
IsModifier = FALSE
Status = CANDIDATE
Type = NONE

CreateBusinessGlossaryPreview= FALSE
BusinessGlossaryPreviewCSVFilePath = c:\\tmp\\preview.csv
FirstRowColumnNames = TRUE


TopCategoryName = BI
ImportToTopCategory = TRUE
DuplicateTermsFileName= c:\\tmp\\dup.txt
CheckForDuplicateTerms=TRUE
```

Error reporting

The log file shows the following status messages.

On success:

```
bi2bg completed successfully!
n categories created
n terms created
n categories updated
n terms updated
n categories deleted
n terms deleted
```

On success, creation of preview file:

```
Glossary preview file is generated!
```

On failure:

```
Building glossary from BI failed, Error Occurred: error_message
```

where *error_message* is a more specific message.

InfoSphere FastTrack assets

You can use the command line to move assets from one IBM InfoSphere Information Server metadata repository to another.

You can specify the mapping specifications, mapping components, project templates, or projects to be moved by using the `-fasttrack` option of the **istool import** and **istool export** commands. This is useful in a case where you need to transfer data from a development environment to a test or production environment.

When you export project assets you can also include the related jobs, database tables, and reports.

Asset IDs

Identify assets that you want to move using asset IDs.

An asset ID describes a project, folder, or a specific asset. An asset ID is a fully qualified path that can be specified in one of the following formats:

```
asset-id::=
 <project-name>.ftp|
 <project-template-name>.ftt |
 <project-name>/<mapping-specification-name>.spc
 <project-name>/<mapping-component-name>.cmp
  <project-name>/<mapping-composition-name>.cps
```

where

> <*project-name*> is the name of a project.
>
> <*project-template-name*>is the name of a FastTrack project template.
>
> <*mapping-specification-name*> is the name of a mapping specification.
>
> <*mapping-component-name*> is the name of a mapping component.

If there is a space in a name, the entire name must be surrounded with double quotation marks (").

Using wildcard characters in the asset identifier

You can use the wildcard character in element names to specify multiple assets.

The asterisk wildcard character (*) represents 0 or more characters. The question mark wildcard character (?) represents exactly 1 character. You cannot use the wildcard to specify the asset type.

For multipart names (such as mapping specification, mapping component, and mapping composition names), the separator character (/) is required, even if one or more wildcard characters is used. For example, the following names are valid uses of the wildcard:

- Project*.ftp

  All FastTrack projects whose name begins with the prefix "Project".
- Project1/*Cust.spc

  All mapping specifications that are contained in the project "Project1" where the name of the specification ends with the suffix "Cust".
- Project*/*Cust.cmp

  All mapping components that are contained in any project where the name the project begins with the prefix "Project" and where the name of the component ends with the suffix "Cust".
- */*.cps

  All mapping compositions that are contained in all projects.

The following names are invalid uses of the wildcard:

- Project.*

  The asset type cannot be a wildcard.
- *.spc

  The mapping specification must have a two-part name.

Export command for InfoSphere FastTrack assets

Use the **istool export** command to create an archive file that can be used to transfer some or all of your IBM InfoSphere FastTrack assets from one environment to another.

You must have the FastTrack Administrator role.

You must run the command on a computer on the client tier where InfoSphere FastTrack is installed.

The result of the export command is an archive file, which contains all the assets that are being transferred.

```
istool export -domain <domain>[:<port>]
 -username <username>
 -password <password>
 -archive <filename>
 [-preview]
 -fasttrack '[<fasttrack-export-options>]'
```

where

```
<fasttrack-export-options>::=
 [-includeGenerationHistory |
 -includeReports |
 -includeCommonMetadata |
 -includeDataStageAssets |
 -includeDependent
 -includeProjectRoleAssignments]*
 <asset-id-list>
```

Note: The two single quotation marks (') are required after the -fasttrack or -ft option even if no export options are specified.

The *<asset-id-list>* is a list of asset identifiers that are specified in the format defined in the section "Asset IDs". The asset identifiers in this list are separated by blanks.

If you select a project, all of the contained mapping specifications, mapping components, and mapping compositions are also selected and written to the archive. If the project is defined based on a project template, the template is automatically included.

For example:

```
export -u admin -p admin100 -dom KILIMANJARO -ar ft_archive1.isx
-fasttrack 'FTProject1.ftp -incCM'
```

Command options

The following list shows the export command options. These options are not required.

Table 26. Export command options

Long name	Short name	Description
-includeGenerationHistory	-incGen	Includes generation history.
-includeReports	-incRep	Includes related reports in the exported archive.

Table 26. Export command options (continued)

Long name	Short name	Description
-includeCommonMetadata	-incCM	Includes related common metadata in the exported archive.
-includeDataStageAssets	-incDS	Includes related IBM InfoSphere DataStage and QualityStage assets in the exported archive.
-includeProjectRoleAssignments	-incRole	Includes InfoSphere FastTrack role assignments in the exported archive.
-includeDependent	-incDep	Includes all types of referenced assets in the exported archive.

Note: If you include related reports, common metadata, or InfoSphere DataStage and QualityStage assets in the archive file, you must specify each type of included metadata on the command line when you import the archive file, otherwise only InfoSphere FastTrack assets are imported.

Exit status

When exporting assets, if at least one item is successfully exported, an archive file is created.

Exit status = 0
The package was built successfully.

Values greater than 0
An error occurred.

Import command for InfoSphere FastTrack assets

Use the **istool import** command to import an archive file that contains IBM InfoSphere FastTrack assets. This command is used when transferring assets metadata repository to another.

You must have the FastTrack Administrator role.

You must run the command on a computer on the client tier where InfoSphere FastTrack is installed.

If the archive contains related IBM InfoSphere DataStage and QualityStage assets you must have privileges to edit those assets. If the archive contains related common metadata, you must have the Common Metadata Administrator role. If the archive contains related reports, you must be the owner of the reports or have the Suite Administrator role.

```
istool import -domain <domain>[:<port>]
 -username <username>
 -password <password>
 -archive <filename>
 [-preview|-replace]
 -fasttrack '[<fasttrack-import-options>]'
```

where

```
<fasttrack-import-options>::=
 [
   [-onNameConflict [ ignore | replace | rename ] ] |
   [-renameSuffix <suffix>]
   [-dsNamespace  <server[/project]>]
 ]
```

Note: Two single quotation marks (') are required after the -fasttrack or -ft option even if no import options are specified.

Command options

The following list shows the import command options.

Table 27. Import command options

Long name	Short name	Value	Description
-onNameConflict	-nameconf	*ignore* | *replace* | *rename*	Specifies what the action should be on detecting a name conflict for the first-level FT asset (FT Project or FT Project Template). The default is **-ignore**. *ignore*: If a project with the same name already exists on the target, do not import image. *replace*: If a project with the same name already exists on the target, replace with import image. The existing asset on the target system is dropped prior to import and the asset in the archive will be imported in. *rename*: If a project with the same name already exists on the target, use the aliasing mechanism to rename the new asset being imported.
-renameSuffix	-rensuf	*<suffix>*	A string that is appended to the end of each imported project (except for projects that match a name in the rename list). The default is **_New**.
-dsNamespace	-dsns	*server* [/*project*]	The name of the InfoSphere DataStage and QualityStage server and optionally the project into which to import mapping components. This option is required when mapping components are present in the archive file to be imported.

If the `-fasttrack` parameter is specified on the **`istool`** import command, the parameter must be followed by a string to indicate the options. For example:

```
import -u admin -p admin100 -dom EVEREST -ar ft_archive1.isx
  -fasttrack '-dsNamespace=EVEREST/DSProject'
```

If no options are required, then an empty string must be specified. For example:

```
 import -u admin -p admin100 -dom EVEREST -ar ft_archive1.isx
  -fasttrack ''
```

Importing multiple types of assets

If the archive file includes multiple types of assets, you must specify each type of included metadata on the command line when you import the archive file, otherwise only InfoSphere FastTrack assets are imported. For example, if the archive was exported with the -includeDependent option, it could include related reports, common metadata, and InfoSphere DataStage and QualityStage assets.

For best import performance, run separate commands to import each type of metadata that was exported to the archive file. Run the commands in the following order:

1. Import common metadata with the -cm option.
2. Import InfoSphere DataStage and QualityStage assets with the -ds option.
3. Import reports with the -rep and -replace options.
4. Import InfoSphere FastTrack assets with the -fasttrack option.

Note: You must use the -replace option when you import report assets from an archive. If you do not want to use the -replace option for other types of assets in the archive, you must use a separate command to import the reports. If you import InfoSphere FastTrack assets without the -replace option and import their related reports with the -replace option, some of the reports might not be accurate for the unreplaced assets in the target environment. Check the reports and run them again in the new environment if necessary.

In the following example, the exported assets from the file ft_archive1.isx are imported in the correct order for best performance. The common metadata assets, InfoSphere DataStage and QualityStage assets, and InfoSphere FastTrack assets are imported without using the -replace option. The reporting assets are imported with the required -replace option.

```
import -u admin -p admin100 -dom EVEREST -ar ft_archive1.isx -cm
import -u admin -p admin100 -dom EVEREST -ar ft_archive1.isx
   -ds '<import-options>'
import -u admin -p admin100 -dom EVEREST -ar ft_archive1.isx
  -replace -rep '<import options>'
import -u admin -p admin100 -dom EVEREST -ar ft_archive1.isx
  -fasttrack '<import options>'
```

The import options for the InfoSphere FastTrack assets must include the -dsNamespace option, which specifies the server and project that the InfoSphere DataStage and QualityStage assets were imported to.

Exit status

The command returns the following exit values:

Exit status = 0
The package was built successfully.

Values greater than 0
An error occurred.

A summary report is printed upon completion.

InfoSphere Information Analyzer assets

You can import and export IBM InfoSphere Information Analyzer project and analysis assets and move them between metadata repositories by using the command line. For example, you can move them from a development to a test environment.

Export command for InfoSphere Information Analyzer assets

Use the **istool export** command to export some or all of your IBM InfoSphere Information Analyzer assets to an archive file. You can use the archive file to import the assets into a different installation of IBM InfoSphere Information Server.

You must have project administrator authority.

You must run the command on a computer on the client or engine tier where InfoSphere Information Analyzer is installed.

```
istool export -domain <domain>[:<port>]
 -username <username>
 -password <password>
 -archive <filename>
 [-preview]
 -ia '[<ia-export-options>]'
```

where

```
<ia-export-options>::=
 -ia'{
[-includeAllDataClasses]*
[
[-projects]+
[-includeReports]*
[-includeCommonMetaData]*
[-includeProjectRoleAssignments]*
]
}'
```

For example:

```
export -u admin -p admin100 -dom KILIMANJARO -ar ia_archive1.isx
 -ia '-projects="testProject1" -includeCommonMetadata'
```

Export command options

The following list shows the export command options. These options are not required.

Table 28. Export command options

Long name	Short name	Description
-projects	-projects	Includes project names that you specify in the exported archive. You delimit multiple project names with a blank space between each name. To specify all project names, use an asterisk (-projects="*").
-includeAllDataClasses	-dataclass	Includes all data classes for the project names specified in the exported archive.

Table 28. Export command options (continued)

-includeCommonMetadata	-inccm	Includes all common metadata for the project names specified in the exported archive.
-includeProjectRoleAssignments	-incroles	Includes all project role assignments for the project names specified in the exported archive.
-includeReports	-incrpt	Includes reports for the project names specified in the exported archive.

Note: If you include reports or common metadata assets in the archive file, you must specify each type of included metadata on the command line when you import the archive file, otherwise only InfoSphere Information Analyzer assets are imported.

Exit status

When exporting assets, if at least one item is successfully exported, an archive file is created.

Exit status = 0
The package was built successfully.

Values greater than 0
An error occurred.

Note: Archive files of assets that are exported by using the istool command can be imported only by using the istool command line.

Import command for InfoSphere Information Analyzer assets

Use the **istool import** command to import an archive file of assets that was created by the **istool** export function.

You must have project administrator authority to import IBM InfoSphere Information Analyzer assets. To import related common metadata, you must have the Common Metadata Administrator role.

You must run the command on a computer on the client or engine tier where InfoSphere Information Analyzer is installed.

```
istool import -domain <domain>[:<port>]
 -username <username>
 -password <password>
 -archive <archive_name>
 [-preview | -replace]
-ia'{
[-onNameConflict < ignore | replace | rename >]+
[-renameSuffix <is_New>]
}'
```

Command options

The following list shows the command options for imports. These options are not required.

Table 29. Import command options

Long name	Short name	Description
-onNameConflict [ignore / replace / rename]	-nameConf	Specifies an action that you want to perform when a name conflict is detected for an InfoSphere Information Analyzer project. The default action is to ignore the conflict. **ignore** If a project with the same name already exists on the target, then the image is not imported. **replace** If a project with the same name already exists on the target, then replace the target with the imported image. **rename** If a project with the same name already exists on the target, then rename the new asset that is being imported.
-renameSuffix [<*value*>_New]	-renSuf	Specifies the suffix that would be used if there was a name conflict. For example, if a project named Customer_Data is being imported, and a project named Customer_Data already exists on the target system, then the new project being imported would be renamed to Customer_Data_New.

If the `-ia` parameter is specified on the **`istool`** import (or **`istool`** export) command, the parameter must be followed by a string to indicate the options. If no options are required, then an empty string must be specified. For example:

```
import -u admin -p admin100 -dom EVEREST -ar ia_archive1.isx -ia ''
```

Importing multiple types of assets

If the archive file includes multiple types of assets, you must specify each type of included metadata on the command line when you import the archive file, otherwise only InfoSphere Information Analyzer assets are imported. For example, if the archive is exported with the -includeCommonMetadata and -includeReports options, you must specify the -cm and -rep options in addition to the -ia options when you import the archive.

Note: You must use the -replace option when you import report assets from an archive. If you do not want to use the -replace option for the other types of assets in the archive, you must use a separate command to import the reports. If you import InfoSphere Information Analyzer assets without the -replace option and import their related reports with the -replace option, some of the reports might not be accurate for the unreplaced assets in the target environment. Check the reports and run them again in the new environment if necessary.

In the following example, the first command imports InfoSphere Information Analyzer assets and common metadata assets from the file ia_archive1.isx without using the -replace option. The second command imports reporting assets from the same archive file while using the required -replace option.

```
import -u admin -p admin100 -dom EVEREST -ar ia_archive1.isx -ia '' -cm
  '<import options>'

import -u admin -p admin100 -dom EVEREST -ar ia_archive1.isx -replace -rep
  '<import options>'
```

InfoSphere DataStage and QualityStage assets

These assets are created in projects. They include jobs, table definitions, rule sets, and other project assets.

You can interchange IBM InfoSphere DataStage and QualityStage assets by using two different methods:

- You can use the graphic interface of IBM InfoSphere Information Server Manager to define a package of assets. You can then build that package and deploy that package to another project or services tier by using the build package and deploy package commands. The package is an object that is held in the InfoSphere Information Server metadata repository, and can be rebuilt or deployed by users who have access to the repository. After you have defined a package, you can rebuild and redeploy the package whenever any of the assets that it contains change. A history is maintained to help you track the package.
- You can export a list of named DataStage assets to an archive file by using the istool export command. You can then import the assets to another project or domain by using the istool import command. If any of the objects contained in the archive change, you can reexport them to a new archive or update the existing archive file. The archive is created by, and belongs to, a particular user, and can be shared only by physically distributing the file.

The package and deploy method is suited to the product lifecycle scenario, where you are repeatedly moving assets between development, test, and production systems. The archive file method is suited to an asset sharing or asset backup scenario.

You can use InfoSphere Information Server Manager to identify the names of the assets that you want to export, and then capture those names for inclusion in istool commands.

Build package command

You can use the istool command-line interface (CLI) to build packages of IBM InfoSphere DataStage and QualityStage assets that are defined in the IBM InfoSphere Information Server Manager.

Purpose

The istool build package command is used to build a package ready for deployment. You must first define the package in the InfoSphere Information Server Manager, including specifying the assets that it contains and the build and deploy paths. In a clustering environment, set the build and deploy paths to shared directories that are accessible from every cluster node. The package that you specify resides in the metadata repository.

To build a package, you must have an InfoSphere DataStage and QualityStage role that grants you permission to edit the assets in the package

Command syntax

```
istool build package
authentication options
[generic options]
-package  package
[ -label "buildlabel" ]
[ -comment "comment" ]
[ -overwrite ]
[ -preview ]
```

Command options

`authentication options`
Use authentication options to connect to a specific installation of InfoSphere Information Server.

`generic options`
Use the generic options to request help on command syntax, or to specify silent or verbose operation.

`-package` *`name`* **`or -pkg`** *`name`*
Specifies the name of an existing deployment package definition in the metadata repository.

`-comment "`*`comment_text`***`" or -c "`***`comment_text`***`"`**
Adds a comment to the deployment package information.

`-preview or -pre`
Specify this option to preview the build operation without building a package.

`-label "`*`label_text`***`" or -l "`***`label_text`***`"`**
Specifies a label for the build. You can use the label to version different builds of your deployment package.

`-overwrite or -o`
Rebuilds an existing deployment package. This option removes all history from the package.

Exit status

A return value of 0 indicates successful completion, any other value indicates failure. The list of exit codes is shown in the command help. Enter `istool build package -help` to see the list of possible exit codes for the **`build package`** command.

Error handling

When building a deployment package, if at least one object is successfully built, a deployment package file is created. If one or more objects fails to build, the command completes with a non-zero exit code.

Example

The following example shows how to build two versions of a package.

1. Define a package named DeployPackage1 by using the InfoSphere Information Server Manager to include `tabledef1.tbd`.

2. Build the package DeployPackage1, add the comment “my first package” to the build, and label the build "version 1.1":

   ```
   istool build package –domain myhost:9080
   -username user1 -password pass1 -package DeployPackage1
   -label "version 1.1" –comment "my first package"
   ```
3. Modify `tabledef1.tbd` in the Designer client. For example, add a row.
4. Rebuild the same package, add the label "version 1.2", and add the comment "table def changes":

   ```
   istool build package –domain myhost:9080
   -username user1 -password pass1 -package DeployPackage1
    -label "version 1.2" –comment "table def changes"
   ```

When you open DeployPackage1 in the InfoSphere Information Server Manager, the History tab shows two builds, version 1.1. and version 1.2. You can deploy version 1.1 or version 1.2 of `tabledef1.tbd` by using the **`deploy package`** command and specifying the `-label` option.

Deploy package command

You can use the istool command-line interface (CLI) to deploy packages of IBM InfoSphere DataStage and QualityStage assets that you have previously built.

Purpose

The istool **`deploy package`** command copies the contents of a package to a target metadata repository of IBM InfoSphere Information Server. You must first define the package in the InfoSphere Information Server Manager, including specifying the assets that it contains and the build and deploy paths. In a clustering environment, set the build and deploy paths to shared directories that are accessible from every cluster node. The package is built by using the istool **`build package`** command.

To deploy a package, you must have an InfoSphere DataStage and QualityStage role that grants you permission to edit assets in the target project.

Command syntax

```
istool deploy package
authentication options
[generic options]
[-package package |-file deployfile | -localfile deployfile]
[-label "buildlabel"]
[-preview]

-datastage '[-replace] server/project'
```

Command options

`authentication options`
: Use authentication options to connect to a specific installation of InfoSphere Information Server.

`generic options`
: Use the generic options to request help on command syntax, or to specify silent or verbose operation.

`-package` *`name`* **`or -pkg`** *`name`*
: Specifies the name of an existing deployment package definition in the metadata repository. The package must already be built. The -package, -file, and -localfile options are mutually exclusive.

-file *name* **or -f** *name*
Specifies a deployment package file name in the target system. The specified file name must be relative to the deploy directory in the target system. Use this option to deploy assets that were packaged on a different computer. You must first transfer the package file from the source system build directory to the target system deploy directory. The -package, -file, and -localfile options are mutually exclusive.

-localfile *name* **or -lf** *name*
Specifies the fully qualified name of a deployment package file on the local file system of the client. The -package, -file, and -localfile options are mutually exclusive.

-label "*label_text***" or -lab "***label_text***"**
Specifies the label for the build of the package to be deployed.

-preview or -pre
Specify this option to preview the action of the command without changing the repository.

-datastage '*server/project***' or -ds '***server/project***'**
Specifies that InfoSphere DataStage and QualityStage assets are to be deployed to the target server and project.

-replace or -repl
Specifies that assets in the deployment package replace any existing assets in the target project that have the same identity.

Exit status

A return value of 0 indicates successful completion, any other value indicates failure. The list of exit codes is shown in the command help. Enter `istool deploy package -help` to see the list of possible exit codes for the **deploy package** command.

Error handling

When you deploy a package, the operation continues until the entire deployment package is processed. As many objects are imported as possible. If there is failure in deploying one or more objects to the project, a non-zero exit status is returned.

Examples

The following command deploys an existing package named localpackage to the target project named myProject. The target project is on the same computer. If there are any assets with the same name in the target project, they are replaced with assets from the deployment package.

```
istool deploy package –domain myserver:9080
-username user1 -password pass1
-package localpackage
-datastage '-replace sliver/myProject'
```

The following command deploys a package named remotePackage that was created on a different computer. The package file has already been copied to the deploy directory on the target computer. The package is deployed from the file to the project named OtherProject.

```
istool deploy package –domain myserver:9080
-username user1 -password pass1
-file  remotePackage.pkg
-datastage 'slice/OtherProject'
```

Send package command

You can use the istool command-line interface (CLI) to send package files to a local client computer.

Purpose

The istool **send package** command sends a deployment package from the metadata repository to a file on a local client computer. You can deploy a package from the local client computer by using the **deploy package** command with the -localfile option.

You must first define the package in the InfoSphere Information Server Manager, including specifying the assets that it contains and the build and deploy paths. In a clustering environment, set the build and deploy paths to shared directories that are accessible from every cluster node. The package is built by using the istool **build package** command.

Command syntax

```
istool send package
authentication options
[generic options]
-package package
-file deployfile
[-replace]
```

Command options

authentication options
Use authentication options to connect to a specific installation of InfoSphere Information Server.

generic options
Use the generic options to request help on command syntax, or to specify silent or verbose operation.

-package *name* **or -pkg** *name*
Specifies the name of an existing deployment package definition in the metadata repository. The package must already be built.

-file *name* **or -f** *name*
Specifies the fully qualified name of a file on the local file system of the client computer to send the deployment package to.

-replace
Replaces the file if it exists on the computer.

Exit status

A return value of 0 indicates successful completion, any other value indicates failure. The list of exit codes is shown in the command help. Enter `istool send package -help` to see the list of possible exit codes for the **send package** command.

Example

The following command sends the deployment package, package1, from the system named sliver to a file, package1.pkg in the folder "c:\package dir" in the local file system.

```
istool send package –domain sliver:9080
-username user1 -password pass1
-package package1
-file "c:\package dir\package1.pkg"
-replace
```

Export command for InfoSphere DataStage and QualityStage assets

You can use the istool command line interface (CLI) to export assets to an archive file. The default extension of the archive file is .isx.

Purpose

Use the DataStage command option with the istool export command to export IBM InfoSphere DataStage and QualityStage assets to an archive file on the local file system. You can then use the istool import command with the DataStage command option to restore the exported assets into a different IBM InfoSphere Information Server metadata repository.

You must have an InfoSphere DataStage and QualityStage role that grants you permission to edit the assets that you are exporting.

Command syntax

```
istool export
authentication options
[generic options]
-archive "pathname" [-updatearchive]
[-preview ]
[-abortIfError=number_of_errors]
-datastage ' [ -base="server[:port]/project"]
[-includedependent]
[-nodesign]
[-includeexecutable]
"dsServer[:port]/project/folder/name.type" '
```

Command options

authentication options
Use authentication options to connect to a specific installation of InfoSphere Information Server.

generic options
Use the generic options to request help on command syntax, or to specify silent or verbose operation.

-archive "*archive_pathname*" or -ar "*archive_pathname*"
Specifies the path name for the file that the assets are exported to.

-updatearchive or -up
Specifies that the archive file is updated if it exists (otherwise it is overwritten)

-preview or -pre
Specify this option to preview the export operation without exporting the assets.

-AbortIfError *number_of_errors* **or -abort** *number_of_errors*
Specifies that the export stops if the specified number of errors occur

-datastage ' "*server***/***project***/***folder***/***name.type***" ' or -ds ' "***server***/***project***/***folder***/***name.type***" '**
Specifies that InfoSphere DataStage and QualityStage assets are to be exported. Specifies the assets that are to be added to the export file (see "Asset paths for InfoSphere DataStage and QualityStage assets" on page 246). You can copy and paste asset names from the InfoSphere Information Server manager.

-nodesign
Excludes design objects from the export. Use together with the -includeexecutable option to export only runtime executables.

-includedependent or -incdep
Includes dependent assets. For example, if you export a job named myjob that uses the table definition named salesdata, then specifying the -includedependent causes the table definition to be automatically included when the job is exported.

-includeexecutable or -incexe
Includes runtime executables. Some assets do not have executable components. If you use this option and an asset in the export does not have an executable component, a warning is generated but the export does not fail as a result.

-base "*dsServer***[:***port***]/***project***/[***folder***]"**
You can optionally use the -base argument to specify a base path. This path is then prefixed to all the asset path names that you specify. For example, if your base option specifies dsServer/project, then your asset path only specifies *folder/name.type*.

Note: If you specify -includedependent, the archive file can include common metadata assets. When you import the archive file, you must specify the -cm option on the command line. Otherwise, the common metadata assets are not imported.

Exit status

A return value of 0 indicates successful completion, any other value indicates failure. The list of exit codes is shown in the command help. Enter `istool export -help` to see the list of possible exit codes for the **export** command.

Error handling

When you are exporting more than one object, a failure does not interrupt the operation. If only one object is successfully exported, an archive file is still created. If no objects are exported, no archive file is created. The exit status reports an error if one or more objects cannot be exported.

Examples

The following command exports the parallel job named ajob from the project named proj on the computer named sliver. The job is located in the Mine subfolder of the Jobs folder. The command also exports all the server jobs in folder2 and its subfolders in the project named anotherProj on the computer named serv2. In this InfoSphere Information Server system, both sliver and serv2 belong to the same domain (sliver:9080). All the assets are written to the archive file `C:\arc.isx`.

```
istool export –domain sliver:9080 -username user1 -password pass1
-archive "c:\arc.isx"  -datastage  ' "sliver:5000/Proj/Jobs/Mine/ajob.pjb"
"serv2/anotherProj/folder2/*/*.sjb"  '
```

The following command exports all the assets in the folder named tabledefinitions, and all the parallel jobs in the Pivotal subfolder of the Jobs folder. All these folders belong to the project named anotherProj on the computer named serv2. The –updatearchive option is specified, so if the specified archive file, C:\arc.isx, exists, the assets are added to the archive file. The -includedependent option is specified so that any shared tables that are related to the table definitions are also exported.

```
istool export -domain sliver:9080 -username user1 -password pass1
-archive "c:\arc.isx" -updatearchive -datastage '-base="serv2/anotherProj"
"tabledefinitions/*.tbd" "Jobs/Pivotal/*.pjb" -includedependent'
```

The following example exports only job executables for the parallel jobs in the Jobs folder. The folder belongs to the project named dstage on the computer named sliver. No design time assets are exported. The job executables are written to the archive file `c:\runtime.isx`

```
istool export -domain sliver:9080 -username user1 -password pass1
-archive "c:\runtime.isx" -ds '-nodesign -includeexecutable
"sliver:5000/dstage/Jobs/*.pjb" '
```

Asset paths for InfoSphere DataStage and QualityStage assets

You can export specific assets to an archive file by specifying the paths of the assets on the command line.

Asset path

Assets to export are identified by a path name. An asset path is a fully-qualified path that identify assets to be exported. The path has the following format:

```
engine_host[:portnumber]/project/folder[/folder...]/asset.type
```

An asset path consists of the following elements:

- *engine_host*. The name of the computer that hosts the engine tier.
- *port*. Optionally specifies the port used to communicate with the engine tier. The port number is only needed if the engine tier uses a non-default port number. (The default port number is 31538.)
- *project*. The project that contains the asset or assets.
- *folder*[/*folder*...]. The folder structure that contains the asset or assets.
- *asset.type*. The name of the asset and a suffix that specifies the type of the asset.

Asset type

Asset types are identified by a type suffix. Type suffixes are not case-sensitive.

Table 30. Asset type names

Asset type	Type suffix
Data element	det
IMS database	idb
IMS viewset	ivs
Mainframe job	mjb
Parallel job	pjb
Sequence job	qjb

Table 30. Asset type names (continued)

Asset type	Type suffix
Server job	sjb
Machine profile	mcp
Mainframe routine	mrt
Parallel routine	prt
Server routine	srt
Parallel shared container	psc
Server shared container	ssc
Table definition	tbd
Transform	tfm
Data quality specification	dqs
Stage type	stp
Data connection	dcn
Parameter set	pst

Wildcard character

You can use the wildcard character asterisk (*) in element names. The asterisk wildcard character represents 0 or more characters. You can use the wildcard character to specify multiple assets. The following table shows the ways that the wildcard character can be used.

Table 31. Use of wildcard character in asset path

Location	Example	Description
In place of an asset name	server/project/xfolder/*.pjb	All parallel jobs in xfolder
Beginning of an asset name	serve/project/xfolder/*job.pjb	All parallel jobs with name ending with 'job' in xfolder
End of an asset name	server/project/xfolder/job*.pjb	All parallel jobs with name beginning with 'job' in xfolder
Beginning and end of an asset name	server/project/xfolder/*job*.pjb	All parallel jobs with name containing 'job' in xfolder
In place of an asset type	server/project/xfolder/xjob.*	All assets with name 'xjob' of any type in xfolder
In place of asset name and asset type	server/project/xfolder/*.*	All exportable assets in xfolder

Table 31. Use of wildcard character in asset path (continued)

Location	Example	Description
In place of a folder for recursive match	server/project/xfolder/*/*.*	All exportable assets in xfolder and its subfolders (recursive).
	server/project/*/*.*	All exportable assets in the specified project (recursive)
	server/project/xfolder/*/xjob.pjb	All parallel jobs with name=xjob in xfolder and its subfolders (recursive)
	server/project/xfolder/*/job*.pjb	All parallel jobs with name beginning with ‘job' in xfolder and its subfolders (recursive)

Using special characters in an asset path

When the asset path contains characters that conflict with the istool command-line syntax, those characters must be escaped by using special characters. The istool command uses the backslash character (\) as an escape character. Inserting a backslash in front of one of these special characters changes the way istool treats the character.

IBM InfoSphere DataStage and QualityStage does not allow non-alphanumeric characters in asset names, other than underscore (_). The only exception is folder names and machine profiles, where you can use the single quote ('), double quote ("), or asterisk (*) characters, which must be preceded by backslash (\) if used in an asset string. The following table shows how to enter characters that require special treatment.

You must take special steps when using the istool CLI in command mode on a UNIX computer. When using the command mode in UNIX, the asset path is first processed by the UNIX shell. The single quote character (') has a special meaning to UNIX shell, and you cannot escape the single-quote by using the backslash character. To specify an asset path containing a single quote character, you must switch in and out of single-quote mode and use double quotes characters (") to prevent the UNIX shell interpreting the single quote character in the asset path. Switch out of single-quote mode by inserting an additional single quote character in the asset path before the existing single quote character in the asset path. Enclose the single quote character in the asset path within double quote characters ("'"). Switch back into single-quote mode for the remaining of the asset path by inserting another single quote character. For example, to specify the following command `istool export ... -ds '"server/project/x'folder/xjob.pjb"'`, you would actually type the following command at the UNIX command prompt:

```
istool export ... -ds '"server/project/x'"'"'folder/xjob.pjb"'
```

Table 32. Using special characters in an asset path

Character	Syntax	Example
double quotes (")	\"	istool export .... –ds '"server/project/x\"folder/xjob.pjb" '

Table 32. Using special characters in an asset path (continued)

Character	Syntax	Example
single quote (')	\'	Windows • istool export .... -ds '"server/project/x\'folder/xjob.pjb"' UNIX Linux • Command mode: istool export .... -ds '"server/project/x'"'"'folder/xjob.pjb"' • Console and script mode: istool export .... -ds '"server/project/x\'folder/xjob.pjb"'
asterisk (*)	*	istool export .... –ds '"server/project/x*folder/xjob.pjb" '

Retrieving asset names from InfoSphere Information Server Manager

You can use the IBM InfoSphere Information Server Manager to identify the IBM InfoSphere DataStage and QualityStage assets that you want to add to an archive, and retrieve the names of these assets.

You can retrieve the names of multiple assets in a single operation, or you can retrieve the name of a single asset at a time.

To retrieve the names of multiple assets in a single operation:

1. In the repository view of InfoSphere Information Server Manager, select a number of assets by clicking the assets while holding down CTRL.
2. Right-click and select **Copy** from the pop-up menu.
3. In a text editor program, right-click and select **Paste** from the pop-up menu.

The full text path of the asset is inserted into your document. For example, selecting some job icons in the repository view might result in the following strings being added to your document.

```
SPARK/aTestProject/Jobs/Folder1/Job3.pjb SPARK/aTestProject/Jobs/Job2.sjb
```

To retrieve the name of a single asset at a time:

1. In the repository view of InfoSphere Information Server Manager, select an asset by clicking it.
2. Right-click in the Repository view and select **Show Properties** from the pop-up menu.
3. Select the name of the asset in the properties view.
4. Right-click and select **Copy** from the pop-up menu.
5. In a text editor program, right-click and select **Paste** from the pop-up menu.

After you have assembled the names of the assets that you want to export in a document, you can copy and paste the names from there to a command-line prompt, or to a script that you are building.

Import command for InfoSphere DataStage and QualityStage assets

You can use the istool command line interface (CLI) to import assets from a previously exported archive file.

Purpose

Use the DataStage command option with the istool **import** command to import IBM InfoSphere DataStage and QualityStage assets from an archive file to the metadata repository of IBM InfoSphere Information Server. This command is the reverse of the **export** command.

To import InfoSphere DataStage and QualityStage assets you must have a role that grants you permission to edit assets in the target project. To include related common metadata assets in the import, you must have the Common Metadata Administrator role.

Command syntax

```
istool import
authentication options
[generic options]
-archive pathname
[-preview|-replace]
[-abortAfter=number_of_errors]
-datastage '[-nodesign]"Server/project" '
```

Command options

authentication options
All asset interchange commands use authentication options to connect to a specific installation of InfoSphere Information Server.

generic options
The generic parameters are available by all asset interchange commands. Use the generic options to request help on command syntax, or to specify silent or verbose operation.

-archive "*asset_pathname*" or -ar "*asset_pathname*"
Specifies the path name for the file that the assets are imported from.

-replace
Specify this option to replace existing assets with imported assets of the same identity.

-preview or -pre
Specify this option to preview the action of the command without changing the repository.

-abortAfter *number_of_errors* **or -abort** *number_of_errors*
Specifies that the import stops if more than the specified number of errors occur

-datastage ' "*server/project*' or -ds '*server/project*" '
Specifies that InfoSphere DataStage and QualityStage assets are to be imported to the target server and project.

-nodesign
Specifies that job designs are not imported, only job executables

Importing multiple types of assets

If the archive file includes multiple types of assets, you must specify each type of included metadata on the command line when you import the archive file. Otherwise, only InfoSphere DataStage and QualityStage assets are imported. For example, if the archive was exported with the `-includedependent` option, it could include common metadata assets.

For best import performance, import the common metadata assets first, and then run a command to import the InfoSphere DataStage and QualityStage assets.

The following commands import assets from the archive file arc.isx in the correct order. The common metadata assets are imported first. The InfoSphere DataStage and QualityStage assets are then imported to the project aProj on the server slice.

```
istool import –domain sliver.svl.ibm.com:9080
-username user1 -password pass1
-archive "c:\arc.isx"  -cm
istool import –domain sliver.svl.ibm.com:9080
-username user1 -password pass1
-archive "c:\arc.isx"  -datastage ' "slice/aProj" '
```

Exit status

A return value of 0 indicates successful completion, any other value indicates failure. The list of exit codes is shown in the command help. Enter `istool import -help` to see the list of possible exit codes for the **import** command.

Error handling

When importing from an archive file that contains more than one object, a single failure does not interrupt the operation. The exit status reports an error if one or more objects cannot be imported.

Examples

The following command previews an import of assets from the file arc.isx. No assets are imported. Job designs are not included.

```
istool import –domain sliver:9080
-username user1 -password pass1
-archive "c:\arc.isx" -pre  -datastage ' -nodesign "slice/aProj" '
```

After the preview, the command is repeated without the -preview option to import the assets to the project named aProj located on the computer named slice. The InfoSphere Information Server engine on slice is associated with the computer named sliver on the services tier.

```
istool import –domain sliver.svl.ibm.com:9080
-username user1 -password pass1
-archive "c:\arc.isx"  -datastage ' -nodesign "slice/aProj" '
```

Common metadata assets

Common metadata assets include implemented data resources, business intelligence assets, custom attribute definitions, contract libraries, logical and physical data model assets, and other assets that are shared by suite tools. These assets are stored in the metadata repository of IBM InfoSphere Information Server.

Common metadata asset types and identity strings for the command line

You specify the identity strings of common metadata assets when you export, query, or delete the assets by using the command line.

The following sections describe common metadata assets and the identity strings that are used on the command line:

- Implemented data resources

- Physical data model assets
- Business intelligence assets
- Logical data model assets
- Custom attribute definitions
- Miscellaneous common metadata assets

Implemented data resources

You can exchange the following implemented data resource assets between IBM InfoSphere Information Server repositories. You can also query and delete the assets by using the command line.

Host A computer where a database or data file exists.

Database
A relational storage collection that is organized by database schemas and procedures. A database stores data that is represented by tables.

Database schema
A named collection of related database tables and integrity constraints. A schema defines all or a subset of the data that is in a database. A database schema can implement logical data models and physical data models.

Database table
A structure for representing and storing data objects in a database. A database table can implement logical entities or design tables.

Stored procedure
A procedure that is defined and stored within a database to retrieve or manipulate data in that database, or to enforce constraints. Stored procedures can implement design stored procedures.

Data file
An information asset that represents a collection of fields that is stored in a single file. This asset could be a sequential file (a flat file that has no hierarchical structure) or a complex flat file (a file that has hierarchical structure). Examples of complex flat files include COBOL copybooks and XML files. A data file can implement physical data models.

Data file structure
A collection of related fields in a data file. A data file structure is the file equivalent of a database table. A data file structure can implement design tables.

Data item definition
An information asset that represents user-defined types and intermediate elements in the hierarchy of complex data structures. Examples are COBOL structured fields, SAP intermediate segments in IDoc structures, and XML type structures.

Database domain
A user-defined datatype that is contained by a database schema. Database domains can implement design domains and logical domains.

The assets beneath the host are hierarchical. Importing or exporting host assets affects only the host asset. Contained objects must be dealt with separately. Importing or exporting other assets automatically includes all the contained assets. Assets contain other assets as described in the following list:

- Databases include all the schemas in the database

- Database schemas include all the sub-schemas, views, tables, stored procedures, and foreign keys that the schema contains
- Database tables include database columns
- Data files include data file structures
- Data file structures include data file fields

The assets are identified by identity strings and are listed in the following table.

Table 33. Implemented data resources and identity strings

Asset	Identity string for command line
Host	/*host_name*.hst
Database	/*host_name*/*database_name*.db
Database schema	/*host_name*/*database_name*/*schema_name*/[[/*schema_name*]*].sch
Database table	/*host_name*/*database_name*/*schema_name*/[[/*schema_name*]*]/*table_name*.tbl
Stored procedure	/*host_name*/*database_name/schema_name*/[[/*schema_name*]*]/ *stored_procedure_name*.sp
Data file	/*host_name*/*datafile_path*/*datafile_name*.fl
Data file structure	*host_name*/*datafile_path*/*datafile_name*/*dfstructure_name*.dcl
Data item definition	/*data_item_def_qualifier*/*data_item_def_name*.did
Database domain	/*host_name*/*database_name*/*schema_name*/[[/*schema_name*]*]/ *data_item_def_qualifier*/*data_item_def_name*.sdd

If any asset names in the identity string contain space characters, the asset string must be enclosed in double quote characters (").

Physical data model assets

A physical data model is a design schema for information assets that defines the physical structures and relationships of data within a subject domain or application. Physical data models are independent of implementation or platform details.

You can exchange the following physical data model assets between IBM InfoSphere Information Server repositories:

Physical data model
A design schema for information assets that defines the physical structures and relationships of data within a subject domain or application. A physical data model can implement a logical data model and can be implemented by a database schema or a data file.

Design table
An asset that represents a table structure in the physical data model. The design table defines the design column, the design candidate key, and the design foreign key. A design table can implement a logical entity and can be implemented by a database table or data file structure.

Design stored procedure
An asset that represents the stored procedure structure in the physical data model. The design stored procedure also defines the design stored procedure parameters. A design stored procedure can be implemented by a stored procedure.

Physical domain
A user-defined data type or global attribute that can be reused in multiple design tables. A physical domain can implement a logical domain and can be implemented by a database domain.

The assets are identified by identity strings as listed in the following table.

Table 34. Physical data model assets and identity strings

Asset	Contained assets that are deleted with the asset	Identity string for command line
Physical data model	Design table, design stored procedure, and physical domain	/*model_namespace*/*model_name*.pm
Design table	Design column, design candidate key, and design foreign key	/*model_namespace*/*model_name*/*table_name*.dtl
Design stored procedure	Design stored procedure parameter	/*model_namespace*/*model_name*/*procedure_name*.dp
Physical domain		/*model_namespace*/*model_name*/*data_item_def_qualifier*/*data_item_def_name*.pdd

Business intelligence assets

Business intelligence assets comprise the objects that have been imported into the InfoSphere Information Server metadata repository from business intelligence tools.

You can exchange the following business intelligence assets between IBM InfoSphere Information Server repositories. You can also query and delete them by using the command line.

BI model
A grouping of BI data collection views that are relevant to a BI application.

BI collection
A data structure that provides a view of data that is stored in databases and files. In dimensional modeling, these structures are known as dimensions and fact tables. BI collections are the data sources of BI reports.

Cube A subset of a BI model that consists of a set of related analytic values that share the same dimensionality.

BI report
A business intelligence report that is based on information in a database or a BI model.

BI report section
A query on a database or a BI model whose result set populates a BI report section.

The assets are identified by identity strings as listed in the following table.

Table 35. Business intelligence assets and identity strings

Asset	Contained assets that are deleted with the asset	Identity string for command line
BI model	Dimensions, collections, joins, hierarchies, and cubes	/*model_namespace*/*model_name*.oml

Table 35. Business intelligence assets and identity strings (continued)

Asset	Contained assets that are deleted with the asset	Identity string for command line
BI collection	Members, levels, and hierarchies	/*model_namespace*/*model_name*/ *collection_namespace*/*collection_name*/ [/*collection_namespace*/ *collection_name*]*.ocl
Cube	Dimensions and measures	/*model_namespace*/*model_name*/ *cube_namespace*/*cube_name*.ocb
BI report	Report queries and report layout	/*report_namespace*/*report_name*.rdf
BI report section	Query items	/*report_namespace*/*report_name*/ *report_section_namespace*/ *report_section_name*.rds

Logical data model assets

Logical data model assets comprise the set of related entities and their business associations that have been imported into the InfoSphere Information Server metadata repository.

You can exchange the following logical data model assets between IBM InfoSphere Information Server repositories:

Logical data model
A logical representation of the data objects that are related to a business domain and the rules or constraints that govern their associations in real-world applications. Logical data models consist of a set of entities and relationships. A logical data model can be implemented by physical data models or a database schemas.

Logical entity
An asset that represents the data structure in the logical data model. A logical entity defines entity attributes, entity keys, and entity constraints. A logical entity can be implemented by a design table by physical models or by database tables.

Logical relationship
An asset that represents the set of business rules that define the associations between two logical entities. A logical relationship can be implemented by a design foreign keys and foreign keys for a database table.

Entity generalization hierarchy
An asset that represents the inheritance associations that classify logical entities into subtypes and supertypes. A hierarchy supertype is a logical entity that is the supertype or parent entity in the hierarchy.

Logical domain
A user-defined data type or global attribute that can be reused in multiple logical entities. A logical domain can be implemented by physical domains and database domains.

Subject area
A grouping of related logical entities that focus on a particular business area. A logical entity can be included in more than one subject area to better differentiate it from other logical entities in the logical data model. Subject areas can be represented graphically in subject area diagrams.

Diagram
A graphical representation of a logical data model or a subject area.

The assets are identified by identity strings as listed in the following table.

Table 36. Logical data model assets and identity strings

Asset	Contained assets that are deleted with the asset	Identity string for command line
Logical data model	Diagram, subject area, logical entity, logical relationship, entity generalization hierarchy, logical domain **Note:** Logical data models can also contain submodels.	/*model_namespace*/*model_name*/ *[[nested_model_name]*]*.lm
Logical entity	Entity attribute, entity key, entity constraint	/*model_namespace*/*model_name*/ *[[nested_model_name]*]*/ *entity_name*.ent
Logical relationship	Relationship end	/*entity_model_namespace*/ *entity_model_name*/ *[[nested_model_name]*]*/*entity_name*/ *relationship_model_namespace*/ *relationship_model_name*/ *[[nested_model_name]*]*/ *relationship_name*.rel
Entity generalization hierarchy	Hierarchy supertype, hierarchy subtype	/*entity_model_namespace*/ *entity_model_name*/ *[[nested_model_name]*]*/*entity_name*/ *generalization_model_namespace*/ *generalization_model_name*/ *[[nested_model_name]*]*/ *generalization_name*.gen
Logical domain		/*model_namespace*/*model_name*/ *[[nested_model_name]*]*/ *domain_name_qualifier*/ *domain_name*.dom
Subject area	A subject area can include but does not contain logical entities, logical relationships, and entity generalization hierarchies. Deleting the subject area does not delete assets of these types. A subject area can contain a diagram.	/*model_namespace*/*model_name*/ *[[nested_model_name]*]*/ *subjectArea_name*.sa
Logical model diagram		/*model_namespace*/*model_name*/ *[[nested_model_name]*]*/ *diagram_name*.ldg
Subject area diagram		/*model_namespace*/*model_name*/ *[[nested_model_name]*]*/ *subject_area_name*/*diagram_name*.sdg

Custom attribute definitions

Custom attribute definitions are created in InfoSphere Metadata Workbench as properties of implemented data resources, logical data resources, extended data resources, and extension mappings. For information on importing and exporting custom attribute definitions by using the command line, see http://

www.ibm.com/support/docview.wss?uid=swg27022191.

Miscellaneous common metadata assets

You can exchange the following miscellaneous asset between IBM InfoSphere Information Server repositories:

Data connection
A connection for accessing a database or file. For example, an ODBC or Oracle connection.

Contract library
A group of related XML schemas that are imported and used by the InfoSphere DataStage XML stage to transform data.

The assets are identified by identity strings as listed in the following table.

Table 37. Miscellaneous common metadata assets and identity strings

Asset	Identity string for command line
Data connection	/*host_name*/*database_name*/*connection_name*.dcn
Data file connection	/*host_name*/*datafile_path*/*datafile_name*/*connection_name*.fcn
Contract library	/*contractlibrary_name*.cl

Wildcards and special characters in identity strings

You can use wildcards and special characters when specifying identity strings for common metadata assets.

You can use the wildcard characters asterisk (*) and exclamation point (!) in identity strings. The asterisk wildcard character represents 0 or more characters. The exclamation point wildcard character represents exactly one character. For example, /ModelSpace/Model!.oml selects the models Model1, Model2, and Model5, but not Model22.

If a component of the identity string contains asterisks or exclamation points that are not intended as wildcards but are part of the actual name, each asterisk or exclamation point must be proceeded by two backward slash characters (\\). For example, if the host name is `myhost` and the database name is `Data!base`, then the identity string is `/myhost/Data\\!base.db`.

If a component of the identity string contains a forward slash character (/) as part of the component name, then add an additional forward slash (/). For example, if the host name is `myhost` and the database name is `data/base`, then the identity string is `/myhost/data//base.db`.

If a component of the identity string contains a backward slash character (\) as part of the component name, then add two additional backward slash (\) characters. For example, if the host name is `myhost` and the and the database name is `data\base`, then the identity string is `/myhost/data\\\base.db`.

If an identity string ends with a backward slash character (\), then add two additional backward slash (\\) characters or the asterisk (*) character. For example, if the identity string of a BI model contains a BI model namespace, the BI model name, and the extension `.oml`, where the namespace is `192.168.62.131\Public Folders\Executive Insight\Overall\Reports\P1\P1 2011-03-21T21:34:41.692Z\`

and the name is `P1`, then you must add two additional backward slash characters to prevent the export from failing. For example, `istool export -dom is-server.ibm.com:9080 -username <userName> -password <pw> -archive cognosAssets.isx -cm '/192.168.62.131\\Public Folders\\Executive Insight\\Overall\\Reports\\P1\\P1 2011-03-21T21:34:41.692Z\\\\/P1.oml'`

The extra backslash is not required for the last identity component in the identity string. For example, the identity string of the host system with the name `Host\:` can be entered as `/Host\\.hst`.

Importing and exporting common metadata assets by using the command line

You can import and export common metadata assets such as implemented data resources, business intelligence assets, logical data model assets, physical data model assets, custom attribute definitions, and contract library assets that are stored in the InfoSphere Information Server metadata repository.

Export command for common metadata assets

You can export most types of common metadata assets by using the istool export command with the **-cm** parameter.

By using the **-cm** or **-commonmetadata** parameter you can export the following types of assets:

- Implemented data resources
- Business intelligence (BI) assets
- Physical data model assets
- Data connections
- Contract libraries

For the full list of assets that you can export by using the -cm parameter, see the topic Asset types and identity strings.

To export logical data model assets see Export command for logical data model assets.

To export custom attributes see http://www.ibm.com/support/docview.wss?uid=swg27022191.

The export creates an archive file, which by default has the suffix .isx.

You must have the Common Metadata Administrator role.

Command syntax for implemented data resource assets, business intelligence assets, physical data model assets, and miscellaneous common metadata assets

```
istool export
authentication parameters
[generic parameters]
-archive "pathname" [-updatearchive]
[-AbortIfError number_of_errors]
[-preview]
–commonmetadata '[-base "path"] identity_string...
  [-contactAssignmentOnly]
  [-includeContactAssignment]
  [-includeAnnotations]
  [-includeDataConnection]
  [-creationtoolonly]
'
```

Note: The following parameters cannot be used when exporting contract library assets:

```
[-contactAssignmentOnly]
  [-includeContactAssignment]
  [-includeAnnotations]
  [-includeDataConnection]
  [-creationtoolonly]
```

Parameters

authentication
: All asset interchange commands use authentication parameters to connect to a specific IBM InfoSphere Information Server.

generic parameters
: The generic parameters are available to all asset interchange commands. Use the generic parameters to request help on command syntax, or to specify silent or verbose operation.

-archive "*path_name*" or -ar "*path_name*"
: Specifies the path name for the file that the assets are exported to.

-updatearchive or -up
: Updates the archive file if it exists (otherwise it is overwritten if it exists).

-AbortIfError *number_of_errors* **or -abort** *number_of_errors*
: Stops the export after the specified number of errors.

-preview or -pre
: Previews the export. The preview lists the assets that will be exported when the export runs.

-commonmetadata *identity_string* **or -cm** *identity_string*
: Specifies that common metadata assets are exported. Specifies the identity string of each asset to export. The format for the identity string is described in Common metadata asset types and identity strings for the command line. If you specify more than one identity string, the identity strings and associated options must be enclosed in single quotation marks ('). To be exported, an asset must have a name and a complete identity string.

-contactAssignmentOnly or -caonly
: Exports only the contact assignments that are associated with the specified assets or assets, not the assets themselves. A contact is a person or group that is associated with a data resource, it is not an identity of a user in IBM InfoSphere Information Server installation. When imported to a target system, contact assignments are re-linked to the assets that they are contacts for. If this parameter is specified with the -includeAnnotations parameter, then the annotations associated with the contact assignments are exported and the annotations associated with the common model asset represented by the URI in the command are not exported.

-includeContactAssignment or -incca
: Includes the contact information for the exported assets.

-includeAnnotations or -incannot
: Includes the annotations for the exported assets. If this parameter is specified with the -contactAssignmentOnly parameter, then the annotations associated

with the contact assignments are exported and the annotations associated with the common model asset represented by the URI in the command are not exported.

-includeDataConnection
Includes the data connections that are associated with the exported database tables, data files, and stored procedures.

-base "*path*"
Specifies a base path. This path is then prefixed to all the asset identity strings that you specify.

-creationtoolonly or -ctonly
Exports only the creation tools that are associated with the specified assets, not the assets themselves. A creation tool is the tool, such as a bridge or broker, that is used for importing assets into the metadata repository.

Exit status

A return value of 0 indicates successful completion; any other value indicates failure.

Examples

The following command exports all the tables and associated annotations in the database schema named schema1 to the file myarchive.isx.

```
istool export –dom ABC:9080 –username user1 –password pass1
-archive "c:\myarchive.isx"
 –commonmetadata '/host1/db1/schema1/*.tbl
-includeAnnotations'
```

The following command exports all the contact assignments associated to all the tables in the database schema named schema1 to the file myarchive.isx.

```
istool export –dom ABC:9080 –u user1 –p pass1
-ar "c:\myarchive.isx"
 –cm '/host1/db1/schema1/*.tbl
-contactAssignmentOnly'
```

The following command exports the specified hosts to the file myarchive.isx.

```
istool export –dom ABC:9080 –u user1 –p pass1
-ar "c:\myarchive.isx"
 –cm '/host1.hst /host2.hst'
```

The following command specifies a base path of /host1/db1/schema1 and uses the base path when specifying tables to export to the file myarchive.isx:

```
istool export –dom ABC:9080 –u user1 –p pass1
-ar "c:\myarchive.isx"
 –cm '-base "/host1/db1/schema1" tab1.tbl
tab2.tbl tab506.tbl '
```

The following command exports the reports identified by the asset identity string '/report_namespace/*/report_query_namespace/*.rds':

```
istool export –dom ABC:9080 –u user1 –p pass1
-ar "c:\myarchive.isx"
 –cm '/report_namespace/*/report_query_namespace/*.rds'
```

The following command uses the -base option to specify a base path for the asset identity string that specifies the assets to export:

```
istool export –dom ABC:9080 –u user1 –p pass1
-ar "c:\myarchive.isx"
-cm '-base "/model_namespace/model_name/collection_namespace"
collection_name01.ocl collection_name02.ocl'
```

The following command exports all the design tables in the physical data model with name physicalmodel1 and namespace namespace1 to the file myarchive.isx:

```
istool export –dom ABC:9080 –username user1 –password pass1
-archive "c:\myarchive.isx"
 –commonmetadata '/namespace1/physicalmodel1/*.dtl'
```

The following command exports all the design tables and design stored procedures in the physical data model with name physicalmodel1 and namespace namespace1 to the file myarchive.isx:

```
istool export –dom ABC:9080 –username user1 –password pass1
-archive "c:\myarchive.isx"
 –commonmetadata '-base "/namespace1/physicalmodel1" *.dtl *.dp'
```

Export command for logical data model assets:

You can use the istool export command with the **-lm** parameter to export logical data model assets.

For the full list of logical data model assets that you can export, see the topic "Common metadata asset types and identity strings for the command line" on page 251.

The export creates an archive file, which by default has the suffix .isx.

You must have the Common Metadata Administrator role.

Command syntax for logical data model assets

```
istool export
authentication parameters
[generic parameters]
-archive "pathname" [-updatearchive]
[-AbortIfError number_of_errors]
[-preview]
–logicalmetadata '[-base "path"] identity_string...
  [-contactAssignmentOnly]
  [-includeContactAssignment]
  [-includeAnnotations]
  [-creationtoolonly]
```

Parameters

authentication
All asset interchange commands use authentication parameters to connect to a specific IBM InfoSphere Information Server.

generic parameters
The generic parameters are available to all asset interchange commands. Use the generic parameters to request help on command syntax, or to specify silent or verbose operation.

-archive "*path_name*" or -ar "*path_name*"
Specifies the path name for the file that the assets are exported to.

-updatearchive or -up
Updates the archive file if it exists (otherwise it is overwritten if it exists).

-AbortIfError *number_of_errors* **or -abort** *number_of_errors*
Stops the export after the specified number of errors.

-preview or -pre
Previews the export. The preview lists the assets that will be exported when the export runs.

-logicalmetadata *identity_string* **or -lm** *identity_string*
Specifies that logical data model assets are exported. Specifies the identity string of each asset to export. The format for the identity string is described in Common metadata asset types and identity strings for the command line. If you specify more than one identity string, the identity strings and associated options must be enclosed in single quotation marks ('). To be exported, an asset must have a name and a complete identity string.

-contactAssignmentOnly or -caonly
Exports only the contact assignments that are associated with the specified assets or assets, not the assets themselves. A contact is a person or group that is associated with a data resource, it is not an identity of a user in IBM InfoSphere Information Server installation. When imported to a target system, contact assignments are re-linked to the assets that they are contacts for. If this parameter is specified with the -includeAnnotations parameter, then the annotations associated with the contact assignments are exported and the annotations associated with the common model asset represented by the URI in the command are not exported.

-includeContactAssignment or -incca
Includes the contact information for the exported assets.

-includeAnnotations or -incannot
Includes the annotations for the exported assets. If this parameter is specified with the -contactAssignmentOnly parameter, then the annotations associated with the contact assignments are exported and the annotations associated with the common model asset represented by the URI in the command are not exported.

-base "*path***"**
Specifies a base path. This path is then prefixed to all the asset identity strings that you specify.

-creationtoolonly or -ctonly
Exports only the creation tools that are associated with the specified assets, not the assets themselves. A creation tool is the tool, such as a bridge or broker, that is used for importing assets into the metadata repository.

Exit status

A return value of 0 indicates successful completion; any other value indicates failure.

Examples

The following command exports all the entities and associated annotations in the logical data model named model1 and namespace namespace1 to the file myarchive.isx:

```
istool export –dom ABC:9080 –username user1 –password pass1
-archive "c:\myarchive.isx"
 –logicalmetadata '/namespace1/model1.lm -includeAnnotations'
```

The following command exports all the contact assignments associated to all the entities in the logical data model named model1 to the file myarchive.isx:

```
istool export –dom ABC:9080 –u user1 –p pass1
-ar "c:\myarchive.isx"
 –lm '/*/model1.lm -contactAssignmentOnly'
```

The following command exports the specified logical data models to the file myarchive.isx:

```
istool export –dom ABC:9080 –u user1 –p pass1
-ar "c:\myarchive.isx"
 –lm '/namespace1/model1.lm /namespace1/model1/nestedModel2.lm'
```

The following command specifies a base path of /namespace1/model1/nestedModel2 and uses the base path when specifying entities and logical domains to export to the file myarchive.isx:

```
istool export –dom ABC:9080 –u user1 –p pass1
-ar "c:\myarchive.isx"
 –lm '-base "/namespace1/model1/nestedModel2 " entity1.ent
nameQualifier/domain1.dom'
```

The following command exports the logical relationship identified by the asset identity string '/namespace1/model1/entity1/namespace1/model1/relationship1.rel':

```
istool export –dom ABC:9080 –u user1 –p pass1
-ar "c:\myarchive.isx"
 –lm '/namespace1/model1/entity1/namespace1/model1/relationship1.rel '
```

Import command for common metadata assets

You can import most types of common metadata assets by using the istool import command with the **-cm** parameter.

By using the **-cm** or **-commonmetadata** parameter you can import the following types of assets:

- Implemented data resources
- Business intelligence (BI) assets
- Physical data model assets
- Data connections
- Contract libraries

For the full list of assets that you can import by using the **-cm** parameter, see the topic “Common metadata asset types and identity strings for the command line” on page 251.

To import logical data model assets see “Import command for logical data model assets” on page 264.

To import custom attributes see http://www.ibm.com/support/docview.wss?uid=swg27022191.

If you specify the **-replace** parameter, and a common metadata asset exists in the target metadata repository, then the imported asset is merged with the existing asset.

You import the assets from an archive file that has the .isx extension.

You must have the Common Metadata Administrator role.

Command syntax for implemented data resource assets, business intelligence assets, physical data model assets, and miscellaneous common metadata assets

```
istool import
authentication parameters
[generic parameters]
[-AbortAfter number_of_errors]
-archive "pathname"
[-preview | -replace]
–commonmetadata ''
```

Parameters

authentication
All asset interchange commands use authentication parameters to connect to a specific IBM InfoSphere Information Server.

generic parameters
The generic parameters are available to all asset interchange commands. Use the generic parameter to request help on command syntax, or to specify silent or verbose operation.

-AbortAfter *number_of_errors* **or -abort** *number_of_errors*
Specifies that the import stops if more than the specified number of errors occur.

-commonmetadata or -cm
Specifies that common metadata assets are imported. You must put all options for this parameter in single quotations. For example, `–commonmetadata`.

-archive *path_name* **or -ar** *path_name*
Specifies the path name of the file that the assets were previously exported to.

-preview or -pre
Previews the import. The preview lists the assets that will be imported when the import runs.

-replace
Replaces existing common metadata assets with imported assets.

Exit status

A return value of 0 indicates successful completion, any other value indicates failure.

Example

The following command imports all the implemented data resources, including custom attributes, from the file customer.isx:

```
istool import –dom ABC:9080 –u user1 –p pass1
-archive "c:\customer.isx" –commonmetadata ''
```

Import command for logical data model assets:

You can use the istool import command with the **-lm** parameter to import logical data model assets.

For the full list of logical data model assets that you can export, see the topic "Common metadata asset types and identity strings for the command line" on page 251.

You import the assets from an archive file that has the .isx extension.

You must have the Common Metadata Administrator role.

Command syntax for logical data model assets

```
istool import
authentication parameters
[generic parameters]
[-AbortAfter number_of_errors]
-archive "pathname"
[-preview | -replace]
–logicalmetadata ''
```

Parameters

authentication
All asset interchange commands use authentication parameters to connect to a specific IBM InfoSphere Information Server.

generic parameters
The generic parameters are available to all asset interchange commands. Use the generic parameter to request help on command syntax, or to specify silent or verbose operation.

-AbortAfter *number_of_errors* **or -abort** *number_of_errors*
Specifies that the import stops if more than the specified number of errors occur.

-logicalmetadata or -lm
Specifies that logical data model assets are imported.

-archive *path_name* **or -ar** *path_name*
Specifies the path name of the file that the assets were previously exported to.

-preview or -pre
Previews the import. The preview lists the assets that will be imported when the import runs.

-replace
Replaces existing common metadata assets with imported assets.

Exit status

A return value of 0 indicates successful completion, any other value indicates failure.

Example

The following command imports all the logical data model assets from the file customer.isx:

```
istool import –dom ABC:9080 –u user1 –p pass1
-archive "c:\customer.isx" –logicalmetadata ''
```

The following command previews the assets in the file customer.isx:

```
istool import –dom ABC:9080 –u user1 –p pass1 -pre
-ar "c:\customer.isx" –lm ''
```

Querying and deleting assets by using the command line

You can query implemented data resources, business intelligence assets, physical data model assets, and data connections and delete them from the metadata repository by using the command line. You can also query and delete all types of common metadata assets by using the Repository Management tab in InfoSphere Metadata Asset Manager.

In order to delete an asset, you must specify the identity string of the asset. The identity string includes the following elements:

- Hierarchy of names of the assets that contain the asset to be deleted, separated by forward slashes (/)
- Name of the asset
- File extension for the asset, such as .tbl

For example, the identity string of a database table is */host_computer/database/schema/table.tbl*. Therefore, the identity string of the Customer table in the Sales schema of the Production database on a computer named *A341K* is */A341K/Production/Sales/Customer.tbl*.

When you want to delete multiple assets by using the command line, the most efficient way is to run the query command and write the results to a file. You can then specify the file as input to the **deletecm** command. The query results file includes the identity string and the repository ID (RID) of each asset that is listed. Both the identity string and the RID are required when you specify a file of assets that are to be deleted. Because you must run a query to obtain the RID, you must use a query to create the file.

If the query result contains an asset that does not have required attributes in the identity string, such as database name, "Invalid Identity" is written to the output in place of the identity string.

You can delete assets from the query results file, and add assets to it from other queries, as long as you include both the RID and the identity string of each asset.

When you have many implemented data resources in the repository, it might be more efficient to do successive queries. For example, you could first run a query to find all the schemas in the repository, and then run a second query on only those schemas that have database tables that you want to delete.

If you are deleting a small number of assets, you might want to specify the identity string of each asset on the command line instead of specifying a file. You do not specify the RID of the asset on the command line.

You can determine the identity string of an asset in the following ways:

- Run a command-line query to find the asset.
- In InfoSphere Metadata Asset Manager on the Repository Management tab, browse or search for assets and review properties in the **Properties** section.
- In IBM InfoSphere Metadata Workbench, browse the hosts on the **Browse** tab to find databases and data files. Search or query to find BI assets. When your cursor hovers over the name of an asset in a list, the names of the containing assets are displayed.
- In InfoSphere Business Glossary, search for a type of implemented data resource or BI asset. In the resulting list of assets, the **Context** column displays the elements of the identity string.

If the delete operation fails to delete one of the assets identified, then the entire delete operation is rolled back.

Implemented data resources

Implemented data resources comprise the database and data file metadata that is stored in the InfoSphere Information Server metadata repository.

You can delete the following implemented data resources from the IBM InfoSphere Information Server metadata repository:

- Host
- Database
- Database schema
- Database table
- Stored procedure
- Data file
- Data file structure
- Data connection
- Data item definition

Assets that are deleted when you delete implemented data resources are listed in the following table.

Table 38. Implemented data resources and their contained assets

Asset	Contained assets that are deleted with the asset
Hosts	Data connections, databases and data files. Some hosts can also contain projects and jobs from InfoSphere DataStage and QualityStage Administrator. You can only delete hosts only if they contain no database, data file, connector, and job assets.
Databases	Database schemas
Database schemas	Subschemas, views, tables, stored procedures, and foreign keys that the schema contains
Database tables	Database columns and primary keys
Stored procedures	Stored procedure parameters
Data files	Data file structures
Data file structures	Data file fields
Data connections	None
Data item definitions	Data file fields

Physical data model assets

A physical data model is a design schema for information assets that defines the physical structures and relationships of data within a subject domain or application. Physical data models are independent of implementation or platform details. Physical data model assets comprise the objects that have been imported into the InfoSphere Information Server metadata repository from data modeling tools.

You can delete the following physical data model assets from the metadata repository:

- Physical data model
- Design table
- Design stored procedure
- Physical domain

Assets that are deleted when you delete a physical data model asset are listed in the following table.

Table 39. Physical data model assets and their contained assets

Asset	Contained assets that are deleted with the asset
Physical data model	Design tables, design stored procedures, and physical domains
Design table	Design columns, design candidate keys, and design foreign keys
Design stored procedure	Design stored procedure parameters
Physical domain	None

Business intelligence assets

Business intelligence assets comprise the objects that have been imported into the InfoSphere Information Server metadata repository from business intelligence tools.

You can delete the following business intelligence (BI) assets from the metadata repository:

- BI model
- BI collection
- Cube
- BI report
- BI report query

Assets that are deleted when you delete a business intelligence assets are listed in the following table.

Table 40. Business intelligence assets and their contained assets

Asset	Contained assets that are deleted with the asset
BI model	Dimensions, collections, joins, hierarchies, and cubes
BI collection	Members, levels, and hierarchies
Cube	Dimensions and measures
BI report	Report queries and report layout
BI report query	Query items

Query command for common metadata assets

Use the query command to get a list of implemented data resources, physical data model assets, business intelligence assets, and data connections that are stored in the metadata repository.

You can use the query command to get a list of assets. You can write this list to a file that you can then use to specify which assets to delete.

The query command has the following syntax:

```
istool query
authentication parameters
[generic parameters]
[-outputfile ["filename"]]
–commonmetadata '[-base "path"] [identity_string...]+'
```

Parameters

authentication parameters
Use authentication parameters to connect to a specific IBM InfoSphere Information Server.

generic parameters
Use the generic parameters to request help on command syntax, or to specify silent or verbose operation.

-outputfile ["*filename*"] or -of ["*filename*"]
Specifies that the query results be written to a file. Filenames are automatically appended with the string '_commonmetadata', for example, if you specify the filename 'to_delete.txt', the results are written to the file to_delete_commonmetadata.txt. If you do not specify a file name, the results are written to a file named `query_output_commonmetadata.txt` in the current directory. The results include the repository ID (RID) of each asset and the identity string of each asset. You can edit this file to remove assets from it before you delete.

Note: The output file is not created if the file path has a period (,) in it in addition to the period before the file extension.

-commonmetadata or -cm
Specifies that common metadata assets are to be queried.

identity_string
Specifies individual assets to query. If you specify more than one identity string, then the identity strings and associated options must be enclosed in single quote characters ('). If you specify only one identity string, then the single quote characters are optional. The query command fails if you specify more than four tilde (⌂) characters in an identity string.

Note: If you specify both implemented data resources and business intelligence assets in a single query, you cannot use the resulting output file to delete the assets.

-base *path*
You can optionally use the -base argument to specify a base path. This path is then prefixed to all the asset identity strings that you specify.

Example

The following command writes a list of implemented data resources in the database db1 to the file c:\to_delete_commonmetadata.txt:

```
istool query –dom ABC:9080 –u xmetauser –p xmetapwd
-outputfile "c:\to_delete.txt"
 –commonmetadata '/host1/db1.db'
```

The following command writes a list of BI assets to the file `c:\to_delete_businessintelligence.txt`:

```
istool query –dom ABC:9080 –u xmetauser –p xmetapwd
-outputfile "c:\to_delete.txt"
 –cm '/reportSpace/rep*.rdf'
```

The following command selects the tables that begin with “table” in schema schema1 and writes them to the file c:\to_delete_commonmetadata.txt:

```
istool query –dom ABC:9080 –u xmetauser –p xmetapwd
-outputfile "c:\to_delete.txt"
–commonmetadata '/host1/db/schema1/table*.tbl'
```

The following command queries what hosts, databases, and schemas the specified repository contains and writes the result to the file query_results_commonmetadata.txt:

```
istool query –dom ABC:9080 –u xmetauser –p xmetapwd
-cm '/*.hst  /*/*.db  /*/*/*.sch' -outputFile "C:\query_results.txt"
```

The following command writes the details of all the tables belonging to the database db1 to the file query_results2_commonmetadata.txt.

```
is tool query –dom ABC:9080 –u xmetauser –p xmetapwd
-cm '/hostname/db1/schema1/*.tbl' -outputFile "C:\query_results2.txt"
```

Delete command for common metadata assets

Use the istool **deletecm** command to delete implemented data resources, physical data model assets, business intelligence assets, and data connections from the metadata repository.

You must have the Common Metadata Administrator role to delete common metadata assets.

Before you delete the assets, you can use the **query** command to write a list of assets to a file. You can use the file as an input to the **deletecm** command to specify which assets to delete. Alternatively you can specify identity strings on the command line that identify individual assets to delete.

If you use a file as the input to the **deletecm** command, the file must include both the repository identifier (RID) of each asset and the identity string of each asset. The input file cannot include only the identity string. For this reason, you must use the **query** command with the -outputfile option to obtain a properly formatted file that includes both the RID and the identity string. You can edit this file to remove assets before you specify it as input to the **deletecm** command.

You cannot combine implemented data resources, business intelligence assets, and physical data model assets in the same file.

You are prompted for confirmation before each asset is deleted. You can suppress the confirmation message by specifying the -force option.

The **deletecm** command has the following syntax:

```
istool deletecm
authentication parameters
[generic parameters]
[-preview]
[–force]
[-inputfile "filename"]
 –commonmetadata '[-base "path"] [identity_string...]*'
```

Parameters

authentication parameters

All asset management commands use authentication parameters to connect to a specific IBM InfoSphere Information Server.

generic parameters
The generic parameters are available to all asset management commands. Use the generic parameter to request help on command syntax, or to specify silent or verbose operation.

-preview or -pre
Specify this option to see a preview of the deletion. The preview lists the RIDs and the identity strings of the assets that will be deleted when you run the deletecm command. You can use the preview option to ensure that the scope of the deletion is what you expect. Use the force option to suppress the confirmation prompts when you run a preview. Otherwise, the same confirmation prompts for each asset are displayed as if you are running the deletion. No assets are actually deleted by the preview option.

-force or -f
Specify this option to suppress prompting for confirmation. The command silently deletes assets without requesting confirmation. Otherwise, you are prompted to confirm deletion of each individual asset.

-inputfile "*filename*" or -if "*filename*"
Specify the -inputfile option with a file name to provide a list of assets to delete. Create this file by running the query command with the -outputfile option. If you specify an input file you cannot specify an identity string.

-commonmetadata or -cm
Specifies that implemented data resources are to be deleted. If you specify an input file instead of an identity string you must still specify this option.

identity_string
Specifies individual assets to delete or to preview. If you specify an identity string, you cannot specify an input file. If you specify more than one identity string, then the identity strings and associated options must be enclosed in single quote characters ('). If you specify only one identity string, then the single quote characters are optional.

-base *path*
You can optionally use the -base argument to specify a base path. This path is then prefixed to all the asset identity strings that you specify.

Example

The following command deletes all the implemented data resources listed in the file c:\to_delete_commonmetadata.txt :

```
istool deletecm –dom ABC:9080 –u xmetauser –p xmetapwd
-inputfile "c:\to_delete_commonmetadata.txt"
 –cm ''
```

The following command deletes the table1 and table2 database tables in the databases db1 and db2:

```
istool deletecm –dom ABC:9080 –u xmetauser –p xmetapwd
 –cm '/myhost/db1/schema1/table1.tbl /myhost/db2/schema1/table2.tbl'
```

The following command deletes the table7 and table8 database tables in the database db1:

```
istool deletecm –dom ABC:9080 –u xmetauser –p xmetapwd
 –cm '-base "/myhost/db1/schema1" table7.tbl table8.tbl'
```

The following command previews a deletion operation that deletes two tables:

```
istool deletecm –dom ABC:9080 –u xmetauser –p xmetapwd -preview
–cm '/myhost/db1/schema1/table1.tbl /myhost/db2/schema1/table2.tbl'
```

The following command deletes the two tables that were previewed in the previous command:

```
istool deletecm –dom ABC:9080 –u xmetauser –p xmetapwd
–cm '/myhost/db1/schema1/table1.tbl /myhost/db2/schema1/table2.tbl'
```

The following command deletes the reports identified by the asset identity string '/report_namespace/*/report_query_namespace/*.rds':

```
istool deletecm –dom ABC:9080 –u xmetauser –p xmetapwd –cm
'/report_namespace/*/report_query_namespace/*.rds'
```

The following command uses the -base option to specify a base path for the asset identity string that specifies the assets to delete:

```
istool deletecm –dom ABC:9080 –u xmetauser –p xmetapwd –cm
'base="/model_namespace/model_name/collection_namespace"
collection_name01.ocl collection_name02.ocl'
```

Delete command for disconnected assets

Use the istool **deletecm** command with the -orphanedNonSeeds parameter to delete assets in the metadata repository of IBM InfoSphere Information Server that are disconnected from their required containing assets, such as database tables that have no relationship to a database schema.

Disconnected assets do not have valid identities in the metadata repository and can cause errors when you use them in suite tools.

You must have the Common Metadata Administrator role to delete disconnected assets.

You can also delete disconnected assets by using the Repository Management tab of the IBM InfoSphere Information Server Web console.

Syntax

The **deletecm** command has the following syntax when it is used to delete disconnected assets:

```
istool deletecm
authentication parameters
[generic parameters]
-orphanedNonSeeds
```

Parameters

authentication parameters
All asset management commands use authentication parameters to connect to a specific IBM InfoSphere Information Server.

generic parameters
The generic parameters are available to all asset management commands. Use the generic parameter to request help on command syntax, or to specify silent or verbose operation.

-orphanedNonSeeds or -orphanedNS
Specify this option to delete all disconnected assets.

Example

The following command deletes the disconnected assets (non-seed objects), such as database columns that have no relationship to a database table:

```
istool deletecm –dom ABC:9080 –u xmetauser –p xmetapwd
-orphanedNonSeeds
```

Reporting assets

Reporting assets are designs for reports that are made in the IBM InfoSphere Information Server console.

You can interchange the designs for reports, and the results that were obtained from running the reports. The reports and associated results are exported from the source metadata repository to an archive file. The archive file has the suffix .isx.

You can specify the name of the report to export, or you can specify that the reports associated with a particular product are exported. The following products can have reports associated with them:

- InfoSphere Business Glossary
- InfoSphere DataStage
- InfoSphere Information Analyzer
- InfoSphere QualityStage
- Administration reports for the suite.

You can include the report results for a specific named report, include the reports results for the last *n* runs of that report, or include all the results for the specified reports.

Export command for reporting assets

You can use the istool command line interface (CLI) to export your IBM InfoSphere Information Server reporting assets. These assets can include both report designs and report results.

Purpose

The reporting asset interchange commands export reports from your InfoSphere Information Server installation. You can identify the reports to export by using the following methods:

- Export all the reports associated with a particular suite component. For example, you can export all your IBM InfoSphere Business Glossary reports.
- Export reports by name. You can specify wildcards as part of the report name.

You can also specify that the export includes the report results as well as the design details of a report.

To export a report or report results, you must have administration, read, and update permissions for that report. The creator of a report automatically has administration, read, and update permissions, and can grant permissions to other users or groups. A user with the Suite Administrator role can export any reports.

Command syntax

```
istool export
[authentication]
[generic paramters]
-archive "pathname" [-updatearchive]
[-AbortIfError number_of_errors]
-report
['-reportName "report_name"
  [-ownedByProduct "product_name"]
  [-includeLastReportResults number |
  -includeAllReportResults |
  -includeReportResultName report_result_name]'
]
|
['-ownedByProduct "product_name"
  [-reportName "report_name"]
  [-includeLastReportResults number |
  -includeAllReportResults |
  -includeReportResultName report_result_name]'
]
```

Parameters

export
The export command specifies an export operation.

authentication
All asset interchange commands use authentication parameters to connect to a specific installation of InfoSphere Information Server installation.

generic parameters
The generic parameters are available to all asset interchange commands. Use the generic parameters to request help on command syntax, or to specify silent or verbose operation.

-archive "*path_name*" or -ar "*path_name*"
Specifies the path name for the file that the assets are exported to.

-updatearchive or -up
Updates the archive file if it exists (otherwise it is overwritten if it exists).

-AbortIfError *number_of_errors* **or -abort** *number_of_errors*
Stops the export if more than the specified number of errors occur.

-report
Specifies that report assets are exported.

-reportName "*report_name*" or -repName "*report_name*"
Exports reports by name. The argument *report_name* can include wildcard characters. For example, the parameter:

```
-reportName "MyRep*"
```

exports the reports MyRep1, MyRep2, and MyRepTues. If you specify this parameter together with the -ownedByProduct parameter, reports that specify both criteria are exported.

-ownedByProduct "*product_name*" or -prod "*product_name*"
Exports the reports that are associated with the specified suite component. If you specify this parameter together with the -reportName parameter, reports that satisfy both criteria are exported. Valid values for *product_name* are in the following list:

- "Administration"
- "Business Glossary"

- "DataStage"
- "Information Analyzer"
- "QualityStage"

-includeLastReportResults *number* **or -incLastResult** *number*

Exports the specified number of report results along with the report design that you specified by using the reportName or prod parameters. For example, the parameters:

```
-reportName "MyRep1" -includeLastReportResults 20
```

export the report design for MyRep1 together with the 20 most recent results for that report.

-includeAllReportResults or -incAllResults

Exports all results along with the report design that you specified by using the -reportName or -prod parameters. For example, the parameters:

```
-reportName "MyRep1" -includeAllReportResults
```

export the report design for MyRep1 together with all the results for that report.

-includeReportResultName "*report_name***" or -incResultName "***report_name***"**

Exports the most recent results for the report specified by *report_name*. You can use wildcards in *report_name* to return results for a number of reports. For example, the parameter:

```
-includeReportResultName "MyRep*"
```

exports the most recent results for the reports MyRep1, MyRep2, and MyRep15.

Exit status

A return value of 0 indicates successful completion; any other value indicates failure.

Examples

This following command exports all the InfoSphere QualityStage reports on the qakserv system to the archive, QSRAI_001.isx.

```
istool export -domain qakserv:9080 -username user1 -password pass1
-archive "c:/QSRAI_001.isx" -report '-prod "QualityStage"'
```

The following command exports the report named FreqPat to the archive QSRAI_001.isx.

```
istool export -domain qakserv:9080 -username user1 -password pass1
-archive "c:/QSRAI_002.isx"  -report '-reportName "FreqPat"'
```

The following command exports all InfoSphere DataStage reports with names beginning with `MdB` to the archive MDBds_001.isx, together with all the results for those reports.

```
istool export -domain qakserv:9080 -username user1 -password pass1
-archive "c:/MDBds_001.isx"  -report '-prod '"DataStage" -reportName "MdB*"
-includeAllReportResults'
```

Import command for reporting assets

You can use the istool command line interface (CLI) to import your reporting assets from a file containing previously exported assets. These assets can include both report designs and report results.

Purpose

Use the -report command parameter with the istool import command to import reports from an archive that contains previously exported assets.

To import a report or report results, you must have the role of Suite Administrator, or have read permissions for the template that the report is based on. After the import, you are the owner of that report and have administration, read, and write permissions.

Command syntax

```
istool import
[authentication]
[generic parameters]
[-AbortAfter number_of_errors]
-report
-archive pathname
-preview | -replace
```

Parameters

import
The import command specifies an import operation.

authentication options
All asset interchange commands use authentication options to connect to a specific installation of IBM InfoSphere Information Server

generic options
The generic options are available by all asset interchange commands. Use the generic options to request help on command syntax, or to specify silent or verbose operation.

-AbortAfter *number_of_errors* **or -abort** *number_of_errors*
Specifies that the import stops if more than the specified number of errors occur.

-report
Specifies that report assets are imported.

-archive "*pathname***" or -ar "***pathname***"**
Specifies he path name of the file that the assets were previously exported to.

-preview or -pre
Specify this option to preview the action of the command without changing the repository.

-replace
Merges imported assets with existing assets if they have the same identity. The -replace parameter must be specified for all reporting imports, regardless of whether there are existing assets in the metadata repository.

Example

The following command previews reporting assets that were previously exported to the archive c:\MDBds_001.isx:

```
istool import -domain qakserv:9080 -username user1 -password pass1
-report -archive "c:\MDBds_001.isx" -preview
```

The following command imports reporting assets that were previously exported to the archive c:\MDBds_001.isx:

```
istool import -domain qakserv:9080 -username user1 -password pass1
-report -archive "c:\MDBds_001.isx" -replace
```

Importing multiple types of assets

If the archive file to be imported includes multiple types of assets, you must specify each type of included metadata on the command line when you import the archive file, otherwise only reporting assets are imported. For example, if the archive includes InfoSphere Information Analyzer you must specify the -ia and -cm and options in addition to the -rep options when you import the archive. You can use separate import commands for each type of asset.

Note: You must use the -replace option when you import report assets from an archive. If you do not want to use the -replace option for the other types of assets in the archive, you must use a separate command to import the reports. If you import assets without the -replace option and import their related reports with the -replace option, some of the reports might not be accurate for the unreplaced assets in the target environment. Check the reports and run them again in the new environment if necessary.

In the following example, the first command imports InfoSphere Information Analyzer assets and common metadata assets from the file ia_archive1.isx without using the -replace option. The second command imports reporting assets from the same archive file while using the required -replace option.

```
import -u admin -p admin100 -dom EVEREST -ar ia_archive1.isx
-ia '' -cm '<import options>'

import -u admin -p admin100 -dom EVEREST -ar ia_archive1.isx
-replace -rep '<import options>'
```

Exit status

A return value of 0 indicates successful completion; any other value indicates failure.

Merge and replace actions for reporting assets

If a reporting asset with the same identity exists in the target repository, then the new asset is merged with the existing asset.

A reporting asset has various attributes, and the merging process affects the attributes differently. A reporting asset has the following attributes:

Report design
: If a matching Report exists in the target repository, the report is overwritten provided that the user importing the asset has update permission on the target report. Otherwise the import of that asset fails.

Report access control list
: The access control list for the target report is retained.

Report results
Report results cannot change, and so a report result in an import file will not overwrite the target report result.

FavoriteUsers
If the report exists on the target and has a FavoriteUsers list, the imported FavoriteUsers list is merged with the existing list. Any users that the imported list contains are added to the list of the target report.

Security assets

Security assets comprise the user IDs, user groups, user roles, and associated credentials that you define in your IBM InfoSphere Information Server.

The InfoSphere Information Server suite contains a number of components. In a typical system, several users are defined. Each of these users might have access to all the suite, or only to certain components within the suite. Each of these users can have different roles that give them different rights in how they interact with suite components and associated data.

Configuring the users, groups, and their roles is an important part of configuring the suite. There can be several situations where you need to import or export the information from the suite. For example, when you back up your suite assets, you might want to include the users and roles with these assets. When you develop on one system and test on a different system, then you might want to include the users, groups, and roles with the other assets that you deploy. Similarly, when you deploy your project to the final target production system, you might need to move these assets to that system.

Export command for security assets

You can use the istool command line interface (CLI) to export your IBM InfoSphere Information Server security assets, such as users and roles.

Purpose

Use the -security parameter with the istool export command to export the following assets:

- Users and groups and their suite and product role assignments (including their credentials when relevant).
- Engine credential mappings.
- Project roles are not exported by using the -security parameter. They are exported by commands for the tools that create the project.

The export creates an archive file. By default the file has the suffix .isx.

You must have the Suite Administrator role to export security assets.

Command syntax

```
istool export
authentication
[generic options]
-archive "pathname" [-updatearchive]
[-AbortIfError number_of_errors]
[-preview]
-security
  ['-securityUser
```

```
    -userident user_pattern...
  [–includeUserGroupMemberships]
  [–includeCredential]
  [-includeCredentialMappings]
  [-includeRoles]']
|
  ['–securityGroup
    -groupident group_pattern...
  [-includeGroupUserMemberships]
  [-includeRoles]']
```

Parameters

export
The export command specifies an export operation.

authentication
All asset interchange commands use authentication parameters to connect to a specific InfoSphere Information Server installation.

generic parameters
The generic parameters are available to all asset interchange commands. Use the generic parameters to request help on command syntax, or to specify silent or verbose operation.

-archive "*path_name***" or -ar "***pathname***"**
Specifies the path name (including file name) for the archive that the assets are exported to.

-updatearchive or -up
Updates an existing archive file (otherwise overwrites it).

-AbortIfError *number_of_errors* **or -abort** *number_of_errors*
Stops the export if the specified number of errors occur.

-preview or -pre
Shows a preview of the export. The preview lists the assets that are exported when the export runs.

-security or -sec
The -security command parameter specifies that security assets are exported.

'-securityUser *subparameters***' or -su '***subparameters***'**
Specifies an export operation of security assets relating to users. The -securityUser parameter is mutually exclusive with the -securityGroup parameter. The -securityUser parameter has the following subparameters:

-userident *user_pattern* **or -u** *user_pattern*
Specifies user assets to export. *User_pattern* is a search pattern for locating users. You can use the asterisk (*) character to represent multiple characters, and the question mark (?) character to represent single characters. The following strings are examples of valid search patterns:

- dsadmin - selects the user dsadmin
- dsuser? - selects the users dsuser1, dsuser2, and dsuser3
- ds* - selects the users dsadmin, dsuser1, dsuser2, and dsuser3
- "dsadmin dsuser2" - selects the users dsadmin and dsuser2

-includeUserGroupMemberships or -incUsrGrpMems
Exports user group relationships, including the referenced groups, along with user details.

-includeCredential or -incCred
Exports user credentials. Encrypted passwords are stored in the asset archive. Passwords are stored in digested form (SHA-1). If the InfoSphere Information Server installation is using an external directory, this parameter is ignored.

-includeCredentialMapping or -incMap
Exports DataStage credential mapping. Encrypted passwords are stored in the asset archive (passwords are stored in XOR encrypted form).

–includeRoles or -incRole
Specifies that user role relationships are also exported.

'-securityGroup *subparameters*' or -sg '*subparameters*'
Specifies an export operation of security assets relating to groups. The -securityGroup parameter is mutually exclusive with the -securityUser parameter. The -securityGroup parameter has the following subparameters:

-groupident *group_pattern* **or -grp** *group_pattern*
Specifies user group assets to export. *Group_pattern* is a search pattern for locating user groups. You can use the asterisk (*) character to represent multiple characters, and the question mark (?) character to represent single characters. The following strings are examples of valid search patterns:

- dsadmins - selects the group dsadmins
- dsgroup? - selects the groups dsgroup1, dsgroup2, and dsgroup3
- ds* - selects the groups dsadmins, dsgroup1, dsgroup2, and dsgroup3
- "dsadmins dsgroup1" - selects the groups dsadmins and dsgroup1

-includeGroupUserMemberships or -incGrpUsrMems
Specifies that group user relationships, including the referenced users, are also exported.

-includeRoles or -incRole
Specifies that group role relationships are also exported.

Exit status

A return value of 0 indicates successful completion; any other value indicates failure.

Examples

The following command exports DataStage users (whose user IDs begin with "ds" on this system), together with their credentials and credential mappings, to the file `dsusers.isx`.

```
istool export -archive "c:\dsusers.isx"
-domain mysys:9080 -username myid -password mypasswd
-security '-securityUser -userident ds* -includeCredentials
-includeCredentialMappings'
```

The following command exports a group containing IA users, together with their roles, to the file `ia_export.isx`.

```
istool export -archive "c:\ia_export.isx"
-domain mysys:9080 -username myid -password mypasswd
-security '-securityGroup -groupident iaUsergp -includeRoles'
```

Import command for security assets

You can use the istool command line interface (CLI) to import IBM InfoSphere Information Server security assets, such as users and groups.

Purpose

Use the -security command parameter with the istool import command to import user, group, roles, and credential mappings from previously exported archive files.

If a security asset of the same name exists in the target metadata repository, then the imported asset is merged with the existing asset. If the imported asset has entries for fields that are empty in the target asset, the imported settings are added to the target asset. For example, if a user has additional roles defined in the import file, those roles are added to the existing user in the target user definition.

You must have the Suite Administrator role to import security assets.

Command syntax

```
istool import
authentication
[generic parameters]
[-AbortAfter number_of_errors]
-security
-archive pathname
-preview | -replace
```

Parameters

import
The import command specifies an import operation.

authentication
All asset interchange commands use authentication parameters to connect to a specific InfoSphere Information Server installation.

generic parameters
The generic parameters are available to all asset interchange commands. Use the generic parameters to request help on command syntax, or to specify silent or verbose operation.

-AbortAfter *number_of_errors* **or -abort** *number_of_errors*
Stops the import if more than the specified number of errors occur.

-preview or -pre
Previews the import. The preview lists the assets that will be imported when the import runs.

-security or -sec
Specifies that security assets are imported.

-archive *pathname* **or -ar** *pathname*
Specifies the pathname (including file name) for the archive that the assets are imported from.

-replace
Merges imported assets with existing assets if they have the same identity. The -replace parameter must be specified for all security imports, regardless of whether there are existing assets in the metadata repository.

Exit status

A return value of 0 indicates successful completion; any other value indicates failure.

Example

The following command previews the contents of the archive file /opt/IBM/InformationServer/exports/dsuserexport.isx:

```
istool import -domain server1:9080 -username user1 -password pass1
-archive "/opt/IBM/InformationServer/exports/dsuserexport.isx" -security -preview
```

The following command imports the users from the archive file /opt/IBM/InformationServer/exports/dsuserexport.isx:

```
istool import -domain server1:9080 -username user1 -password pass1
-archive "/opt/IBM/InformationServer/exports/dsuserexport.isx" -security -replace
```

Merge and replace actions for security assets

If a security asset with the same identity exists in the target repository, then the new asset is merged with the existing asset.

The merge rules depend on the type of the security asset:

User If a matching user exists in the target repository, the import implements the following merge rules:

- All empty or null attributes of the existing user are replaced by the attributes from the imported user.
- A union is made of all group memberships between the existing user and the imported user. That is, any group memberships of the imported user that do not already exist for the target user are added to the target user.
- A union is made of all user roles between the existing user and the imported user. That is, any user roles of the imported user that do not already exist for the target user are added to the target user.
- The user credentials of a target user are not overwritten by the user credentials of the imported user.
- The credential mappings of a target user are not overwritten by the credential mappings of the imported user. If the target user has no credential mappings, then the import creates the credential mappings of the imported user.

Group If a matching user exists in the target repository, the import implements the following merge rules:

- All empty or null attributes of the existing group are replaced by the attributes from the imported group.
- A union is made of all user memberships between the existing group and the imported group. That is, any user memberships of the imported group that do not already exist for the target group are added to the target group.
- A union is made of all group roles between the existing user and the imported user. That is, any group roles of the imported group that do not already exist for the target group are added to the target group.

Product accessibility

You can get information about the accessibility status of IBM products.

The IBM InfoSphere Information Server product modules and user interfaces are not fully accessible. The installation program installs the following product modules and components:

- IBM InfoSphere Business Glossary
- IBM InfoSphere Business Glossary Anywhere
- IBM InfoSphere DataStage
- IBM InfoSphere FastTrack
- IBM InfoSphere Information Analyzer
- IBM InfoSphere Information Services Director
- IBM InfoSphere Metadata Workbench
- IBM InfoSphere QualityStage

For information about the accessibility status of IBM products, see the IBM product accessibility information at http://www.ibm.com/able/product_accessibility/index.html.

Accessible documentation

Accessible documentation for InfoSphere Information Server products is provided in an information center. The information center presents the documentation in XHTML 1.0 format, which is viewable in most Web browsers. XHTML allows you to set display preferences in your browser. It also allows you to use screen readers and other assistive technologies to access the documentation.

IBM and accessibility

See the IBM Human Ability and Accessibility Center for more information about the commitment that IBM has to accessibility.

Accessing product documentation

Documentation is provided in a variety of locations and formats, including in help that is opened directly from the product client interfaces, in a suite-wide information center, and in PDF file books.

The information center is installed as a common service with IBM InfoSphere Information Server. The information center contains help for most of the product interfaces, as well as complete documentation for all the product modules in the suite. You can open the information center from the installed product or from a Web browser.

Accessing the information center

You can use the following methods to open the installed information center.

- Click the **Help** link in the upper right of the client interface.

  Note: From IBM InfoSphere FastTrack and IBM InfoSphere Information Server Manager, the main Help item opens a local help system. Choose **Help > Open Info Center** to open the full suite information center.
- Press the F1 key. The F1 key typically opens the topic that describes the current context of the client interface.

  Note: The F1 key does not work in Web clients.
- Use a Web browser to access the installed information center even when you are not logged in to the product. Enter the following address in a Web browser: http://host_name:port_number/infocenter/topic/com.ibm.swg.im.iis.productization.iisinfsv.home.doc/ic-homepage.html. The host_name is the name of the services tier computer where the information center is installed, and port_number is the port number for InfoSphere Information Server. The default port number is 9080. For example, on a Microsoft® Windows® Server computer named iisdocs2, the Web address is in the following format: http://iisdocs2:9080/infocenter/topic/com.ibm.swg.im.iis.productization.iisinfsv.nav.doc/dochome/iisinfsrv_home.html.

A subset of the information center is also available on the IBM Web site and periodically refreshed at http://publib.boulder.ibm.com/infocenter/iisinfsv/v8r7/index.jsp.

Obtaining PDF and hardcopy documentation

- A subset of the PDF file books are available through the InfoSphere Information Server software installer and the distribution media. The other PDF file books are available online and can be accessed from this support document: https://www.ibm.com/support/docview.wss?uid=swg27008803&wv=1.
- You can also order IBM publications in hardcopy format online or through your local IBM representative. To order publications online, go to the IBM Publications Center at http://www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss.

Providing feedback about the documentation

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- Online reader comment form: www.ibm.com/software/data/rcf/
- E-mail: comments@us.ibm.com

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Contacting IBM

You can contact IBM for customer support, software services, product information, and general information. You also can provide feedback to IBM about products and documentation.

The following table lists resources for customer support, software services, training, and product and solutions information.

Table 41. IBM resources

Resource	Description and location
IBM Support Portal	You can customize support information by choosing the products and the topics that interest you at www.ibm.com/support/entry/portal/Software/Information_Management/InfoSphere_Information_Server
Software services	You can find information about software, IT, and business consulting services, on the solutions site at www.ibm.com/businesssolutions/
My IBM	You can manage links to IBM Web sites and information that meet your specific technical support needs by creating an account on the My IBM site at www.ibm.com/account/
Training and certification	You can learn about technical training and education services designed for individuals, companies, and public organizations to acquire, maintain, and optimize their IT skills at http://www.ibm.com/software/sw-training/
IBM representatives	You can contact an IBM representative to learn about solutions at www.ibm.com/connect/ibm/us/en/

Providing feedback

The following table describes how to provide feedback to IBM about products and product documentation.

Table 42. Providing feedback to IBM

Type of feedback	Action
Product feedback	You can provide general product feedback through the Consumability Survey at www.ibm.com/software/data/info/consumability-survey

Table 42. Providing feedback to IBM (continued)

Type of feedback	**Action**
Documentation feedback	To comment on the information center, click the Feedback link on the top right side of any topic in the information center. You can also send comments about PDF file books, the information center, or any other documentation in the following ways: • Online reader comment form: www.ibm.com/software/data/rcf/ • E-mail: comments@us.ibm.com

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