Opsware® OMDB 7.0 User's Guide

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Opsware SAS Version 7.0

Opsware OMDB Version 7.0

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Preface

Welcome to the Opsware Operational Management Database (OMDB), the first configuration management database (CMDB) that offers seamless change automation. Leveraging the Opsware System consisting of the Opsware Server Automation System (SAS), Opsware Network Automation System (NAS), and the Opsware Application Storage Automation System (ASAS), the OMDB automatically populates and maintains all the infrastructure configuration items (CIs), their detailed attributes, and interdependencies. After the OMDB is populated with the data, customers can easily execute changes to configure and remediate the IT infrastructure.

Overview of this Guide

This guide describes how to use Opsware OMDB, starting with an introduction to the system and how to navigate the user interface. It provides information about Search, Reports, Dashboard, and Custom Reports.

Contents of this Guide

This guide contains the following chapters and appendices:

Chapter 1: OMDB Overview: Provides an overview of Opsware OMDB, the OMDB user interface, the OMDB Client, and the Search feature.

Chapter 2: OMDB Reports: Provides an overview of the OMDB Reports feature, and how to run, print, export and schedule reports.

Chapter 3: **OMDB Dashboard**: Provides an Overview of the OMDB Dashboard and how to set the Dashboard options.

Chapter 4: **Creating Custom Reports**: Provides instructions for saving a search as a report, using BIRT RCP Designer to design custom reports, and adding custom reports to OMDB.

Chapter 1: Introduction to the OMDB Client

IN THIS CHAPTER

This section discusses the following topics:

- Overview of OMDB
- OMDB Client and OMDB Client Launcher
- OMDB Client
- Key Terms and Concepts
- Search
- Quick Search
- Advanced Search
- Item Browser

Overview of OMDB

The Opsware Operational Management Database (OMDB) is a configuration management database designed to create and maintain a record of the infrastructure data in your IT environment. It has the ability to store information from Opsware SAS, Opsware NAS, and other third party systems. You can use the OMDB Search, Reports, and Dashboard features to view and analyze IT infrastructure such as applications, servers, networks, and storage.

The OMDB feature enables you to perform the following tasks:

- Search and browse for configuration items in your IT environment.
- Create reports and view report results on infrastructure data in your IT environment.
- Run existing reports and schedule reports.
- Aggregate report results to your dashboard.
- Create custom reports.

- Perform historical reporting and compare the results with the current report results.
- Perform actions on search and report results.
- Define security boundaries around the configuration items. You can constrain OMDB feature access based on user permissions.

The OMDB Client provides the following features:

- **Search**: Enables you to search and browse for configuration items in your IT Environment. See "Search" on page 19 for more information.
- **Reports**: Enables you create reports, view report results, run existing reports, and schedule reports. See "OMDB Reports" on page 35 for more information.
- **Dashboard**: Enables you to aggregate report results to the dashboard. See "Overview of Dashboard" on page 57 for more information.
- **Opsware Administration**: Enables you to set the options for Scheduled Reports and Dashboard. See "Setting Dashboard Options" on page 60 for more information.

OMDB Client and OMDB Client Launcher

The OMDB Client Launcher is a self contained Java application that allows you to access the OMDB Client from any OMDB core. You can use the Launcher to log in to and download the latest version OMDB Client. If the OMDB Client has been upgraded on a specific OMDB server, you can choose which OMDB server you would like to use for downloading the OMDB Client.

The OMDB Client Launcher also allows you to configure advanced settings, such as debug settings, locale settings, and access to the Java Web Start that runs the Launcher and OMDB Client.

This section contains the following topics:

- OMDB Client and OMDB Client Launcher Requirements
- Installing the OMDB Client Launcher
- Uninstalling the OMDB Client Launcher
- Launching the OMDB Client
- OMDB Client Launcher Advanced Options
- Launching the OMDB Client from the SAS Client

OMDB Client and OMDB Client Launcher Requirements

The OMDB Client is a Java application that installs and runs with its own Java Runtime Environment (JRE). The OMDB Client will not interfere with any other versions of JRE you may have installed on your system. The JRE will not be used (and is not usable) by any other Java application on the target computer, and it will not set itself as the default JRE on the target computer.

The OMDB Client is supported on the following operating systems:

- Windows 2003
- Windows 2000
- Windows XP
- Windows Vista

The minimum systems requirements to run the OMDB Client are as follows:

- At least 512 MB of DRAM
- If using the OMDB Client to connect to a core using a residential VoIP connection, a minimum 384 Kbps DSL connection is recommended.
- You need to be logged in as a user that has sufficient permissions to install software on the computer. (You do not need to be an administrator user to install the launcher.)

To run the OMDB Client, you must download and install the OMDB Client Launcher (accessible from the OMDB Web Client). In order to install the OMDB Client Launcher, you will need to be a Windows user that is able to install applications on your system.

Installing the OMDB Client Launcher

In order to run the OMDB Client, you need to download and install the OMDB Client Launcher, which is a Java application that allows you to access the OMDB Client from any OMDB server. When you install the OMDB Client launcher, it installs all the necessary Java applications (Java Web Start and JRE) you need to run the OMDB Client.

If you plan to have multiple users install the OMDB Client Launcher on the same computer, Opsware recommends that each user choose a unique path to install the application. For example, if one user has already installed the OMDB Client Launcher in the default location, C:\Opsware, then if another user logs in to the same computer and

attempts to install to that same default location, they will see an error and not be able to install. If this occurs, choose a new location.

To install the OMDB Client Launcher, perform the following steps:

1. Open a Web browser, and enter the URL to the OMDB Web Client.
2. On the OMDB Web Client login page, click the Download Opsware Launcher link.
3. Download the OMDB Client Launcher installation file and double-click to start the OMDB Client Launcher installation.
4. In the Welcome page of the installation wizard, click **Next** to begin the OMDB Client Launcher installation.
5. In the License Agreement page of the wizard, select the "I accept the agreement" option, and then click **Next** to proceed with the installation.
6. In the Select Destination Directory page, accept the default installation directory, or click **Browse** to select a custom location. Click **Next**.
7. In the Select Start Menu Folder page, accept the default name and click **Next**.
8. In the Select Additional Tasks page, accept the default options or choose your own, and then click **Next** to install the OMDB Client Launcher.
9. When the installation has completed, click **Finish** to exit the wizard.

Uninstalling the OMDB Client Launcher

You can uninstall the OMDB Client Launcher using the uninstaller provided by Opsware, or you can use the Windows' Add/Remove Programs utility located in the control panel on your system.

To uninstall the OMDB Client Launcher, perform the following steps:

1. From the **Start** menu, select ➤ **All Programs** ➤ **Opsware** ➤ **Opsware Client Launcher Uninstaller**.
2. In the start page of the uninstaller, click **Next** to begin uninstalling the SAS Client Launcher.
3. When the uninstaller has finished, click **Finish** to exit. The OMDB Client Launcher has been uninstalled.

Launching the OMDB Client

The OMDB Client Launcher allows you to log in to an OMDB server using the OMDB Client. You also have the option of choosing which OMDB server you want to use to download the latest version of the OMDB Client, separate from the OMDB server you log in to. For example, when you log into a OMDB server and that OMDB server has a new version of the OMDB Client, the new version will automatically be downloaded when you log in. Using the OMDB Client Launcher, you can choose one core to log in to and a separate core to download the latest client. This gives you the freedom to not have to download the OMDB Client every time you log into a different core.

The OMDB Client Launcher only allows you to log on to a OMDB 7.0 core. If you attempt to log into a pre-OMDB 7.0 core, you will get a 404 page not found Java Web Start error message and not be able to log on to the core.

If you are running the OMDB Client Launcher on Windows 2000, you may see a missing DLL error message when you log on. This is a benign error and will not affect the log on procedure. To fix this so the error message does not appear, install this Microsoft update: http://support.microsoft.com/default.aspx?scid=kb;en-us;259403&Product=vc6.

To launch the OMDB Client, perform the following steps:

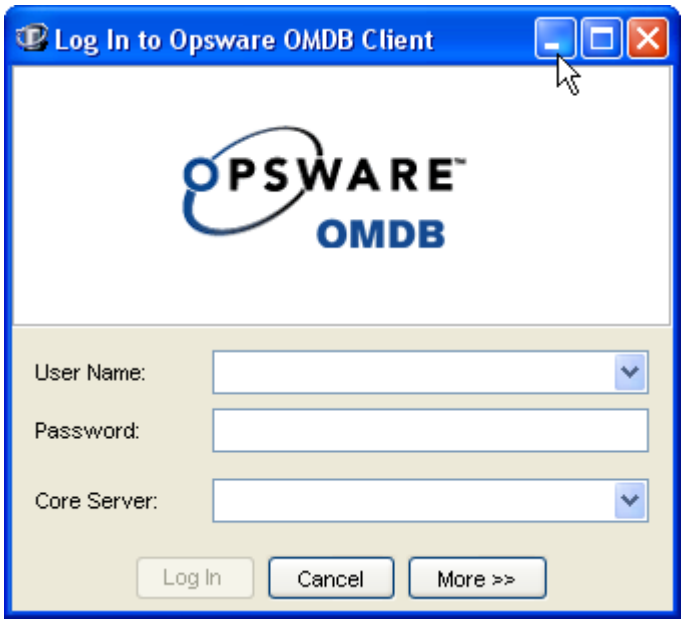
1. Start the OMDB Client Launcher from one of two locations:
   - On your desktop, double-click the OMDB Client Launcher icon (if you chose to install one on your desktop during the installation)

     Or

   - From the **Start** menu, select ➤ **All Programs** ➤ **Opsware** ➤ **Opsware OMDB Client**.

2 In the Log In to Opsware OMDB Client window, enter your Opsware OMDB user name, password, and the OMDB server you want to log in to, as shown in Figure 1-1.

Figure 1-1: Log In to OMDB Client Window



The user name is not case sensitive. If you have access to more than one OMDB server, you can enter the OMDB server's IP address or name in the core server field. You must specify port 8443 using the *host:port* notation at the end of the OMDB server name.

If this is the first time you are logging into a specific OMDB server, the launcher will download the latest version of the OMDB Client when you log in. If you would like to differentiate between the OMDB server you log in to and the core from which you download the latest version of the OMDB Client, you can change those options by clicking **More** in the log in window and configuring your Client Host Server. For information on this and other advanced OMDB Client Launcher options, see "OMDB Client Launcher Advanced Options" on page 15.

3 Click **Log In**.

4 If you are asked to accept the certificate from the core server, click **Yes**. The OMDB Client now appears.

OMDB Client Launcher Advanced Options

The OMDB Client Launcher provides several advanced options that enable you to customize how you log in to Opsware OMDB cores and access the OMDB Client in your data center. For example, you can configure the OMDB Client Launcher so the OMDB server you log in to is different from the OMDB server you use to access the latest version of the OMDB Client. This can be useful so that you do not have to download a new version of the OMDB Client each time you log in to a OMDB server.

The advanced OMDB Client Launcher options also allow you to:

- Locale (English, Japanese, or Korean)
- Client Host Server (the server from which you want to download the OMDB Client)
- Debug Settings
- Advanced Configuration (Java Web Start access)

To configure the OMDB Client Launcher's advanced settings, perform the following steps:

1. Start the OMDB Client Launcher from one of two locations:
   - On your desktop, double-click the OMDB Client Launcher icon, if you chose to install one on your desktop during the installation

     Or,

   - From the **Start** menu, select ➤ **All Programs** ➤ **Opsware** ➤ **Opsware OMDB Client**.
2. In the Log In to Opsware OMDB Client window, click **More**. You can set the following OMDB Client Launcher options:
   - **Username**: Enter your Opsware OMDB username.
   - **Password**: Enter your Opsware OMDB user password.
   - **Core Server**: Choose the core server which you want to log into.
   - **Locale**: Choose a locale to match the localized version of the OMDB Client, either Japanese (ja), Korean (ko), for English (en). English is the default.
   - **Client Host Server**: Allows you to choose the server from which you want to download the OMDB Client, which can be separate from the login server.
     - **Use Core Server**: Will use the server set in the Core Server field as the server you want to use to download the OMDB Client.

- **Use**: Enter a core server you want to use to download the OMDB Client.

- **Debug Settings**: Debugging options that are captured in the following log file: C:\<install_dir>\Opsware\javaws.log
  - **Enable Debug Logging (Fine)**: Enables debugging and sends OMDB Client operations and errors to the log file.
  - **Enable Server Method Call Logging**: Adds server method calls to the log file.
- **Advanced Settings**: Click to access the Java Web Start application that runs the OMDB Client Launcher

3. When you are finished setting the options, click **Log In** to log in and make the changes to the advanced settings. (If you do not log in successfully, any changes you made will not be saved.)

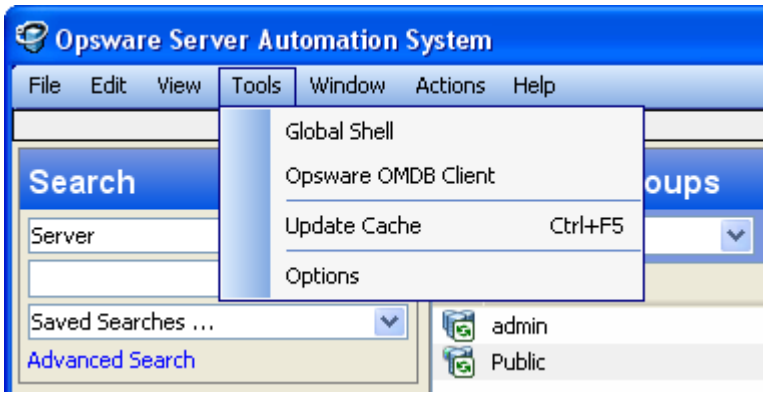
Launching the OMDB Client from the SAS Client

To launch the OMDB Client from the SAS Client, perform the following steps:

1. Launch the SAS Client. See the *Opsware® SAS User's Guide: Server Automation* for information on how to launch the SAS Client.

2. In the SAS Client, from the **Tools** menu, select **Opsware OMDB Client**. See Figure 1-2. This opens the Log In to OMDB Client window as displayed in Figure 1-1.

Figure 1-2: Launching the OMDB Client



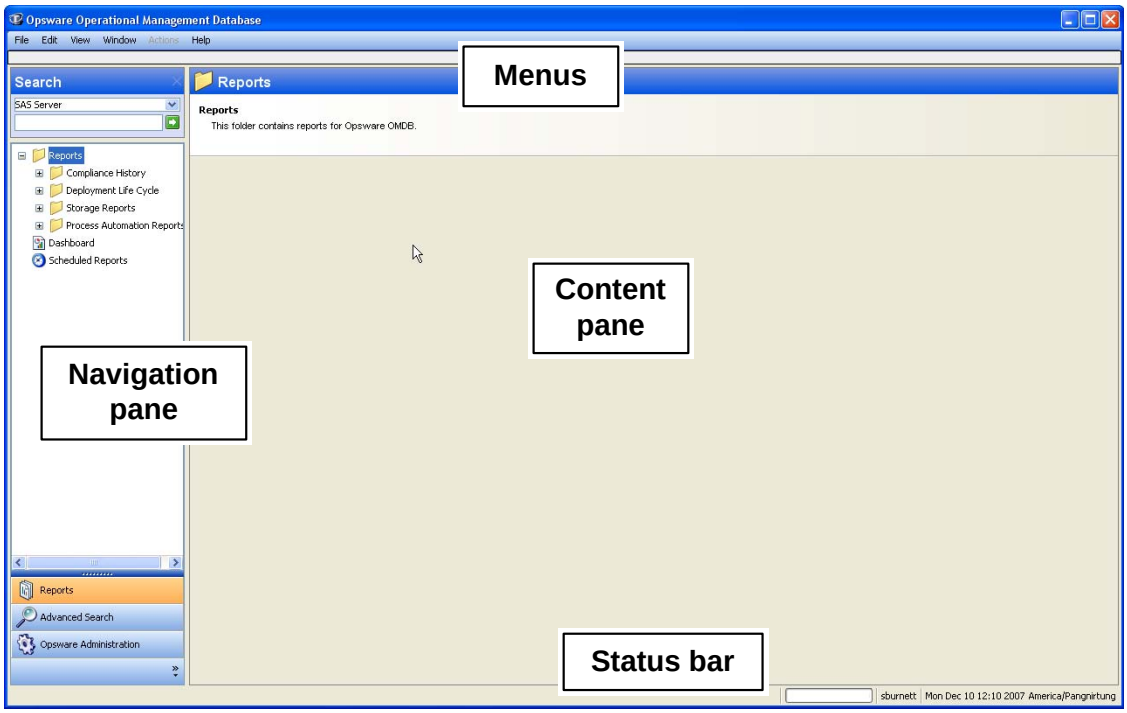
3. (Optional) To display Search in the Navigation pane, select **Search Pane** from the **View** menu in the OMDB Client.

OMDB Client

The OMDB Client user interface provides an easy access to OMDB features and functionality. The OMDB Client user interface has the following main areas:

- Menus
- Navigation Pane
- Content Pane
- Status Bar

Figure 1-3: OMDB Client



Menus

The OMDB Client includes the following menus:

- **File**: This menu enables you to open a new OMDB Client window, close the current window, or exit all open OMDB Client windows.
- **Edit**: This menu enables you to cut, copy, paste, and delete text.

- **View**: This menu refreshes the current view and shows the latest information from the core that you are currently logged into. You can also access OMDB features in the Navigation pane, such as Reports (Reports, Dashboard, Scheduled Reports), Advanced Search (Search, Quick Search), and Opsware Administration (Schedule Report options, Dashboard options). The menu also allows you to show or hide the Search pane.
- **Actions**: Depending on the feature that you have selected in the Navigation pane, this menu enables you to perform OMDB functions.
- **Window**: This menu enables you to access multiple instances of OMDB Client windows, if more than one window is open.
- **Help**: This menu provides help for the OMDB Client. Help F1 provides context-sensitive help relevant to the current feature window selected or opened (same as F1). The contents and index will open the SAS Client help system to the main table of contents.

Navigation Pane

To access OMDB features, select a feature in the Navigation pane. When you select a feature, the details of the feature appears in the Content pane. You can access functions related to it through the Actions menu.

Content Pane

Depending on the selection in the Navigation pane (Advanced Search, Quick Search, Reports, Dashboard, Scheduled Report Options, Dashboard Options), the Content pane lists the corresponding information.

Status Bar

At the bottom of the OMDB Client Application window, the status bar provides the following information:

- Informational text (left hand side) about the selected object
- A progress bar active when retrieving information from the core
- The user ID
- The time zone set in the user profile

Key Terms and Concepts

The following terms and concepts are used in the OMDB feature:

- **Configuration Item (CI)**: An object which can be viewed and managed with Opsware OMDB. For example SAS Server, NAS Device, SAS Patch Policy.
- **Attribute**: A single property of a configuration item, the value of which describes the behavior of the configuration item. Configuration items can have one or more attributes. For example, some of the attributes for the configuration item SAS Server includes hostname, life cycle, agent status, and management IP.

Search

In the OMDB Client, the Search feature allows you to search for any information about your operational environment that is available in Opsware SAS, Opsware NAS, Opsware PAS, and any third party systems.

You can also search for storage Database, SAN Switch, Server, and Storage Systems objects if you have purchased Opsware's Application Storage Automation System (ASAS). For more information, see the *Opsware® ASAS User's Guide*.

Opsware's Application Storage Automation System (ASAS) is a separately licensed product that requires the Opsware Server Automation System (SAS). To visualize any storage data in ASAS, you must license a version of Visual Application Manager (VAM) for Opsware ASAS. If you have not purchased VAM and would like to, contact your Opsware sales representative.

The OMDB Search feature enables you to perform the following actions:

- Perform a search by using keywords.
- Perform an advanced search by creating search queries.
- Browse for configuration items in your IT environment.
- Search for historical data by selecting the date and time for the search query.
- Save a search query.

- Perform actions on search results. You must have Opsware SAS 6.5 installed to perform actions on SAS results, Opsware NAS 6.0 or later installed to perform actions on NAS results, and either PAS 2.2 or PAS 7.0 installed to perform actions on PAS results.
- Export search results.
- Customize search results formatting using the Results Options window.
- View Item Browser for search results.

Performing a Search

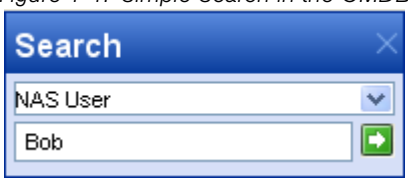
In the OMDB Client, you can search for configuration items by entering a keyword in the search text field. The search is carried out against the default displayable attributes defined for the configuration item in the OMDB data catalog.

The search operation returns only configuration items where you have the data access permissions. See *Opsware® OMDB 7.0 Installation Guide* for information on OMDB permissions.

To carry out a search, perform the following steps:

1. From the Navigation pane, select **Search**. To display Search in the Navigation pane, select **Search Pane** from the **View** menu.
2. From the drop-down list, select the type of item that is the target of the search. Figure 1-4 shows a search for the NAS User named Bob.

Figure 1-4: Simple Search in the OMDB Client



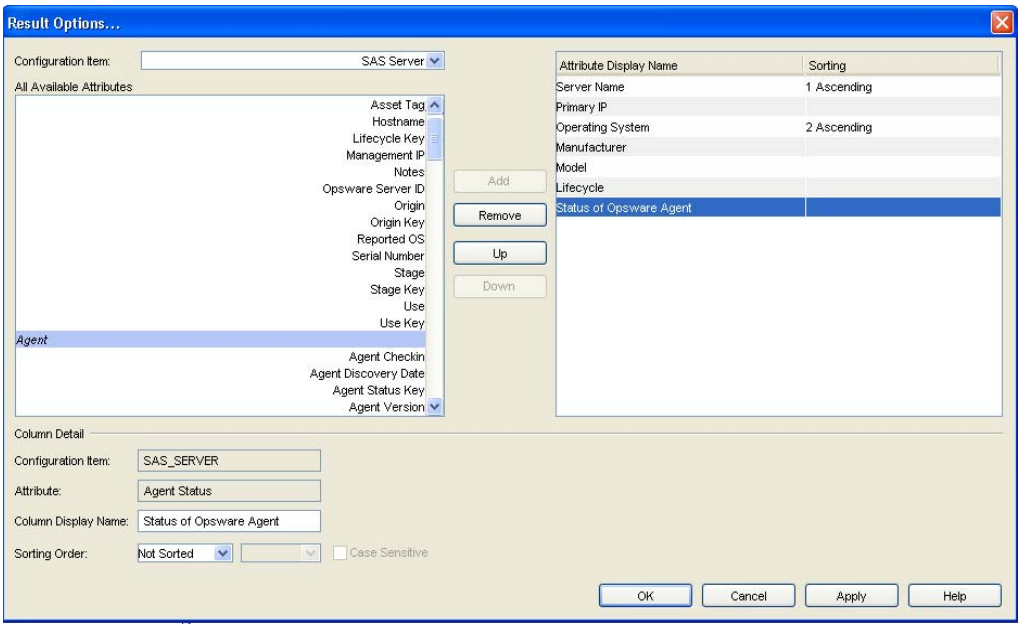
3. Enter the search text in the text field. The OMDB Client search feature does not support a wildcard search and the search is not case sensitive.
4. Click  to search. The search results appear in the Content pane.

5 (Optional) Click on any column heading to sort the search results. You can also change the order of the columns by dragging the column heading and dropping it into the desired location.

6 (Optional) Click Results Options to specify the attribute to be displayed as column headings for the search results.
Perform the following steps to customize the column headings:

1. In the Results Options window, from the All Available Attributes list, select the attributes you want to display as column headings for the search results. Click **Add**. The attributes now appear on the right pane. See Figure 1-5.

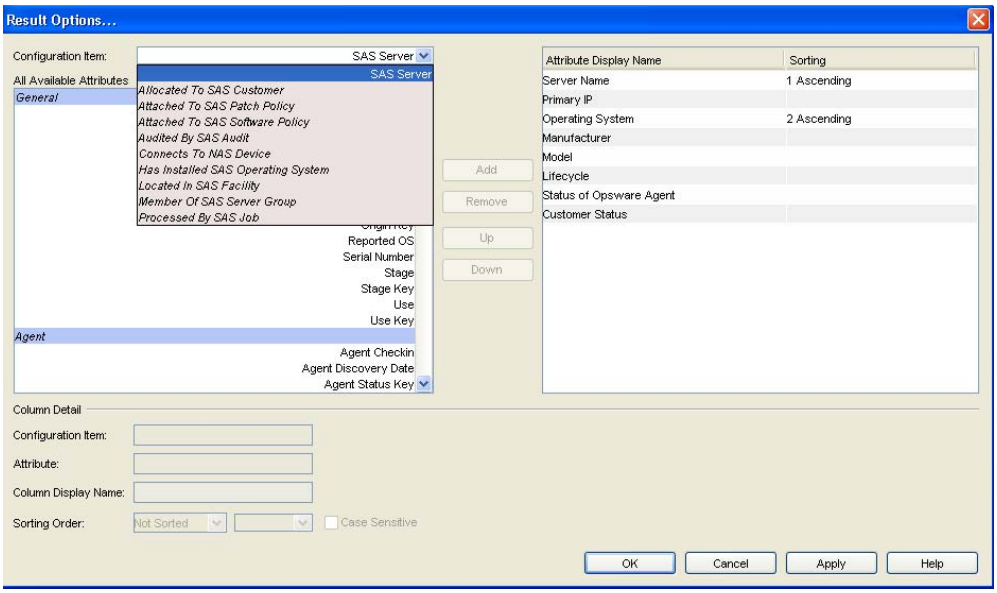
Figure 1-5: Results Option Window



2. To reorder the attributes, select the attribute in the right pane and then click **Up** or **Down**.
3. To remove the attribute, select the attribute in the right pane and then click **Remove**.
4. To change the display name of the attribute in the column heading, select the attribute in the right pane and then enter a new name in the Column Display Name field.

5. To select the sort order of the attribute on the search results, select the attribute in the right pane and then select the order number from the Sorting Order drop-down list.
6. To sort the search results for an attribute, select the attribute in the right pane and then select Ascending or Descending from the Sorting Order drop-down list.
7. To make the sorting order case sensitive, select the attribute in the right pane and then select the Case Sensitive check box.
8. Click **OK** to display the selected attributes as column headings. Click **Apply** to save.
9. To add additional attributes, select the relationship from the Configuration Item drop-down list as shown in Figure 1-6. The additional attributes appear in the All Available Attribute list. Perform the instructions listed in steps 1 to 7 to add or remove additional attributes.

Figure 1-6: Adding Additional Attributes to the Results Option Window



7. (Optional) Click **Save** to save your search query. The Save Search window appears. Enter the name of the search and click **Save**. The name of the saved search cannot be more than 64 characters. The search is saved in a folder corresponding to the configuration item types in the Advanced Search location in the navigation pane.

8 (Optional) In the Save Search window, select Save as a Report Definition to create custom reports. See “Editing a Report Definition File” on page 66 for more information.

9 (Optional) Click **Export** at the bottom of the screen to export search results. The Export Results window appears. Enter the location, the file name and the file type and then click **Export Results**. You can export OMDB search results as .csv or .html files.

10 (Optional) After you export the search results, you can email the search results by attaching the exported file to the email. You can also print the search results by printing the exported file from an application that supports .csv or .html files.

11 (Optional) To perform an action on the search results, select an item from the Content pane and then from the **Actions** menu, select the appropriate action.

Quick Search

Quick Search allows you to browse all the configuration items available in OMDB by selecting the configuration item and then the attribute and value for that item.

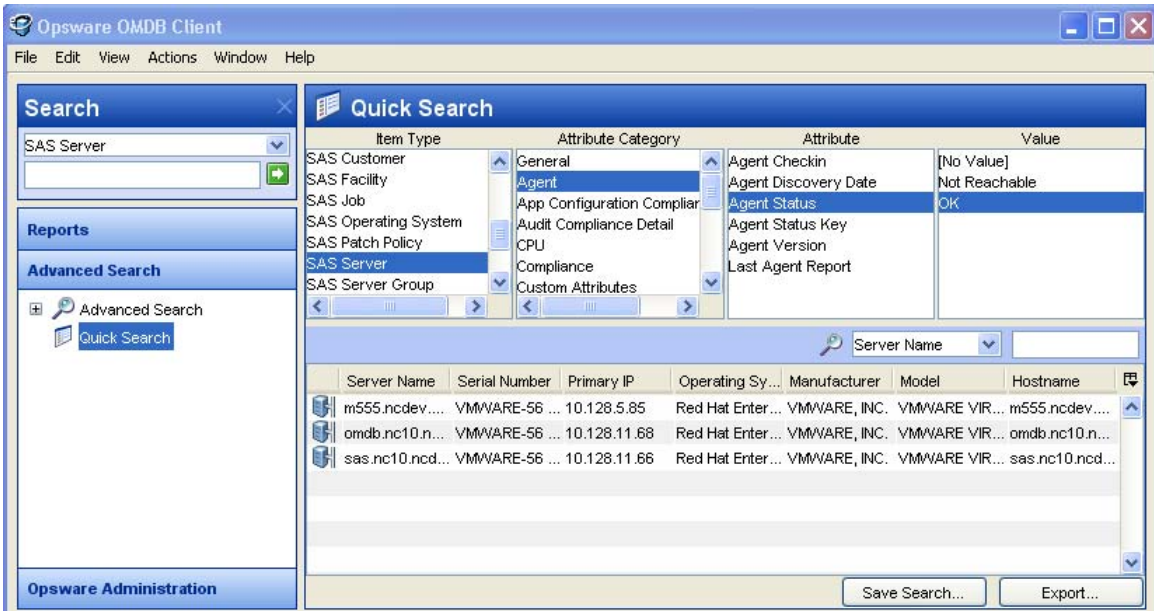
Performing a Quick Search

The search operation returns only configuration items on which you have the data access permissions. See the *Opsware® OMDB 7.0 Installation Guide* for information on OMDB permissions.

To carry out a quick search, perform the following steps:

1. From the Navigation pane, select **Advanced Search ➤ Quick Search**. Quick Search is displayed in the Content pane as shown in Figure 1-7.

Figure 1-7: Quick Search in the OMDB Client



2. From the Item Type list in the Content pane, select the configuration item type you would like to browse. The list of attribute categories for the selected configuration item appear in the Attribute Category list.

3. From the Attribute Category list, select an attribute category.

4. Select the attribute from the Attribute list and then select the value for that attribute from the Value list. The search results appear in the content pane.

5. (Optional) Click on any column heading to sort the search results. You can also change the order of the columns by dragging the column heading and dropping it into the desired location.

6. (Optional) Click **Save** to save your search query. The Save Search window appears. Enter the name of the search and click **Save**. The name of the saved search cannot be more than 64 characters. The search is saved in a folder corresponding to the configuration item type in the Advanced Search location in the navigation pane.

7. (Optional) In the Save Search window, select Save as Report Definition to create custom reports from your search results. See creating custom reports for more information.

8 (Optional) Click **Export** at the bottom of the screen to export search results. The Export Results window appears. Enter the location, the file name and the file type and then click **Export Results**. You can export OMDB search results as csv or .html files.

9 (Optional) After you export the search results, you can email the search results by attaching the exported file to the email. You can also print the search results by printing the exported file from an application that supports .csv or .html files.

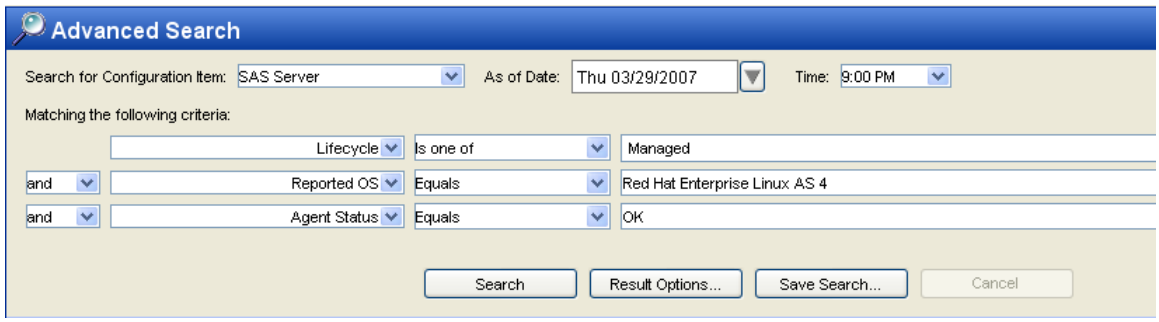
10 (Optional) To perform an action on the search results, select an item from the Content pane and then from the **Actions** menu, select the appropriate action.

Advanced Search

In the OMDB Client, an Advanced Search enables you to create queries on search items. In the search query, you can specify rules and combine each rule with a logical “And” or “Or” operator. You can use both the “And” and “Or” operator in a single search query. Each rule is a combination of an attribute/operator/value that enables you to search for a specific attribute value for the selected search item. For the search item, depending on the attribute that you select, the options for the operator and value are displayed.

You can specify the attribute values by entering text or a numerical value in the text field, or by selecting a value from the drop-down list, or by selecting multiple values from a list of values in the Select Values window. See Figure 1-8.

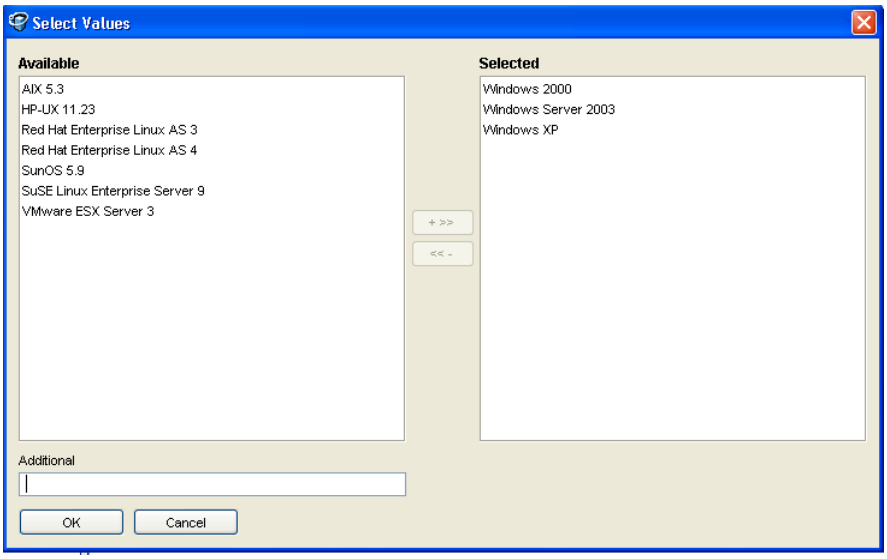
Figure 1-8: Advanced Search



The Select Values window appears when you need to specify multiple values for a rule containing a "is one of" or "is not one of" operator. In this window, you can select multiple values from the list or add values to the Additional field. See Figure 1-9.

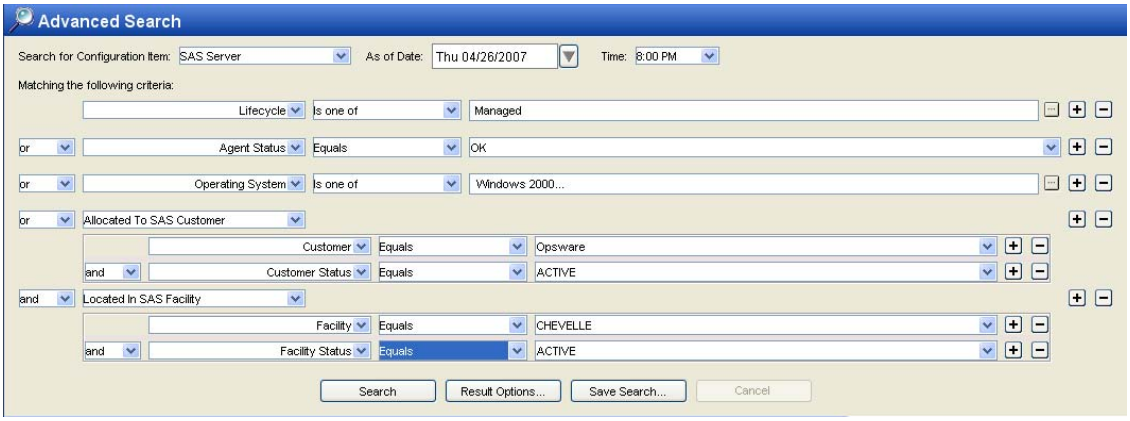
In OMDB, when you perform a search of any configuration item and you select " Equals" or "Does not equal" or "Is one of" or "Is not one of" in the operator field, then the values listed in the Value field depends on the values existing in the OMDB database as of the selected date. If the other values in the OMDB database are not relevant for the selected date then those values will not be listed in the Value field.

Figure 1-9: Select Values Window



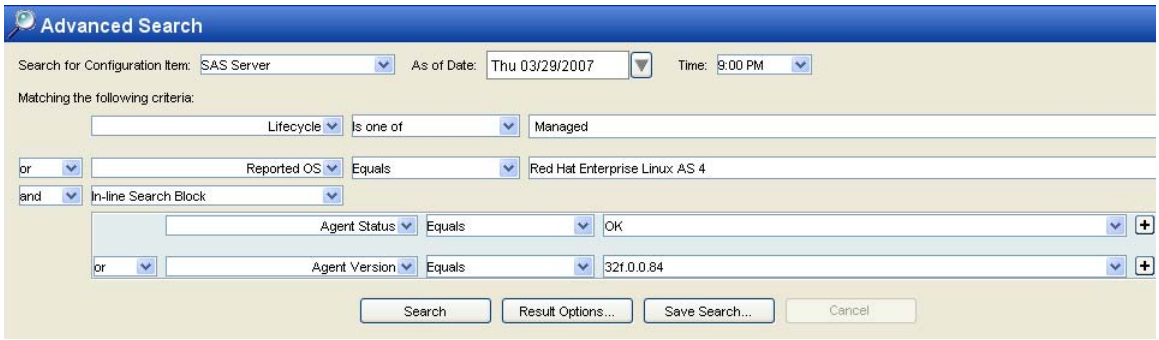
You can create complex queries by selecting multiple relationships or in-line blocks for a configuration item and also multiple rules for each relationship. See Figure 1-10.

Figure 1-10: Complex Query Containing Multiple Relationships



In a complex query, you can also set the precedence on the Or/And logic for the different rules in that query. In any query, by default the Or logic takes precedence over the And logic. In Advanced search, you can use the In-Line Search Block to prioritize the And/Or logic for rules in a query. See Figure 1-11.

Figure 1-11: Complex Query Containing In-Line Block



Using Advanced Search you can search for historical data by selecting the date and time for the search query. You can then compare the historical data with the current results or create custom reports for both the current search results and the historical search results. See “Editing a Report Definition File” on page 66 for information on how to create custom reports.

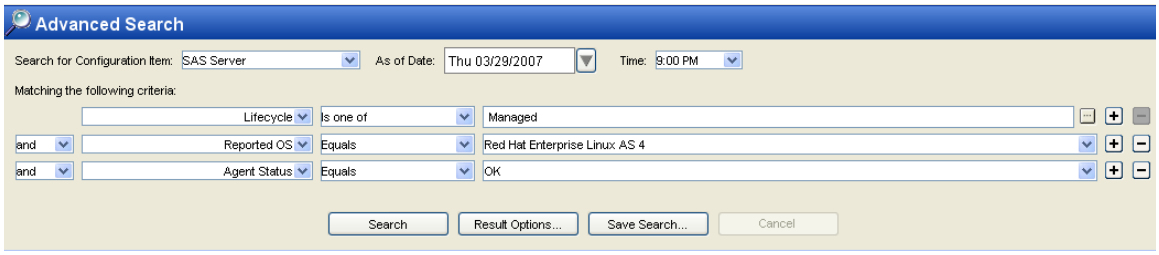
Performing an Advanced Search

The search operation returns only configuration items on which you have the data access permissions. See the *Opsware® OMDB 7.0 Installation Guide* for information on OMDB permissions.

To carry out an advanced search, perform the following steps:

1. From the Navigation pane, select **Advanced Search ➤ Advanced Search**. The Advanced Search page appears in the Content pane.
2. From the Search for Configuration Item drop-down list, select the item you want to search. From the As of Date drop-down list select the date and from the Time drop-down list select the time to carry out the search.

Figure 1-12: Advanced Search in the OMDB Client



3. Create a rule by selecting the attribute from the first drop-down list. Depending on the attribute that you select, options available for the operator and values for the rule could change.
4. Select the operator from the second drop-down list. The operator selected defines how the search text is treated.
5. Enter a value in the field or select a value from the drop-down list or click to select multiple values from the **Select Values** window.
6. Click to add additional rules and repeat steps 3 to 5. Click to delete any rules.
7. Select the logic (And/Or) to be applied for every rule in the query.
8. (Optional) To add a relationship to the search query, select the relationship (indicated in italics) from the left-most drop-down list. Create rules by following instructions listed in steps 3 to 7.

9 (Optional) To set precedence for any rule in a query, select In-Line Search Block from the first drop-down list. Then create rules for the query by following instructions listed in steps 3 to 7.

10 Click **Search** to run the search query. The search results appear in the Content pane.

11 (Optional) Click on any column heading to sort the search results. You can also change the order of the columns by dragging the column heading and dropping it into the desired location.

12 (Optional) Click Results Options to specify the attribute to be displayed as column headings for the search results. Perform the following steps to customize the column headings:

1. In the Results Options window, from the All Available Attributes list, select the attributes you want to display as column headings for the search results. Click **Add**. The attributes now appear on the right pane.
2. To reorder an attribute, select the attribute in the right pane and then click **Up** or **Down**.
3. To remove an attribute, select the attribute in the right pane and then click **Remove**.
4. To change the display name of the attribute in the column heading, select the attribute in the right pane and then enter a new name in the Column Display Name field.
5. To select the display order of the attribute on the search results, select the attribute in the right pane and then select the order number from the Sorting Order drop-down list.
6. To order the search results for an attribute, select the attribute in the right pane and then select Ascending or Descending from the Sorting Order drop-down list.
7. To make the sorting order case-sensitive, select the attribute in the right pane and then select the Case Sensitive check box.
8. Click **Apply** to display the selected attributes as column headings. Click **OK** to close the window.
9. To add additional attributes, select the relationship from the Configuration Item drop-down list as shown in Figure 1-6. The additional attributes appear in the All Available Attribute list. Perform instructions listed in steps 1 to 7 to add or remove attributes.

13 (Optional) Click **Save** to save your search query. The Save Search window appears. Enter the name of the search and click **Save**. The name of the saved search cannot be more than 64 characters. The search is saved in a folder corresponding to the configuration type in the Advanced Search location in the navigation pane.

14 (Optional) In the Save Search window, select Save as Report Definition to create custom reports. See creating custom reports for more information.

15 (Optional) Click **Export** at the bottom of the screen to export search results. The Export Results window appears. Enter the location, the file name and the file type and then click **Export Results**. You can export OMDB search results as .csv or .html files.

16 (Optional) After you export the search results, you can email the search results by attaching the exported file to the email. You can also print the search results by printing the exported file from an application that supports .csv or .html files.

17 (Optional) To perform an action on the search results, select an item from the Content pane and then from the **Actions** menu, select the appropriate action.

Exporting Search Results

To export search results, perform the following steps:

1 Perform a search in the OMDB Client. The search results appear in the Content pane.

2 Click **Export** at the bottom of the screen to export search results. The Export Results window appears.

3 Enter the location, the file name and the file type and then click **Export Results**. You can export OMDB search results as .csv or .html files.

Running a Saved Search Query

To run a saved search query, perform the following steps:

1 From the Navigation pane, select **Advanced Search ➤ Advanced Search**.

2 Navigate the folder hierarchy to select the search query. The search results will appear in the Content pane.

Deleting a Saved Search

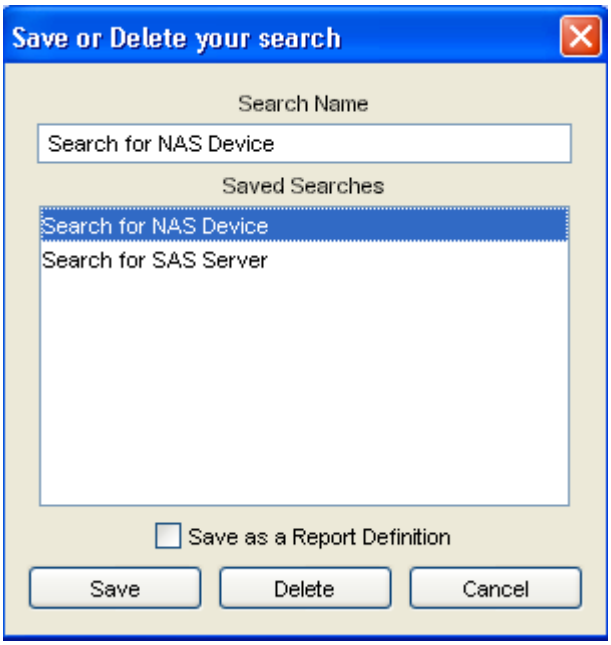
To delete a saved search query, perform the following steps:

1 From the Navigation pane, select **Advanced Search ➤ Advanced Search**.

2 Navigate the folder hierarchy to select the search query. The search results will appear in the Content pane.

3 Click **Save**. The Save or Delete your search window appears as shown in Figure 1-13.

Figure 1-13: Save or Delete Your Search



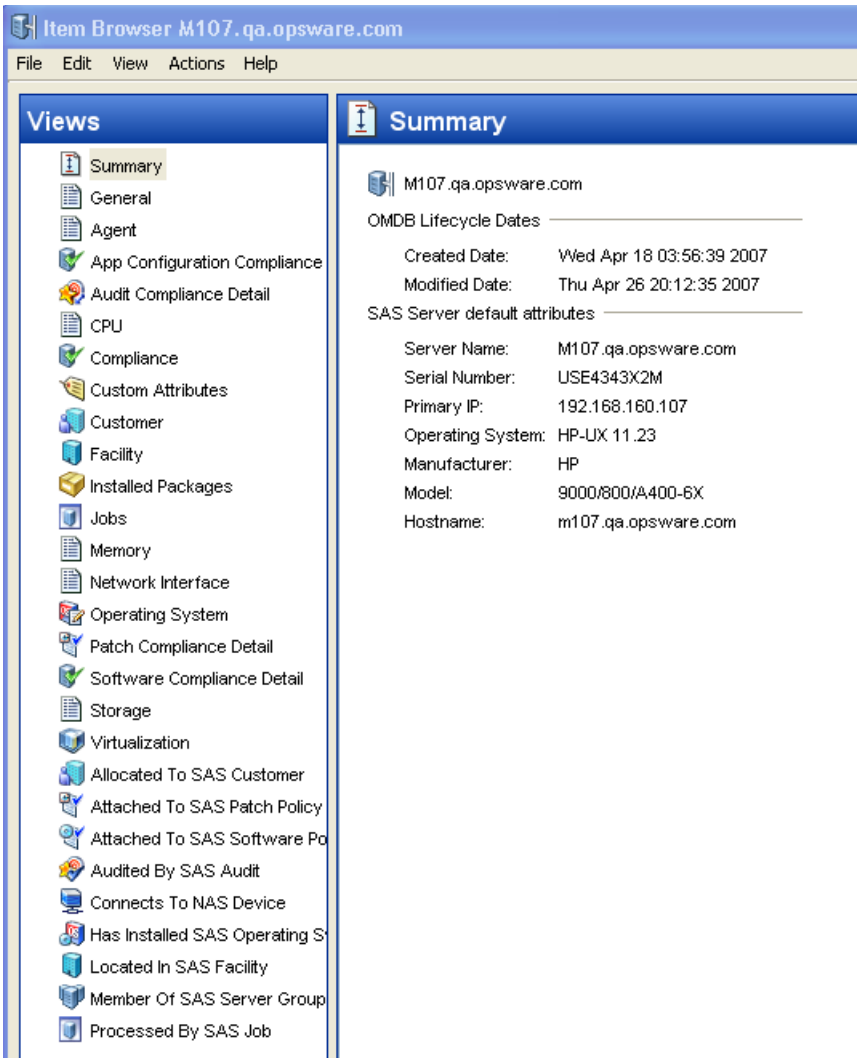
4 Select the saved search and click **Delete**. Click **Delete** on the Confirmation window to delete a saved search.

Item Browser

The Item Browser in the OMDB Client allows you to view all the available attributes for the selected configuration item. The Item Browser enables you to view additional information about the configuration item and its relationships.

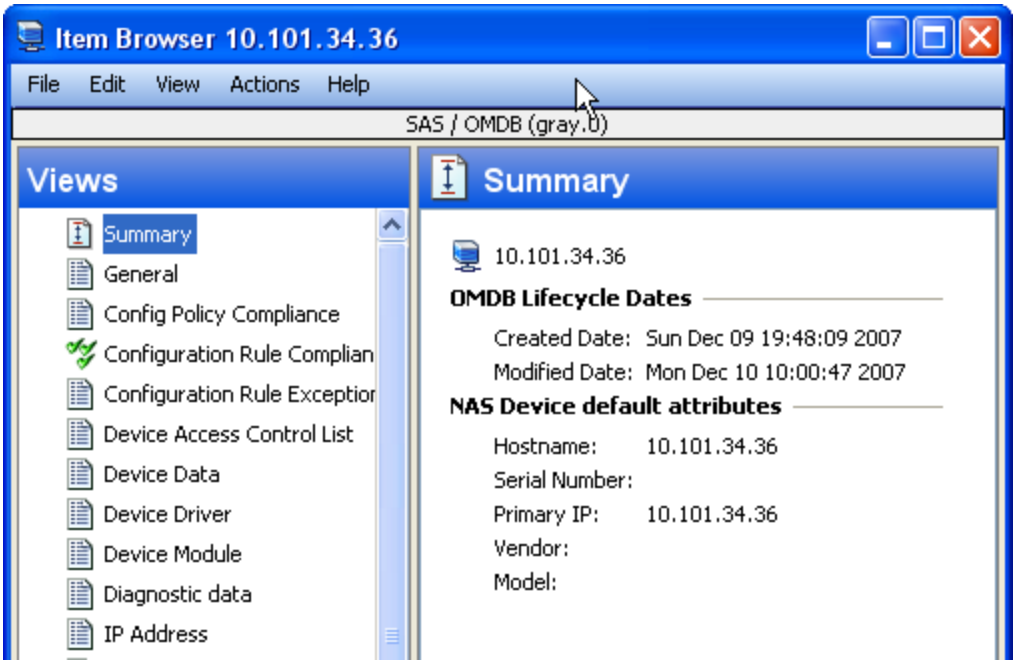
The Item Browser consists of two main components: the Views pane and the Content pane. The Views pane lists all the available attribute categories for the selected configuration item, and the Content pane displays the details of the selected attribute. When you select an attribute in the Views pane, its corresponding details appear in the Content pane. See Figure 1-14.

Figure 1-14: Item Browser



The list of attribute categories in the Item Browser varies depending on the configuration item returned in the search or report results. For example, Figure 1-14 shows an Item Browser for the configuration item SAS server, and Figure 1-15 shows an Item Browser for the configuration item NAS device switch.

Figure 1-15: Item Browser for NAS Switch



Accessing the Item Browser

Perform the following steps to access the Item Browser:

1. In the OMDB Client, perform a search or run a report.
2. Select an item from the search or report results and then from the **Actions** menu, select **View**. The Item Browser for the selected configuration item appears.

Chapter 2: OMDB Reports

IN THIS CHAPTER

This section discusses the following topics:

- Overview of OMDB Reports
- Reports Features
- Opsware OMDB Client Reports
- User Permissions
- Launching the Reports Feature
- Reports Display
- Running a Report
- Report Results
- Exporting a Report
- Printing a Report
- Saving a Search as a Report
- Scheduling a Report

Overview of OMDB Reports

The Opsware OMDB Client Reports feature provides comprehensive information about managed servers, network devices, software, patches, customers, facilities, operating systems, compliance policies, and users and security in your environment. These parameterized reports are presented in graphical and tabular format, and are actionable—which means that you can perform appropriate actions on objects, such as a policy or an audit, within the report. These reports are also exportable to your local file system (as .html, .pdf and .xls files) to facilitate use within your organization.

You can also search for storage Database, SAN Switch, Server, and Storage Systems objects if you have purchased Opsware's Application Storage Automation System (ASAS). For more information, see the *Opsware® ASAS User's Guide*.

Opsware's Application Storage Automation System (ASAS) is a separately licensed product that requires the Opsware Server Automation System (SAS). To visualize any storage data in ASAS, you must license a version of Visual Application Manager (VAM) for Opsware ASAS. If you have not purchased VAM and would like to, contact your Opsware sales representative.

This section contains information about the types of OMDB Client reports, how to modify report parameters, how to run the reports, and how to perform actions in the report results.

Reports Features

The OMDB Client Reports enable you to perform enterprise health assessments by providing the following features:

- Actionable reports that enable you to take the appropriate action on objects within the reports. For example, in the list view of a compliance report, you can select a server and open a Remote Terminal or Server Explorer to browse it, perform an audit, create a snapshot, create a package, and so on.
- The OMDB Client Dashboard provides a display of selected reports. See "OMDB Dashboard" on page 57.
- Reports that are data-secured—controlled by the user's permissions to the data.
- Reports that can be run on either current or historical data.
- Reports that are printable and also exportable to .html, .pdf, and .xls formats. You can export reports to your local file system for use within your organization.
- Custom reports can be created and imported. See "Editing a Report Definition File" on page 66.
- Reports that can be scheduled to run automatically and to email the results to you and others.

Opsware OMDB Client Reports

Table 2-1 lists the OMDB Client Reports by report folders.

Table 2-1: OMDB Client Reports

REPORT FOLDER	REPORT TITLE
Compliance History	Device Compliance History - Provides a detailed compliance state history for all servers, or for one or more selected servers Device Group Compliance History - Summarizes the compliance history of devices in a specified device group Customer Compliance History - Summarizes the compliance history of devices assigned to a specified customer Facility Compliance History - Summarizes the compliance history of devices in a specified facility
Deployment Life Cycle	Devices By Type - Filters network devices by group, and non-network devices by customer, facility, or group Network Devices By Device Type - Provides a deployment trend history for the network devices in a specified group, organized by device type Servers By Operating System - Provides a deployment trend history for the servers in a specified customer, facility or group, organized by operating system and version Servers By Architecture - Groups the servers in a specified customer, facility or group organized by architecture

REPORT FOLDER	REPORT TITLE
Storage Reports - Host and Application Storage Reports	Host Capacity and Utilization Overview - Provides detailed capacity & utilization information for multiple hosts, potentially grouped by customer, facility or device group. Host Capacity and Utilization Trend Data - Provides detailed capacity & utilization trend data for a collection of hosts, grouped by customer, facility or device group. Host Total Storage Utilization Trend - Provides total storage utilization rate for a set of hosts (grouped by customer, facility or device group), has changed over time and is projected to change in the future. Host Total Storage Allocation Trend - Provides total allocated and used storage for a set of hosts (grouped by customer, facility or device group), has changed over time and is projected to change in the future.Host Volume Manager Storage Utilization Trend - Provides volume manager storage utilization rate for a set of hosts (grouped by customer, facility or device group), has changed over time and is projected to change in the future. Host Volume Manager Storage Allocation Trend - Provides allocated and used volume manager storage for a set of hosts (grouped by customer, facility or device group), has changed over time and is projected to change in the future. Host DB Storage Utilization Trend - Provides database storage utilization rate for a set of hosts (grouped by customer, facility or device group), has changed over time and is projected to change in the future. Host DB Storage Allocation Trend- Provides allocated and used database storage for a set of hosts (grouped by customer, facility or device group), has changed over time and is projected to change in the future.

REPORT FOLDER	REPORT TITLE
Storage Reports - Host and Application Storage Reports (continued)	Host Filesystem Storage Utilization Trend - Provides filesystem storage utilization rate for a set of hosts (grouped by customer, facility or device group), has changed over time and is projected to change in the future. Host Filesystem Storage Allocation Trend - Provides allocated and used filesystem storage for a set of hosts (grouped by customer, facility or device group), has changed over time and is projected to change in the future. Host Reclaimable Storage Overview - Provides capacity information grouped by hosts. Host Storage Detail- Provides detailed storage information for a selected host.

REPORT FOLDER	REPORT TITLE
Storage Reports - Database Storage Reports	Tablespace Capacity and Utilization Overview - Lists tablespaces and their capacity and utilization information, grouped by database. Database Utilization Trend - Provides how utilization information for a set of databases has changed over time and is projected to change in the future. Database Allocation Trend - Provides how allocated and used capacity for a set of databases has changed over time and is projected to change in the future. Database Capacity and Utilization Trend Data - Provides detailed capacity and utilization trend data for a set of databases. Tablespace Utilization Trend - Provides how utilization for a set of tablespaces within a specific database has changed over time and is projected to change in the future. Tablespace Allocation Trend - Provides how allocated and used capacity for a set of tablespaces within a specific database has changed over time and is projected to change in the future. Tablespace Capacity and Utilization Trend Data - Provides detailed capacity and utilization trend data for a set of tablespaces.
Storage Reports - Storage Array Reports	Array Inventory- Provides basic inventory information and storage statistics for SAN storage arrays and NAS filers. Array Capacity & Utilization Overview - Provides summary capacity & utilization statistics for SAN storage arrays and NAS filers, grouped by Customer, Facility or Device Group if desired. Storage Allocated to Hosts Unmanaged By ASAS - Provides summary of storage capacity allocated to unmanaged hosts. Array Detail -Provides a detailed inventory of storage-related information pertaining to a specific storage array or filer.

REPORT FOLDER	REPORT TITLE
Storage Reports - Storage Switch and Fabric Reports	Zone Inventory - Provides the zone configuration for a specified zone set.
Process Automation Reports	PAS Run History Summary By Device - Provides device impact for PAS workflows sorted by device. PAS Run History Summary By Flow - Provides device impact for PAS workflows sorted by flow. PAS Run History Details By Device - Provides device impact for PAS workflows sorted by device. PAS Run History Details By Flow - Provides device impact for PAS workflows sorted by workflow.

User Permissions

Reports are controlled by the user's permissions to access the data. If a user does not have permissions to view a set of servers, those servers will not display in a report run by that user.

Launching the Reports Feature

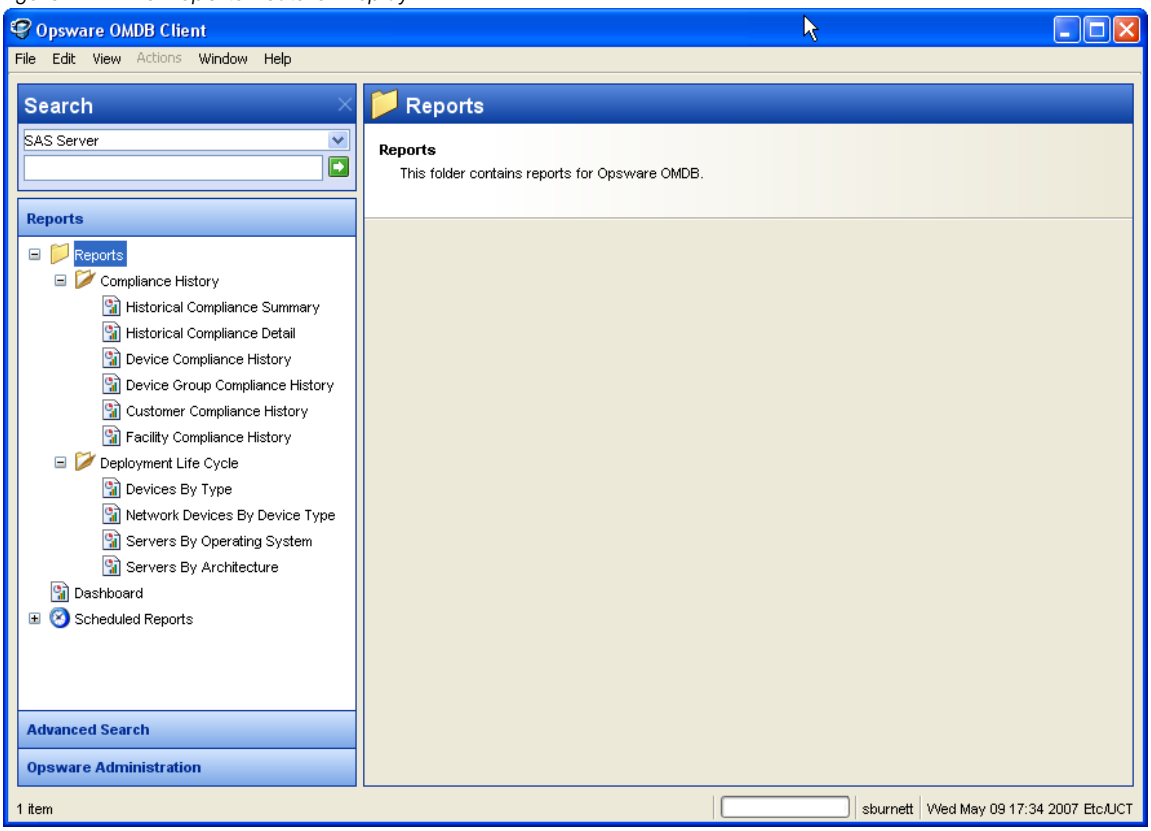
To launch the Reports feature, perform one of the following steps:

- From the Navigation pane, select **Reports**.
- From the **View** menu, select **Reports ➤ Dashboard**.
- From the **View** menu, select **Reports ➤ Reports**.
- From the Navigation pane, select **Scheduled Reports**.

Reports Display

The Reports feature display consists of a Search pane, a Dashboard, Scheduled Reports, report folders, and report parameters.

Figure 2-1: The Reports Feature Display



Search Pane

In the Reports feature, you can use the OMDB Client Search feature to find reports by defining specific filter criteria. You can save a search as a report definition and create custom reports.

Dashboard

The Dashboard provides a display of selected reports. See "Overview of Dashboard" on page 57 for more information.

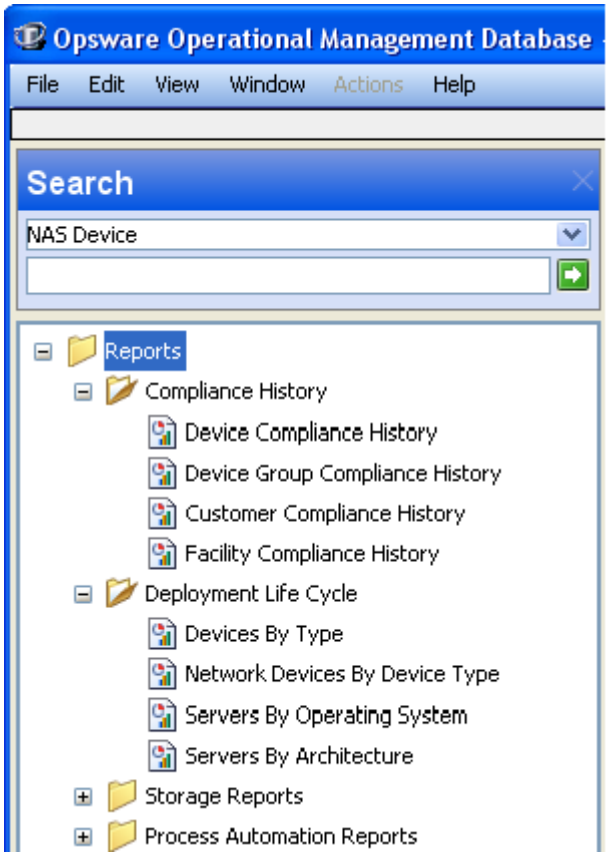
Report Folders

Reports are organized in the following folders according to regulatory or IT best practice standards:

- **Compliance History**: This folder contains reports about compliance for software policies, audit policies, and patch policies by servers, customer, and facility.
- **Deployment Life Cycle**: This folder contains reports about attributes of servers and network devices.
- **Storage Reports**: This folder contains reports about attributes of storage servers and arrays.
- **Process Automation Reports**: This folder contains process automation reports.
- **Custom Reports**: This folder contains any custom reports you have created. If no custom reports exist, then the Custom Reports folder is not present. For more information on creating custom reports, see ““OMDB Custom Reports” on page 65.

- Figure 2-2 illustrates the Report folders in the Navigation pane, including the reports you will find in each folder.

Figure 2-2: Report Folders



Report Parameters

Many reports require input parameters in order to be run. For reports that require parameters, you can run the report with its default parameter values or modify the parameter values. If you want to run a report that includes or excludes certain servers, customers, or hardware models, you need to specify this criteria in the report parameters. See "Running a Report" on page 45.

Running a Report

To run a report, perform the following steps:

1. From the Navigation pane, select **Reports**.
2. Expand the Reports folder and then expand Compliance History.
3. Select one of the reports listed in the folder.
4. If there are no report parameters in the Content pane, click **Run**.
5. If there are report parameters in the Content pane, you can either use the default parameters or change them:
   - To use the default report parameters, click **Run** to run the report.
   - To change the report parameters, see "Modifying Report Parameters" on page 45.

Modifying Report Parameters

You can modify the default parameters of a report. If you modify the parameters of a report, your changes become your default settings for that report. To modify the default parameters and run a report that includes certain servers, customers, hardware models, and so on, perform the following steps:

1. (Optional) Select the date.
2. (Optional) Select the interval.
3. (Optional) You can select Use Relative Dates to set the date and interval as relative to when the report is run in the future. See "Setting the Use Relative Dates Parameter" on page 46.
4. In the drop-down list for (the Server, Customer, Model, and so on), select one of Contains, Equals, Begins With, or Ends With.
5. (Optional) Click the ellipsis (...) button to the right of the [Any Value] fields to open the Select Values window.
6. In the Select Values window, select a value in the Available or Selected pane and then use the directional buttons to include it in or exclude it from your search criteria.
7. Click **OK** to save your changes.
8. Click **Run** to run the report.

If data cannot be found to run the report, "No records to display!" displays.

Setting the Use Relative Dates Parameter

The Use Relative Dates parameter sets the date and interval as relative to when the report is run in the future. Relative dates are calculated in absolute dates offset from the current date. For example, you run a report on October 26 of this year, and select the date and interval of the report to run from October 24 to October 25. Scheduling this report to run in the future without selecting Use Relative Dates will present the results for October 24 to October 25 of this year. Selecting Use Relative Dates causes the report to present the results of yesterday and the day before yesterday, relative to whenever the report is run.

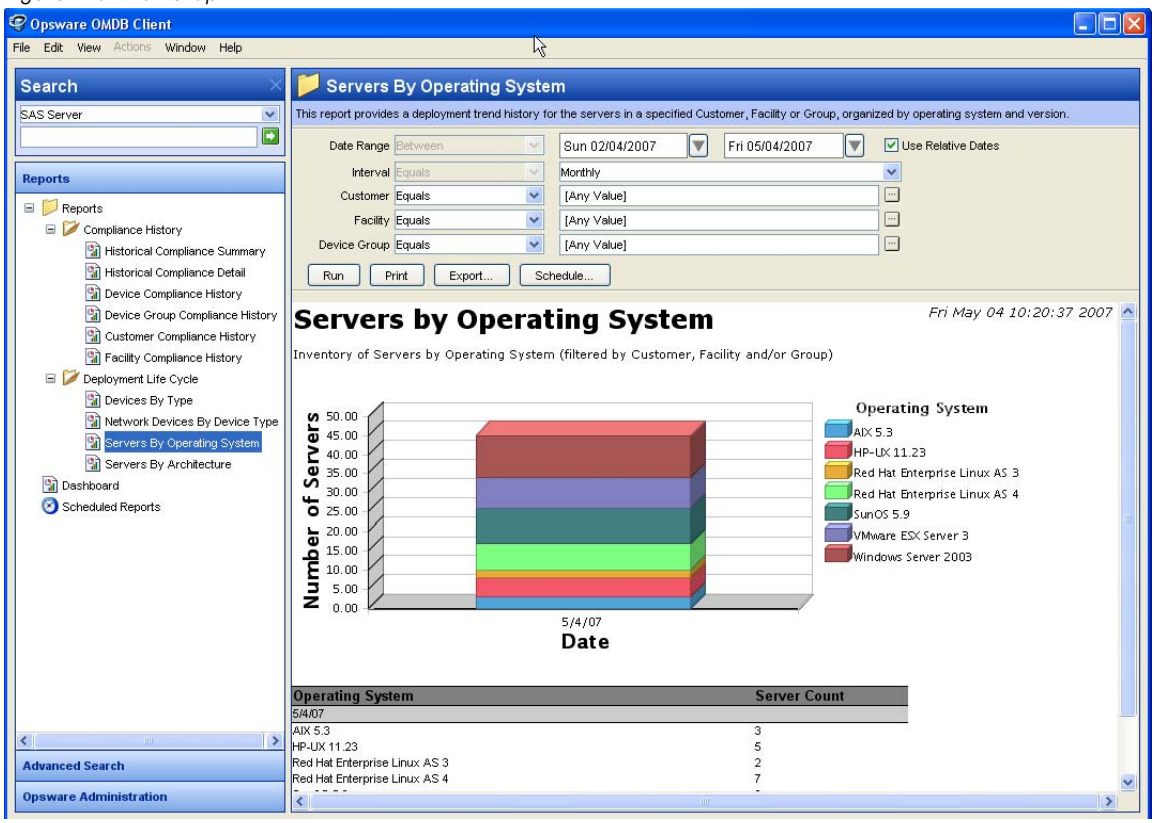
Report Results

Report results initially appear in a graphical or list view. The graphical report is an overview of available data for this report displayed in a pie chart or in a bar graph.

Graphical Report

A graphical report is a bar graph or a pie chart. See Figure 2-3 for an example.

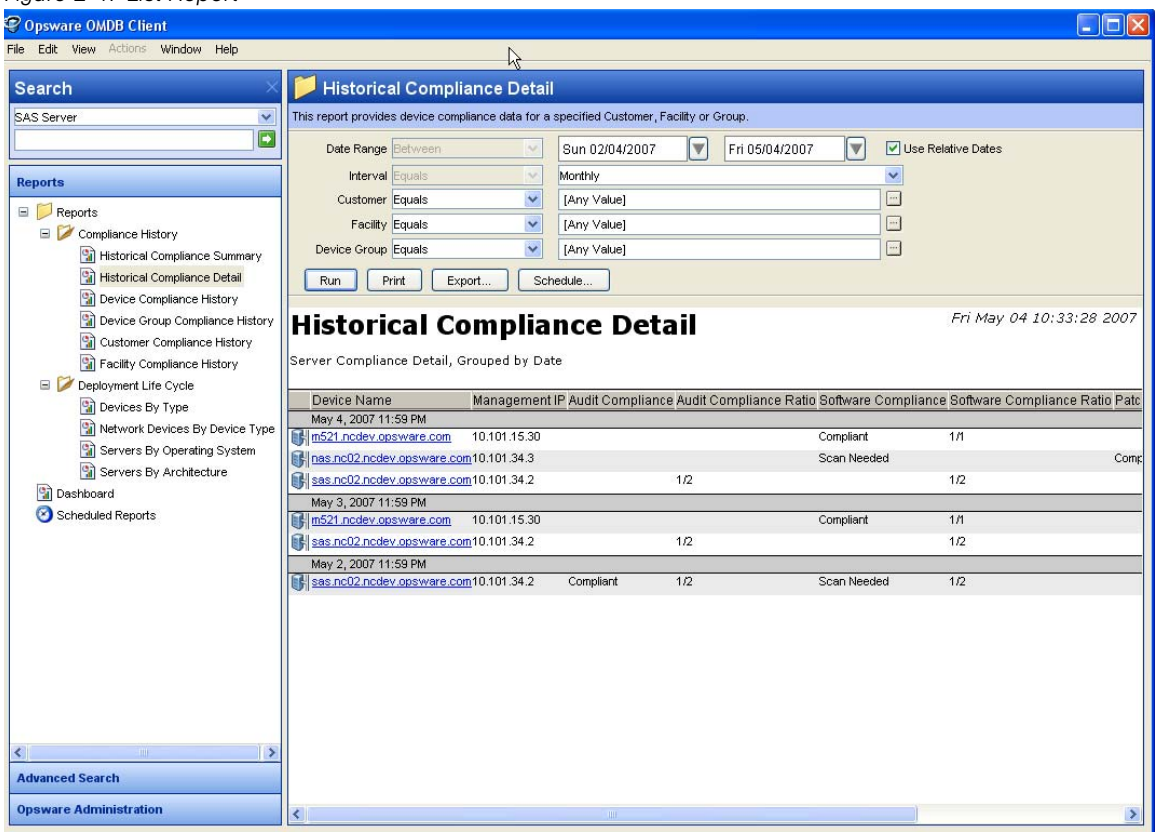
Figure 2-3: Bar Graph



List Report

A list report is a tabular display of information. Double-click on a row in the list, such as a server, audit, or policy, for more detail or to perform an action. See Figure 2-4 for an example.

Figure 2-4: List Report



Exporting a Report

You can export a report for use in other applications in your environment and attach a report for email distribution. Depending on the report format, you can export a report to your local file system as an .html file, a .pdf file, or an .xls file.

To export a report, perform the following steps:

1. From the report, click **Export** to open the Save window.
2. In the Save in field, enter a location that identifies where you want to save the file to, or select from the drop-down list.

3. Select the file type.
4. Enter a file name.
5. Click **Save**.

Printing a Report

To print a report, perform the following steps:

1. From the report, click **Print** to open the Print window.
2. Use the default print options or modify them, and then click **OK**.

Saving a Search as a Report

Using the OMDB search engine you can generate rich SQL queries and save them as BIRT reports. In this example, you will use the OMDB search engine to look at the SAS Server configuration items in the enterprise and save the search parameters as a report.

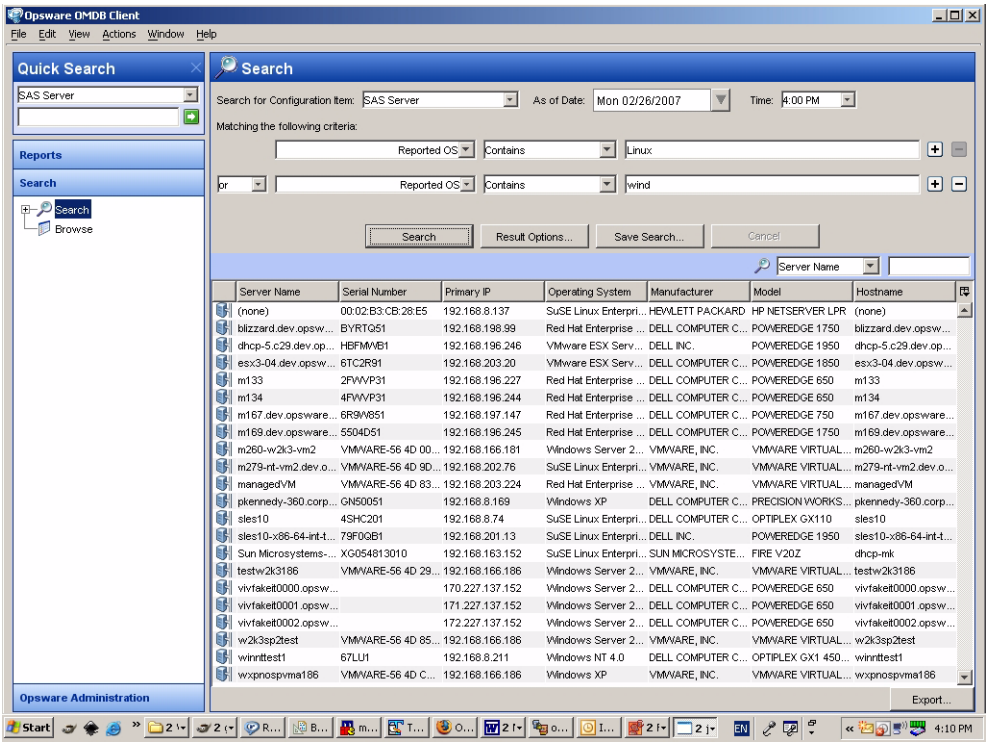
To customize the report definition file you create in this task, see “Editing a Report Definition File” in Chapter 4, “OMDB Custom Reports”.

To perform a search and save that search as a report, perform the following steps:

1. In the OMDB Client, in the Search pane, select **Advanced Search ➤ New Search.**
2. Select the SAS Server configuration item from the Search for Configuration Item drop-down list.
3. To find all servers with a reported OS value of either Linux or Windows, perform the following steps:
    1. Select the Reported OS criteria and Contains from the drop-down lists.
    2. Enter `Linux` in the next field, and then click the plus (+) button.
    3. Select or from the drop-down list.
    4. Select Reported OS criteria from the drop-down list.
    5. Select Contains criteria from the drop-down list.
    6. Enter `wind` in the next field.

4 Click **Search** to generate the screen illustrated in Figure 2-5.

Figure 2-5: Search Screen

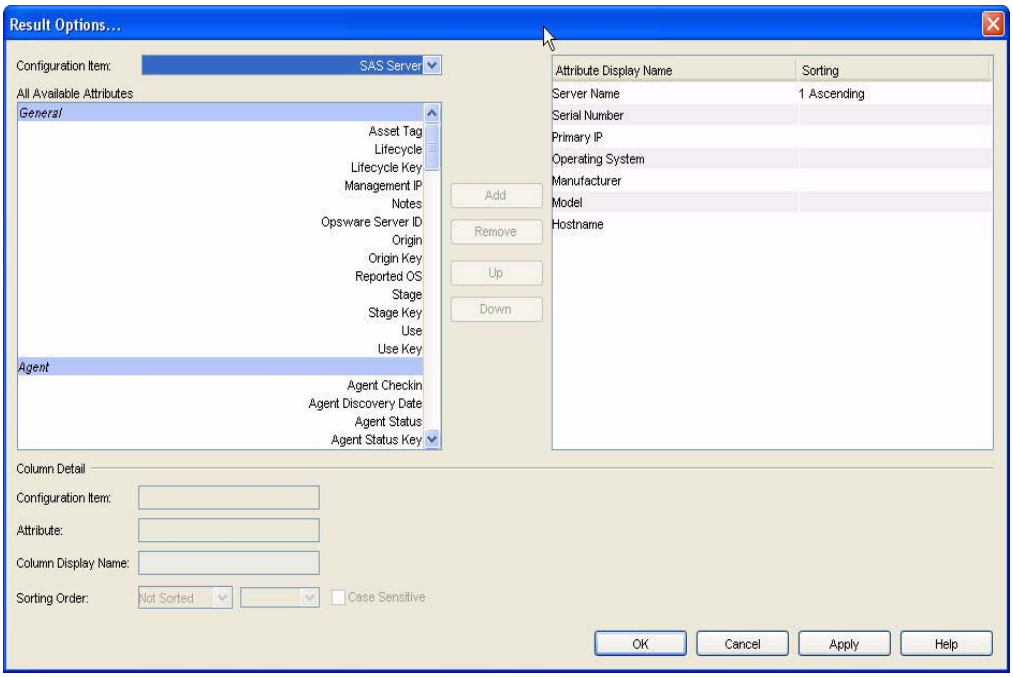


These results are sorted by the first column, Server Name.

5 Click **Result Options** to specify a different sort priority.

The Result Options window shown in Figure 2-6 allows you to select Attributes to sort, and to set the order in which each is considered.

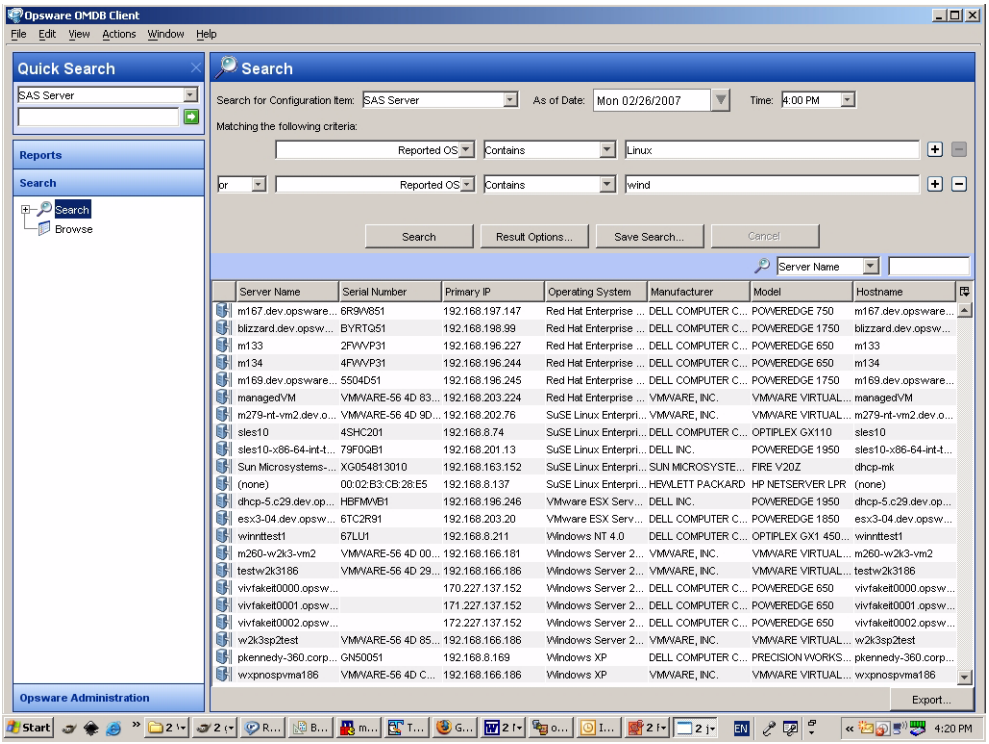
Figure 2-6: Sort Order



6. In the Attribute Display Name column, select Operating Systems.
7. In the Sorting Order drop-down list, select 1.
8. Click **OK**.

The sorted results of this modified search appear in Figure 2-7 below. Red Hat precedes SuSE, which is followed by VMware, then is followed by the Windows family of operating systems.

Figure 2-7: Results Sorted by Operating System



You can assign a name to the selection criteria used for this search, and save it as a report. At a later date, you could select the report from the OMDB Client and run it again.

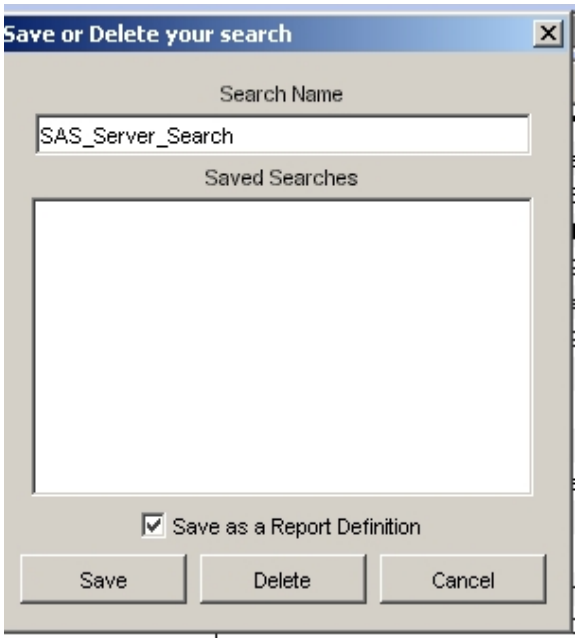
You can also save this search as a BIRT report. Doing so will allow you to open the report in BIRT to edit its appearance and functionality.

9 Click **Save Search**.

10 Save the search with a descriptive name, so that you can run it in the future from the OMDB Client. In the Search Name field shown in Figure 2-8, enter a Search Name, such as `SAS_Server_Search`.

11 Select Save as a Report Definition.

Figure 2-8: Save or Delete Your Search



12 Click **Save**, and then choose a directory to save the `SAS_Server_Search.rptdesign` file to.

Scheduling a Report

You can schedule a report to run at a specified time, and to repeat at intervals. The report can be emailed to one or more recipients when it runs.

To schedule a report, perform the following steps:

1 From the report, click **Schedule** to open the Scheduled Report Options window shown in Figure 2-9.

2 In the Schedule Name field, enter the name. The default value is the report type name.

3 Select the frequency, either Once, Daily, Weekly, or Monthly.

4 (Optional) Select the options available for Daily, Weekly, and Monthly, as appropriate.

5 Set the Start Time.

6 Set the Start Date.

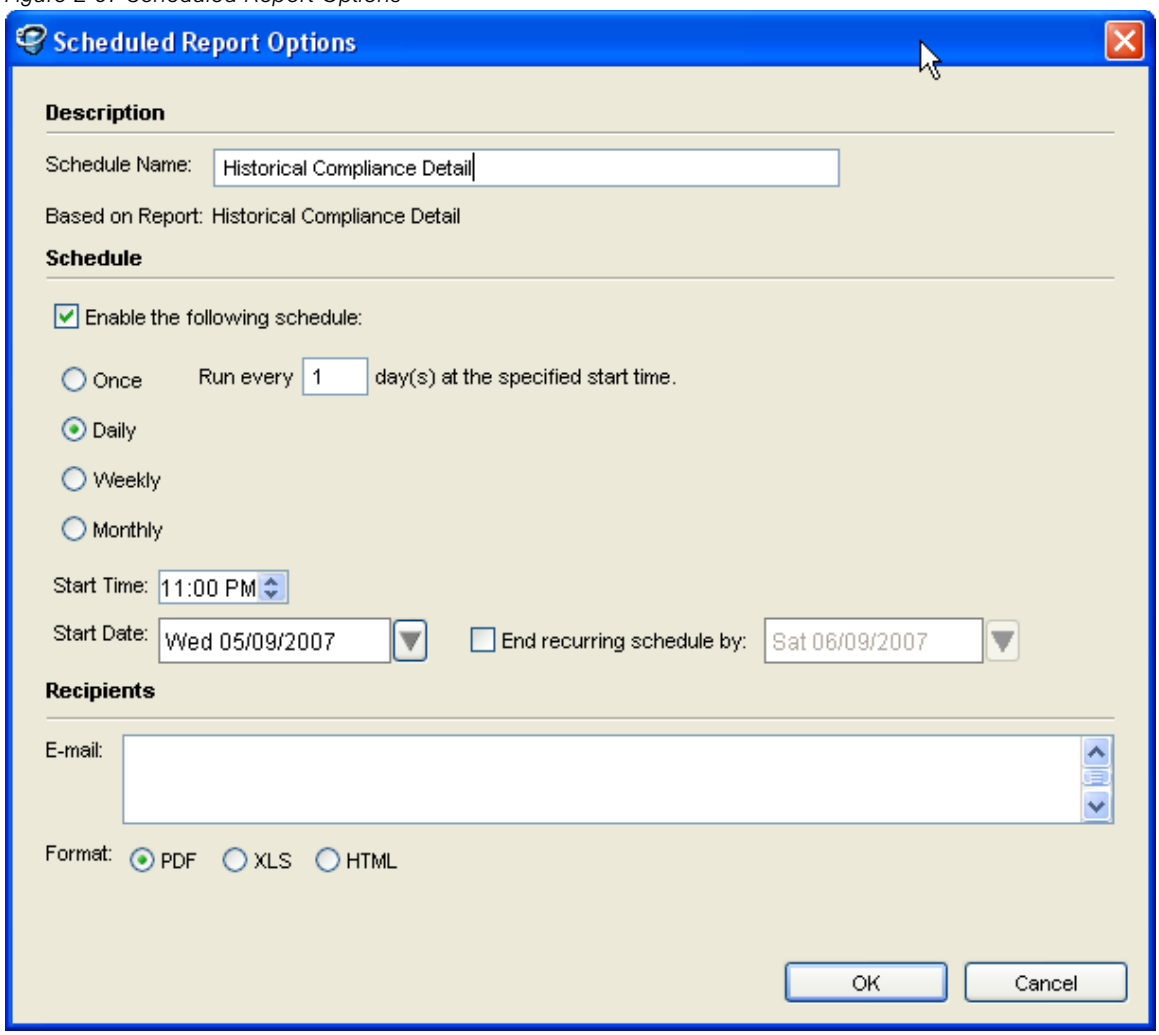
7 (Optional) Select End recurring schedule by, and then set the end date.

8 In the Recipients field, enter one or more email addresses. If you are entering, multiple addresses, the addresses can be separated by a space, comma, semicolon, or a Return.

9 Select a format for the report output.

10 Click **OK**.

Figure 2-9: Scheduled Report Options



Setting Scheduled Report Options

For scheduled reports an Administrator can set the following options:

- Maximum number of scheduled reports each user can enable
- Number of scheduled reports concurrently processed by server

The 'Maximum number of scheduled reports each user can enable" option allows an user only to enable the number of reports as set by the administrator. This option does not prevent the user from creating an unlimited number of scheduled reports.

An administrator can lower the number of scheduled reports to below the number of scheduled reports a user currently has configured. The next time the user updates or creates a scheduled report, the user will need to disable some of their scheduled reports down to the current maximum number of scheduled reports. This option also will not allow the user to save changes to a scheduled report if they have already matched the maximum number of scheduled reports.

The "Number of scheduled reports concurrently processed by server" option enables an Administrator to monitor that the server that processes scheduled reports are running smoothly. This setting is designed to keep the server from crashing due to an excessive number of reports being scheduled at the same time.

In the event that there are more scheduled reports scheduled to run at a specific time than specified in this value, then the server will process the scheduled reports in batches of the size specified in this value. Therefore, sometimes reports may not run at the time as specified by the user. Running some reports may be delayed due to server load.

To set the options for scheduled reports, perform the following steps:

1. In the OMDB Client, from the Navigation pane, select **Opsware Administration ➤ Scheduled Report Options**. The Scheduled Report Options options appears in the Content pane.
2. Enter the value for the maximum number of scheduled reports each user can enable option.
3. Enter the value for the number of scheduled reports concurrently processed by server.
4. Click **Save** to save the Scheduled Report options.

Chapter 3: OMDB Dashboard

IN THIS CHAPTER

This section discusses the following topics:

- Overview of Dashboard
- Viewing the OMDB Dashboard
- Setting Dashboard Options

Overview of Dashboard

The OMDB Dashboard displays useful summary type OMDB reports allowing you to view important reports on a daily basis. It contains one or more of the following summary reports in a graphical format:

- Devices by Type
- Servers by Operating System
- Network Devices by Type
- Servers by Architecture

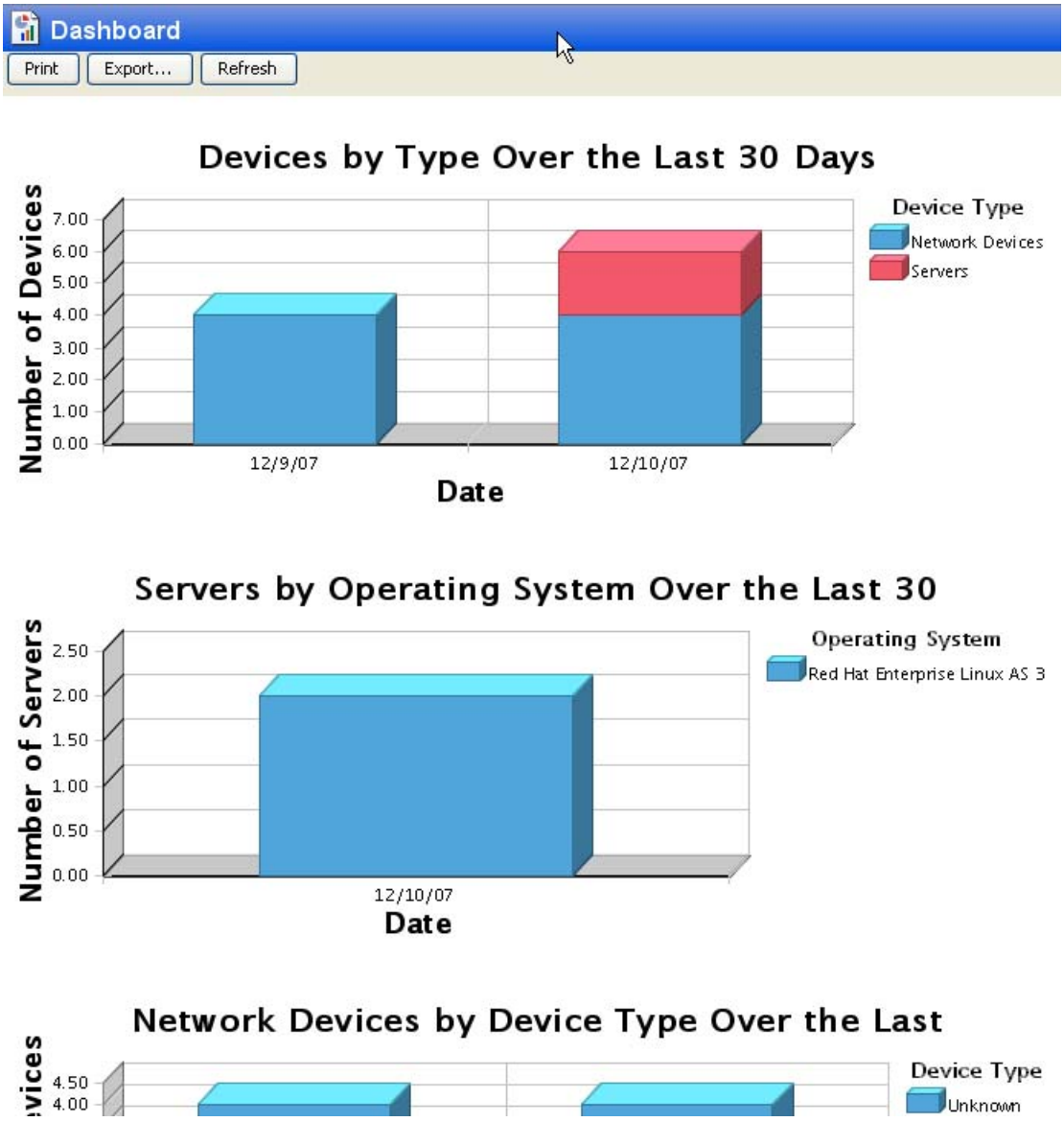
You can drill down to the summary report to view the complete report in detail. In the Dashboard, you can perform the following actions on the summary reports:

- Print reports
- Export OMDB report results as .html, .pdf, or .xls files
- Drill down the summary report to view the complete report in detail
- Perform action on report results

By default, the Dashboard contains the following five summary reports as shown in Figure 3-1:

- **Compliance % Over the Last 30 Days**: This report displays the compliance history of servers and network devices over the last 30 days at daily intervals.
- **Devices by Type Over the Last 30 Days**: This report displays the devices (servers and network devices) deployed over the last 30 days at daily intervals.
- **Servers by Operating System Over the Last 30 Days**: This report displays the servers organized by operating system and version over the last 30 days at daily intervals.
- **Network Devices by Type Over the Last 30 Days**: This report displays the network devices (such as routers, switches) deployed over the last 30 days at daily intervals.
- **Servers by Architecture Over the Last 30 days**: This report displays the servers organized by CPU architecture over the last 30 days at daily intervals.

Figure 3-1: OMDB Dashboard



In the OMDB Client, you can also create and configure your own personal Dashboard. You can select up to eight reports to be displayed in your Dashboard from the list of reports mentioned above. You can also configure your Dashboard to be in either a one-column or two-column layout. See "Setting Dashboard Options" on page 60 for more information.

When you launch the OMDB Client, by default the Search feature is displayed in the Content pane. You can also configure the dashboard options to display the Dashboard feature in the Content pane when you first launch the OMDB Client. See "Setting Dashboard Options" on page 60 for more information.

Viewing the OMDB Dashboard

To view the Dashboard in OMDB, perform the following steps:

1. In the OMDB Client, from the Navigation pane, select **Reports ➤ Dashboard**. The default Dashboard appears in the Content pane.
2. To create your personal Dashboard, see "Setting Dashboard Options" on page 60.
3. (Optional) To view the complete report in detail, click on any report in the Dashboard. The complete report appears in the Content pane.
4. (Optional) Click **Export** to export the reports displayed in the Dashboard. The Export Results window appears. Enter the location, the file name and the file type and then click **Save**. You can export OMDB report results as .html, .pdf, or .xls files.
5. (Optional) Click **Print** to print the reports displayed in the Dashboard.
6. (Optional) To perform an action on the report results, select an item from the Content pane and then right-click to select the appropriate action.

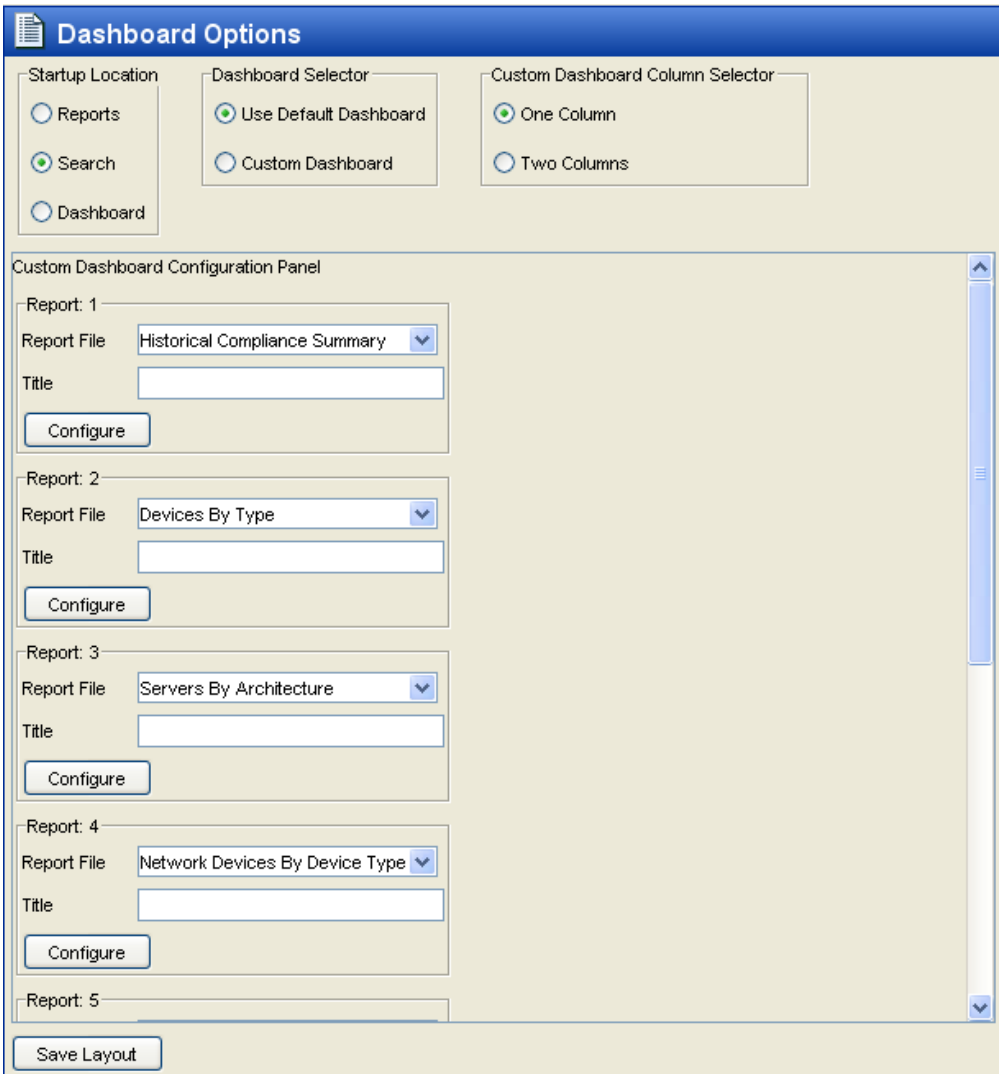
Setting Dashboard Options

In the OMDB Client, you can create and configure your own personal Dashboard. You can select up to eight reports to be displayed in your Dashboard and specify the parameter values for those reports. You can also configure your Dashboard to be in either a one-column or two-column layout.

To configure the Dashboard options, perform the following steps:

1. In the OMDB Client, from the Navigation pane, select **Opsware Administration ➤ Dashboard Options**. The Dashboard options appears in the Content pane.

Figure 3-2: Dashboard Options



2. From the Startup Location options, select an option to be displayed every time you launch the OMDB Client. You can select either Reports, Search, or Dashboard. Select the Dashboard option to display the Dashboard feature when you launch the OMDB Client.

3. From the Dashboard Selector options, select Custom Dashboard to configure your Dashboard using the reports that are available.

4. From the Custom Dashboard Column Selector options, select One Column to display the reports in a one-column format in the Dashboard. Select Two Columns to display the reports in a two-column format in the Dashboard.

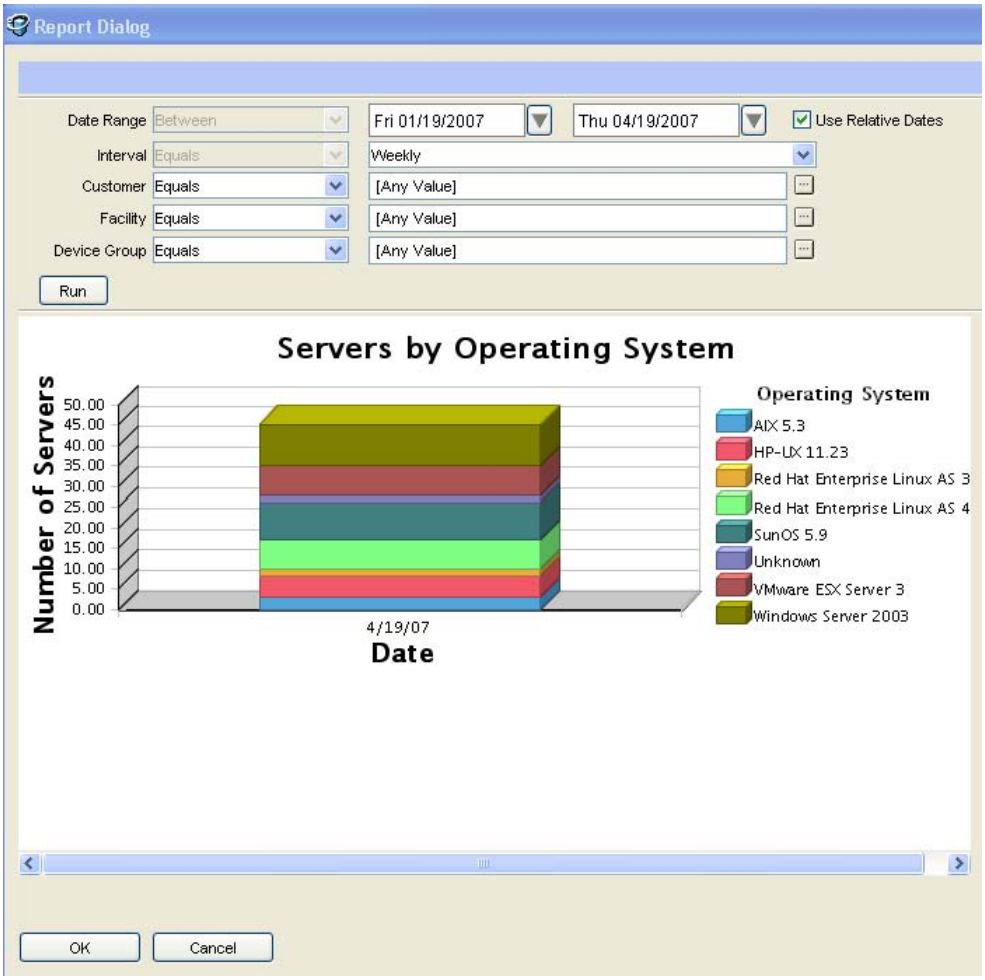
5. To configure a report in the Dashboard, perform the following steps:

Different reports have different report parameters to configure. For example, for the report "Network Devices by Device Type," you can configure the parameters such as Device Group, Vendor, and Model. For the report "Servers by Operation System", you can configure the parameters such as Customer, Facility, and Device Group.

1. From the Custom Dashboard Configuration Panel in Report 1, select a report from the Report File drop-down list.
2. (Optional) Enter the report title in the Title field, or the default report name will be used for the report title.

3. Click **Configure**. The Report Dialog window appears.

Figure 3-3: Report Dialog Window



4. From the Date Range drop-down list, select a date range to run the report.
5. From the Interval drop-down list, select the time interval to run the report. The Interval drop-down list allows you to group the data on a daily, weekly, or monthly time interval.
6. From the Customer drop-down list, specify the customer to be included or excluded in the report.
7. From the Facility drop-down list, specify the facility to be included or excluded in the report.

8. From the Device Group drop-down list, specify the device group to be included or excluded in the report.
9. Click **Run**. The report with the specified parameters is displayed in the Content pane.
10. Click **OK** to save your changes or click **Cancel** to close the window.

6 To configure more reports, repeat the steps listed in Step 5.

7 Click **Save Layout** to save the Dashboard options.

Chapter 4: OMDB Custom Reports

IN THIS CHAPTER

This section discusses the following information:

- Introduction
- Designing a Report
- Editing a Report Definition File
- Inserting a Chart
- Integrating a Custom Report into the OMDB Client
- Creating OMDB Reports
- Parameter Substitution Configuration
- Parameter Substitution of Dates
- Actionability

Introduction

The Opsware family of products is comprised of a cluster of Oracle databases, typically running on a Sun Microsystems minicomputer. These databases are continuously refreshed and updated by agents residing on the managed servers and workstations in the network.

Opsware SAS enables you to create and design reports and integrate them into the SAS Client and the OMDB Client.

This chapter presents how to use content selected from these databases and create custom reports. It explains how to create a simple SQL query, how to design a report, and how to integrate it into the Opsware OMDB user interface.

The recommended authoring environment for custom OMDB reports includes the following items:

- A file transfer tool

- An SQL query tool
- Business Intelligence and Reporting Tools (BIRT) RCP Designer (http://www.eclipse.org/birt) BIRT release 2_1_1
- BIRT library file `cmdb-data-sources.rptlibrary`
- JDBC driver file `ojbc14.jar`

Designing a Report

Begin your report design by defining its content. To define the report's content, you should determine the report's purpose, the type of information displayed, and the logical grouping of the data set. Then, you can map the content definition into the product-specific database schema by determining how Opsware should represent the data needed, the names of the tables where the data is stored, and the names of all of the fields within those tables.

Using this information you can write the SQL query that Opsware will use to generate the report. Writing the correct SQL query is the most difficult part of report creation. The standard reports contain a set of queries that are good candidates to borrow work from. The report (.rptdesign) files can be found in an installed OMDB core at `/opt/opsware/omdb/reports`. Whether borrowing from existing reports or creating original content, consider using a tool such as PL/SQL Developer to refine and optimize your SQL.

When you have optimized the SQL, you should test your SQL query to ensure that the SQL is valid and returns the expected data.

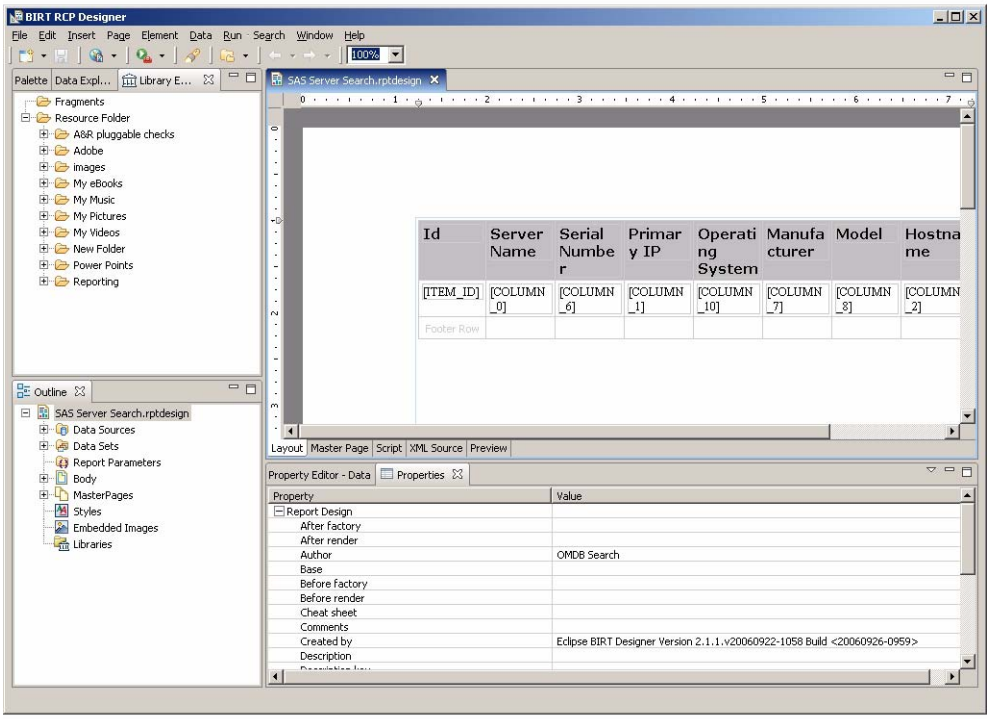
No AAA-specific considerations need to be made in your SQL. The report engine will automatically transform the SQL that you have created at runtime to constrain the report results to what the current user can see.

Editing a Report Definition File

1. In the OMDB Reports chapter, perform the task "Saving a Search as a Report".
2. Start BIRT 2.1.1. In a Windows command prompt, run the command `birt.exe`.
3. Open the `SAS_Server_Search.rptdesign` file that you just created.

As shown in Figure 4-1, the new report contains the form and content of the information you selected when defining the report. The header information is already in place.

Figure 4-1: New Report in BIRT

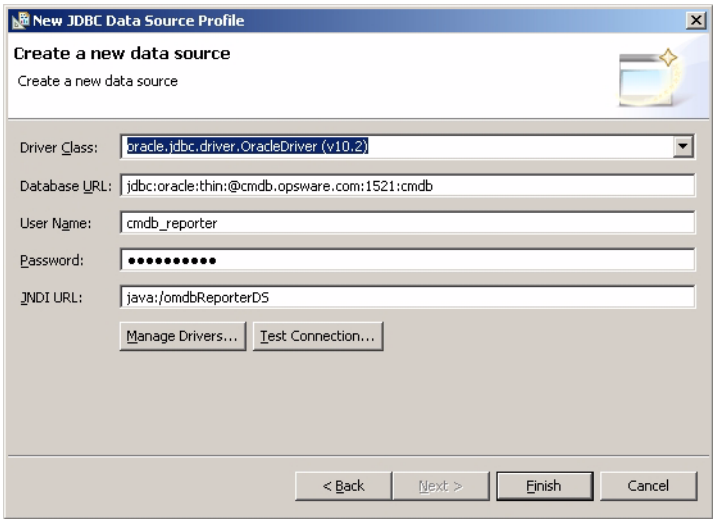


4 In the Outline pane, expand Data Sources, and then double-click the Data Source icon.

5 View the information for the new JDBC Data Source as shown in Figure 4-2.

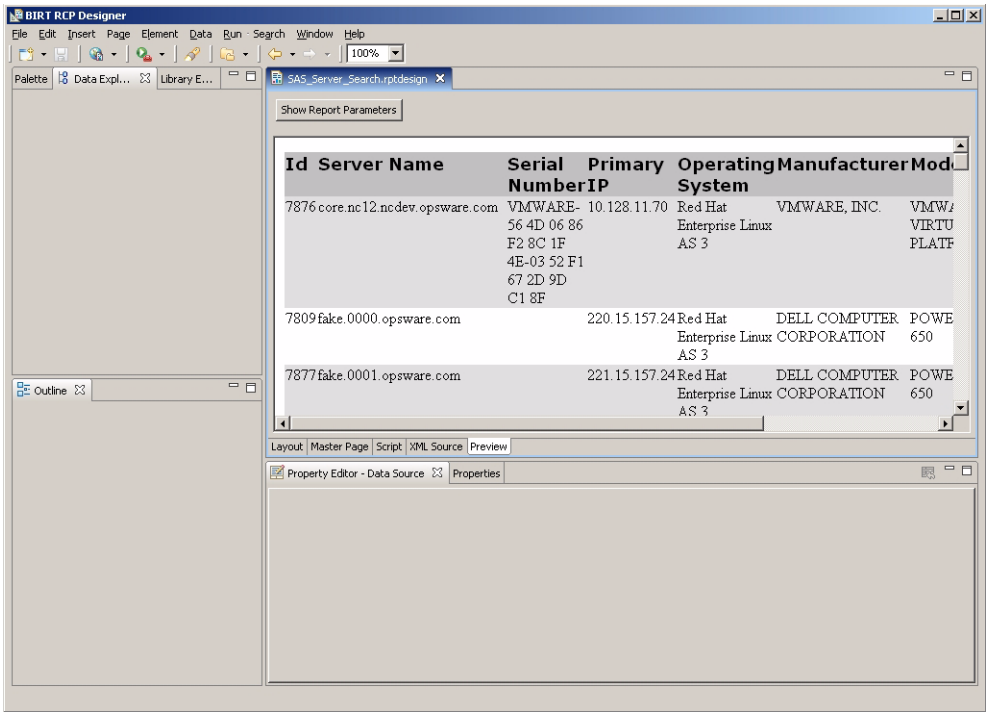
6 Click **Test Connection** to ensure that the report is connected.

Figure 4-2: JDBC Connection



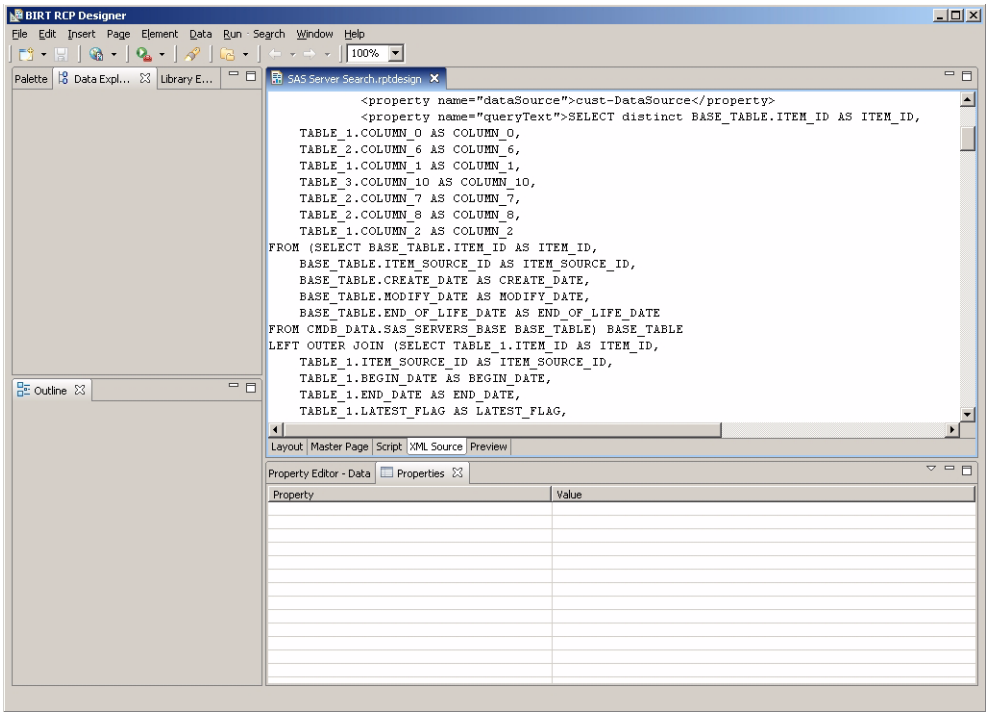
7 Select the Preview tab, and review the report.

Figure 4-3: Preview Tab



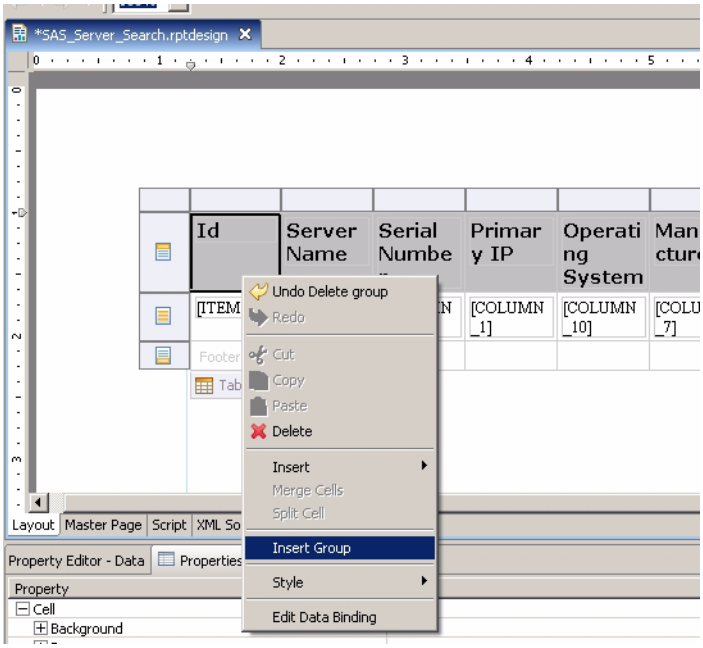
8 Click on the XML Source tab to see the SQL query that the OMDB Client generated.

Figure 4-4: XML Source Tab



9 To group the output by operating system, select the top cell in the header row, right-click and select Insert Group from the menu as shown in Figure 4-5.

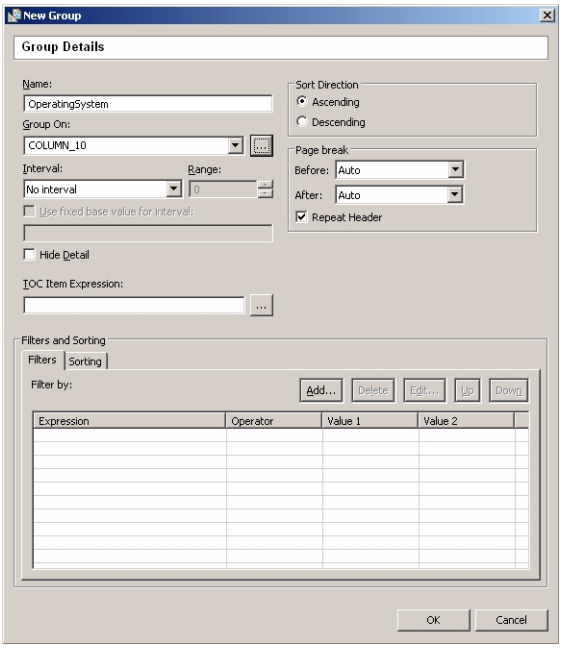
Figure 4-5: Inserting a Group



In the next window shown in Figure 4-6, you can select the column that provides the group identity.

10 Select COLUMN_10 to specify the Reported OS column.

Figure 4-6: New Group Creation



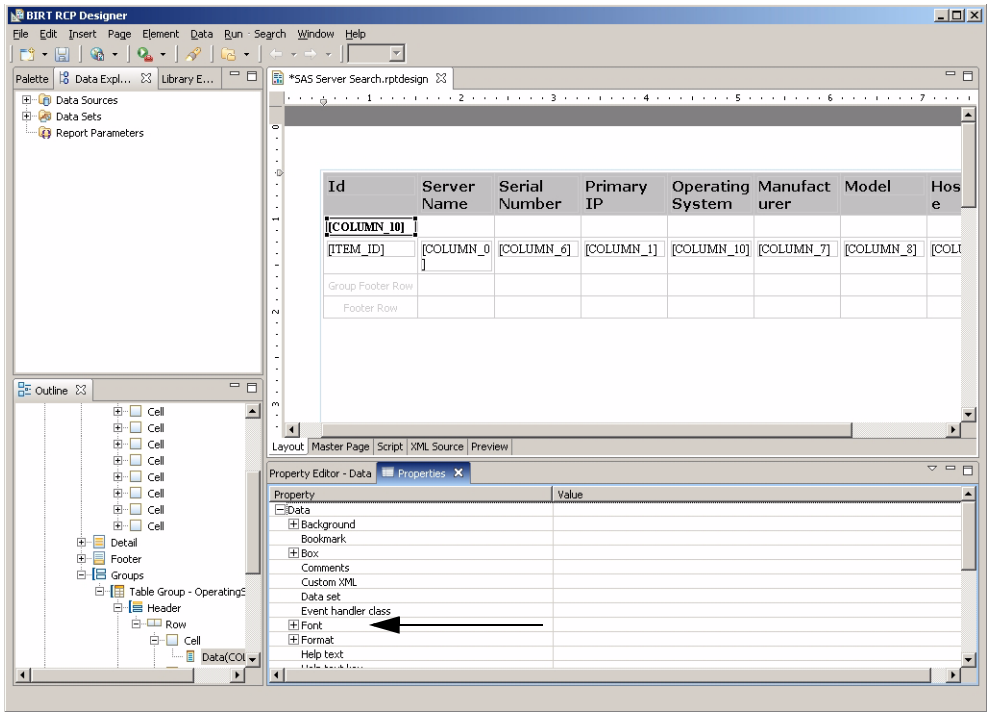
11 Click **OK**.

12 Select the Layout tab.

13 Select the Properties tab.

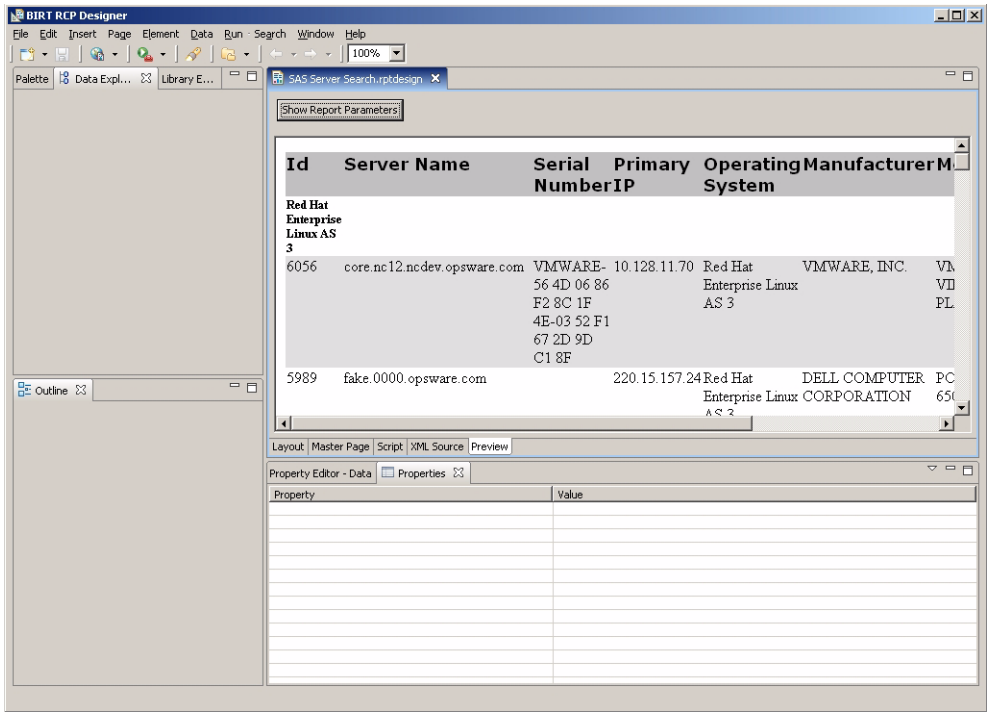
14 Select the font properties to make this field smaller and darker.

Figure 4-7: Font Properties



As shown in Figure 4-8, the report now groups the output by operating system.

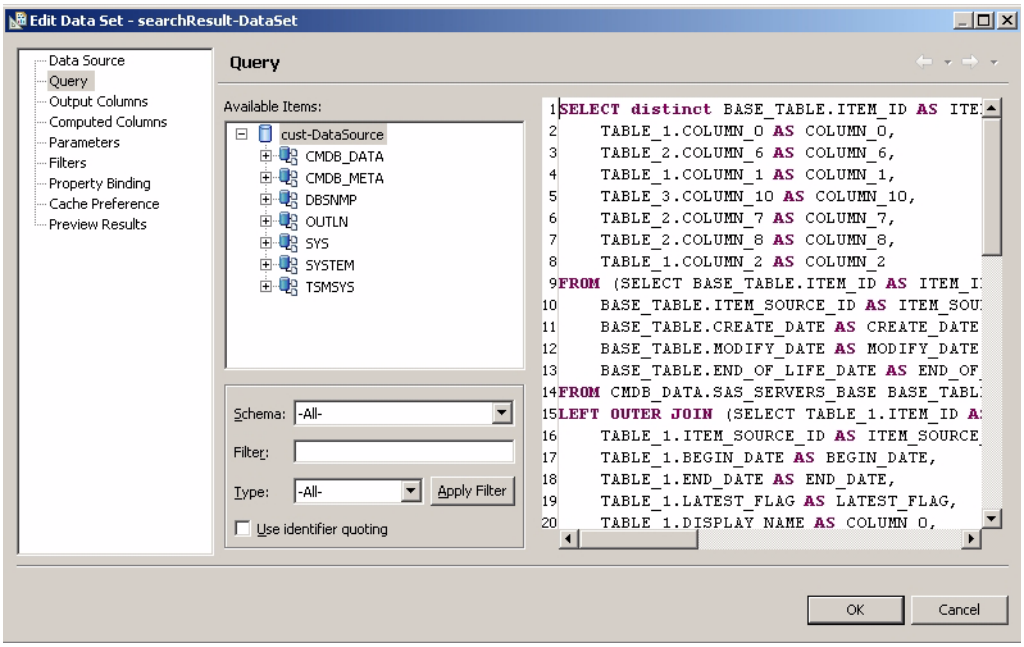
Figure 4-8: Preview of Grouped Report



Inserting a Chart

BIRT can generate a chart to visually display selected elements of the output. Figure 4-9 displays the detailed SQL query that the SAS OMDB Client created. This is the search-Result-Dataset based on the cust-DataSource data source.

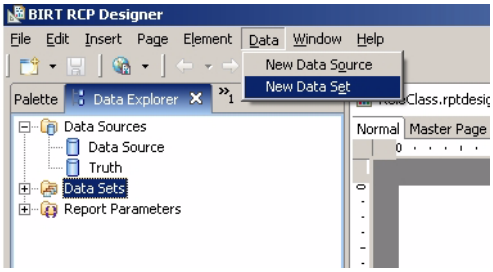
Figure 4-9: SQL Query



To create a new data set based on the same cust-DataSource data source, perform the following steps.

1 From the **Data** menu, select **New Data Set**.

Figure 4-10: New Data Set

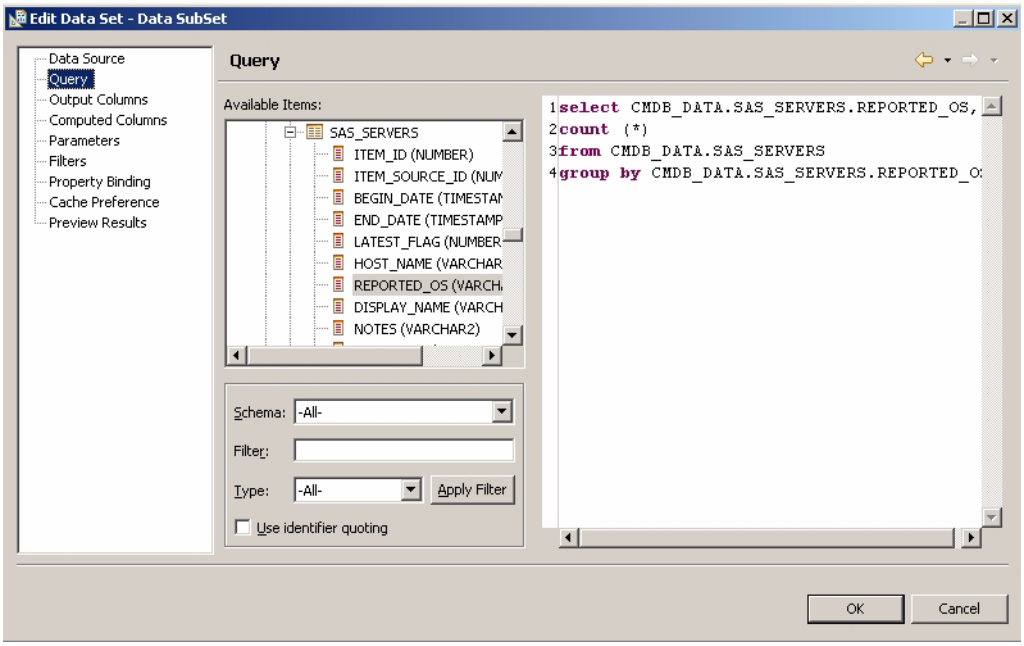


2 To learn how many instances of each operating system are currently online, in the Query pane type the SQL statements Select Count (*) From and Group By. Then, drag the desired Available Items from the middle pane to their places in the query text.

The final SQL statement is:

```
select CMDB_DATA.SAS_SERVERS.REPORTED_OS,
count (*) from CMDB_DATA.SAS_SERVERS
group by CMDB_DATA.SAS_SERVERS.REPORTED_OS
```

Figure 4-11: Data Set Query

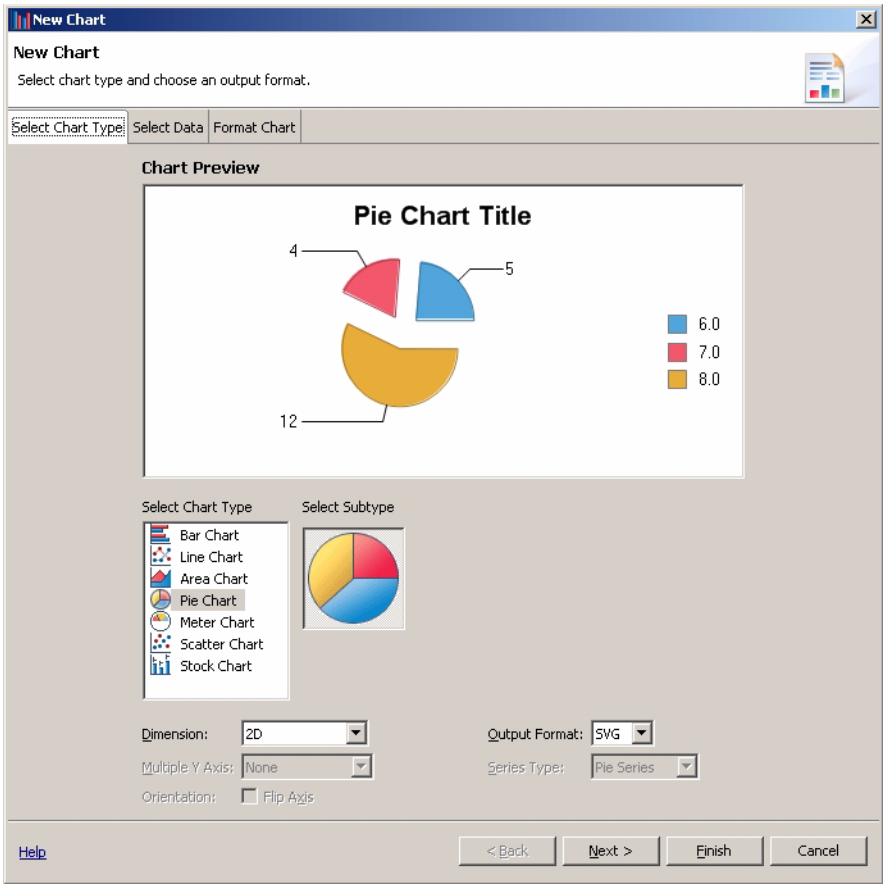


3 Click **OK**.

4 Drag the Chart icon from the Palette tab to the Layout panel.

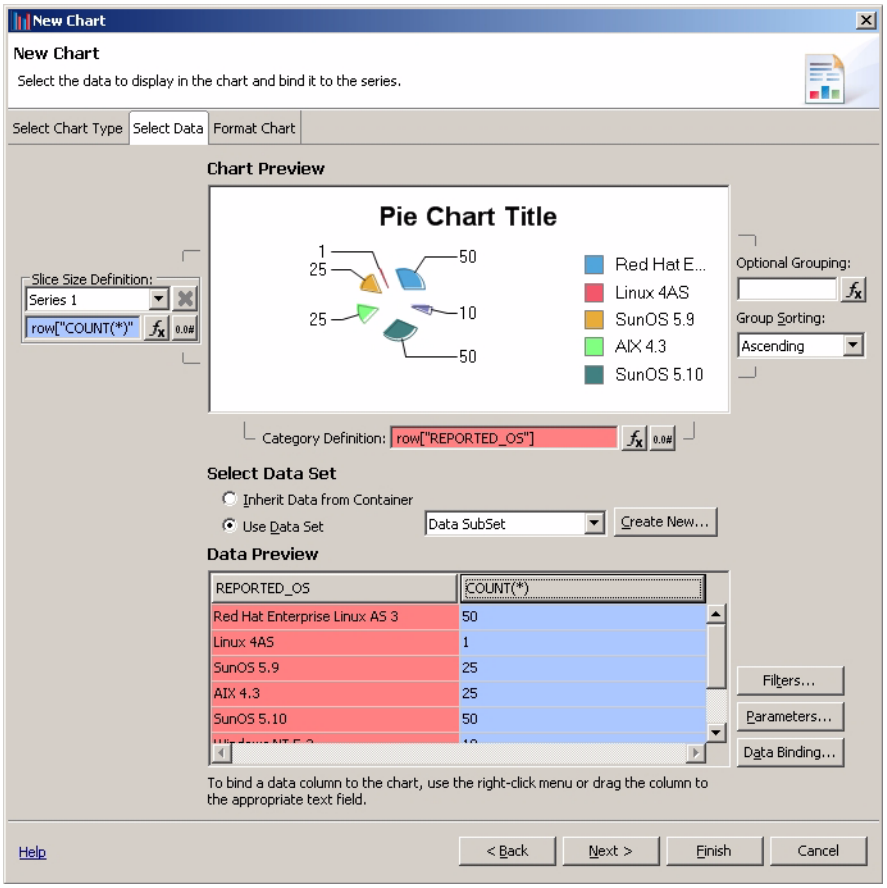
5 From **Select Chart Type** menu, select **Pie Chart**.

Figure 4-12: Chart Type



6 Click **Next**. A screen similar to Figure 4-13 appears.

Figure 4-13: New Chart



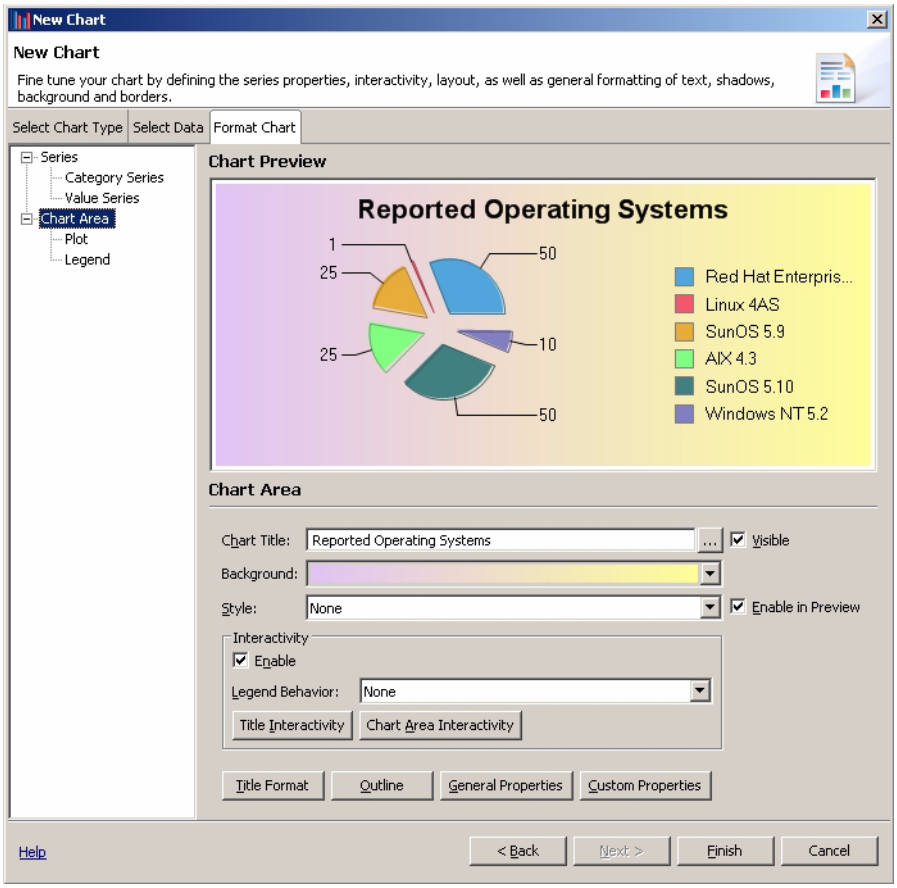
7 From the Select Data Set option, select Use Data Set, and then select Data SubSet from the drop-down list. The Data Preview pane displays the contents of the data set.

8 Drag the COUNT(*) header to the Slice Size Definition field.

9 Drag the REPORTED_OS header to the Category Definition field.

10 Click **Next**.

Figure 4-14: Report Operating Systems

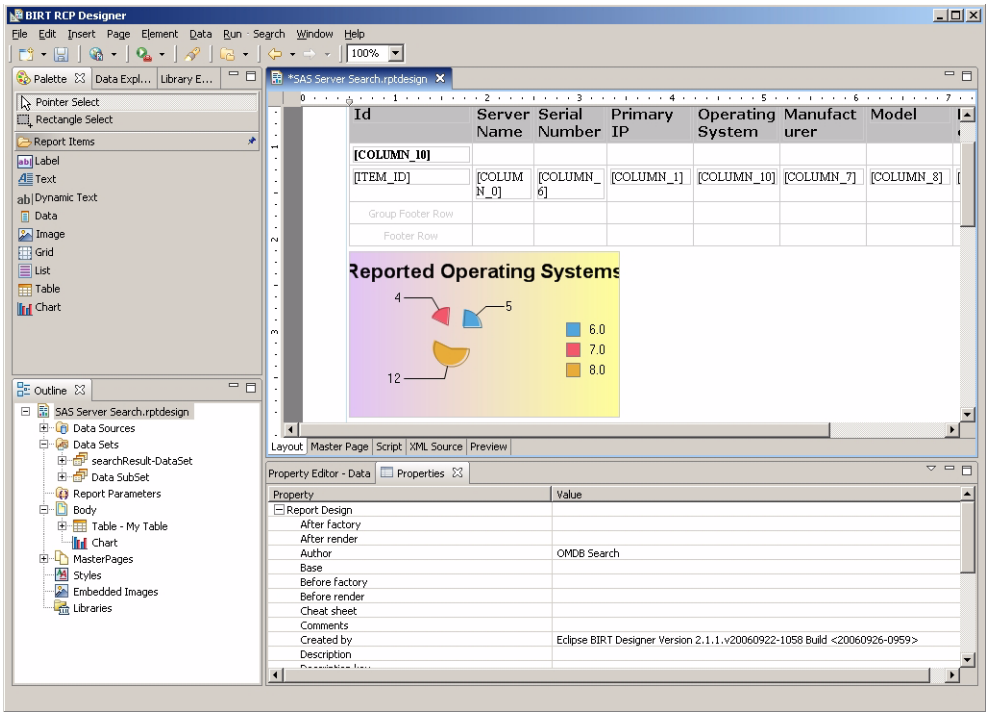


11 Select the Chart Area line to call up the input fields. You can use these to assign a chart title and to define the background.

12 Click **Finish**.

As shown in Figure 4-15, the Layout view displays an icon of the chart, rather than the chart itself.

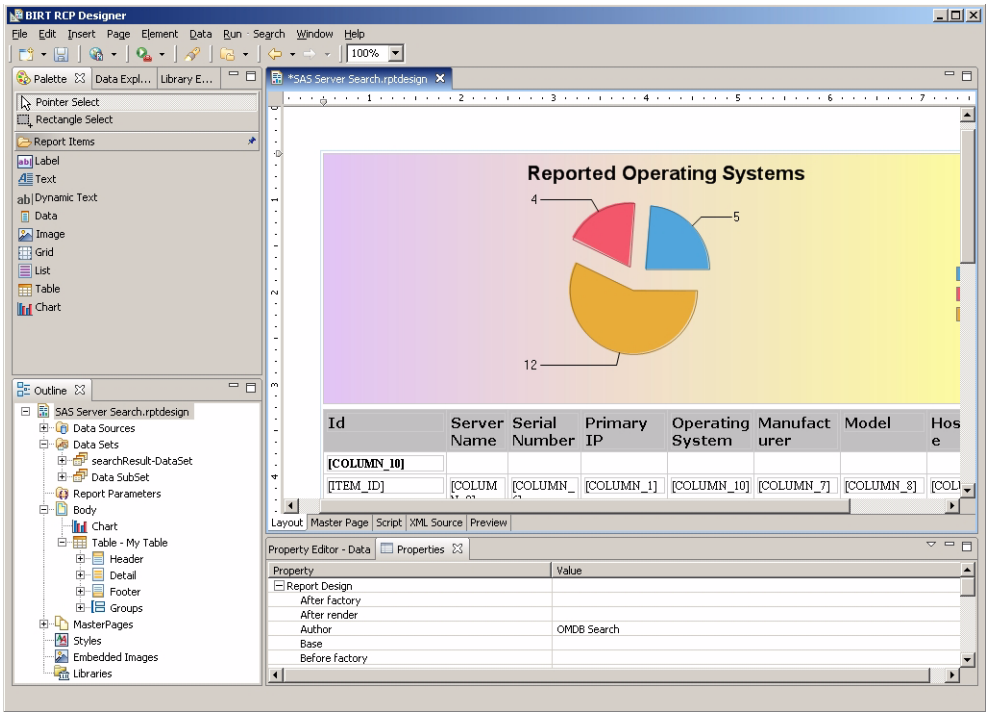
Figure 4-15: Layout View of Chart



13 Drag the chart icon to the top of the report.

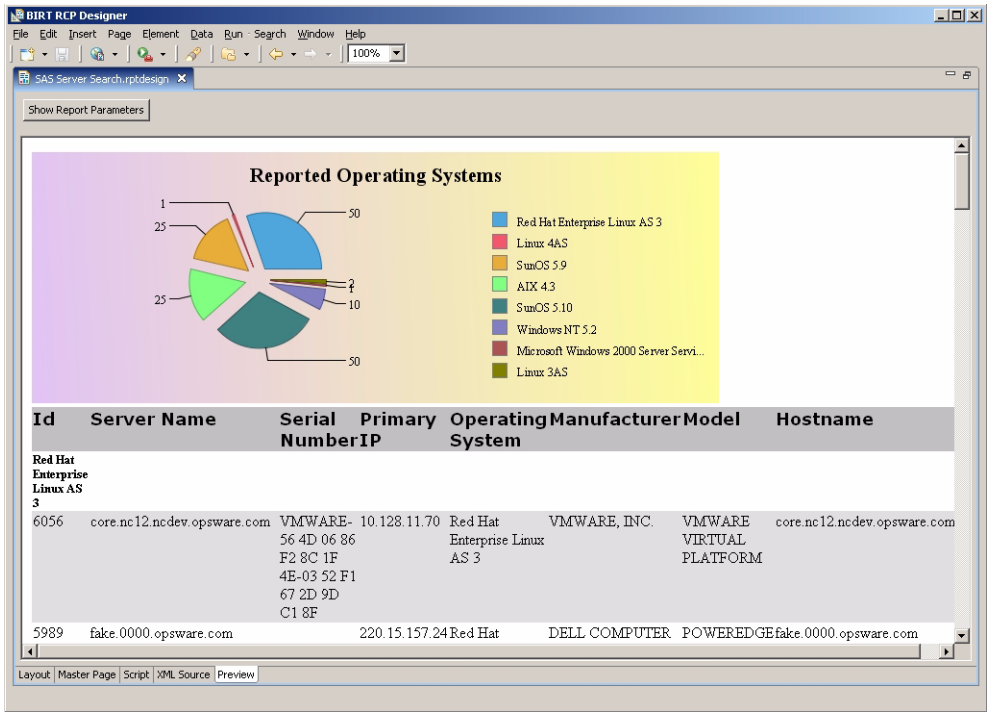
14 Pull the handles on the icon to expand it.

Figure 4-16: Chart Icon



15 Click **Preview**.

Figure 4-17: Report Preview



Integrating a Custom Report into the OMDB Client

To integrate the report into the OMDB Client, perform the following steps:

1 Copy the custom report to the `/opt/opsware/omdb/reports` directory. Repeat this step for additional cores as needed; report files are not automatically replicated.

2 To see this report listed in the OMDB Client, add it to `custom_def.xml`.

To edit `custom_def.xml` to include the report, perform the following steps:

1 Modify the custom_def.xml file in the `/opt/opsware/omdb/deploy/birt.war` directory that the OMDB Client uses to recognize, display, and invoke the reports stored on each core. If you are using WinSCP, you can double-click on the `custom_def.xml` file name to open the document for editing.

2 Insert a description of your report in the top part of the .xml file. The easiest way to do that is to copy an existing report definition, paste it in, then modify the report name, display name, and description to match your new custom report.

In the following sample text, the new report is defined in the bold text.

```
<reporting>
    <reports>
        <location>/etc/opt/opsware/occ/reports</location>
      <report name="ServerByOSChart.rptdesign">
            <display_name>ServerByOSChart_Title</display_
name>
        <description>ServerByOSChart_Desc</description>
            <parameters>
            </parameters>
        </report>
      <report name="SAS_Server_Search.rptdesign">
            <display_name>SAS_Server_Search</display_name>
        <description>SAS_Server_Search</description>
            <parameters>
            </parameters>
        </report>
```

3 In the custom_def.xml file, modify the folder section to specify where the new report will go. In the following example, we are telling the SAS Client to make the sample report available in the Compliance Reports folder.

```
  <folder name="compliance_reports">
            <display_name>complianceReportsFolderDesc</
display_name>
            <folder_reports>
    <report_name>
ServerConfigurationPolicyComplianceChart.rptdesign</report_
name>
    <report_name>SAS_Server_Search.rptdesign</report_name>
...
    <report_
name>ApplicationPolicyComplianceChart.rptdesign</report_
name>
    <report_name>
ApplicationPolicyComplianceTableByCustomer.rptdesign</
report_name>
    <report_
name>ApplicationPolicyComplianceByFacility.rptdesign</
report_name>
            </folder_reports>
            <subfolders>
```

```
    <subfolder_name>sox</subfolder_name>
        </subfolders>
      <parent>reports</parent>
</folder>
```

The `custom_def.xml` file must have user and group ownership set to `omdb:omdb` or the OMDB Client will not see it.

When you use the OMDB Client, you can view and run your new report.

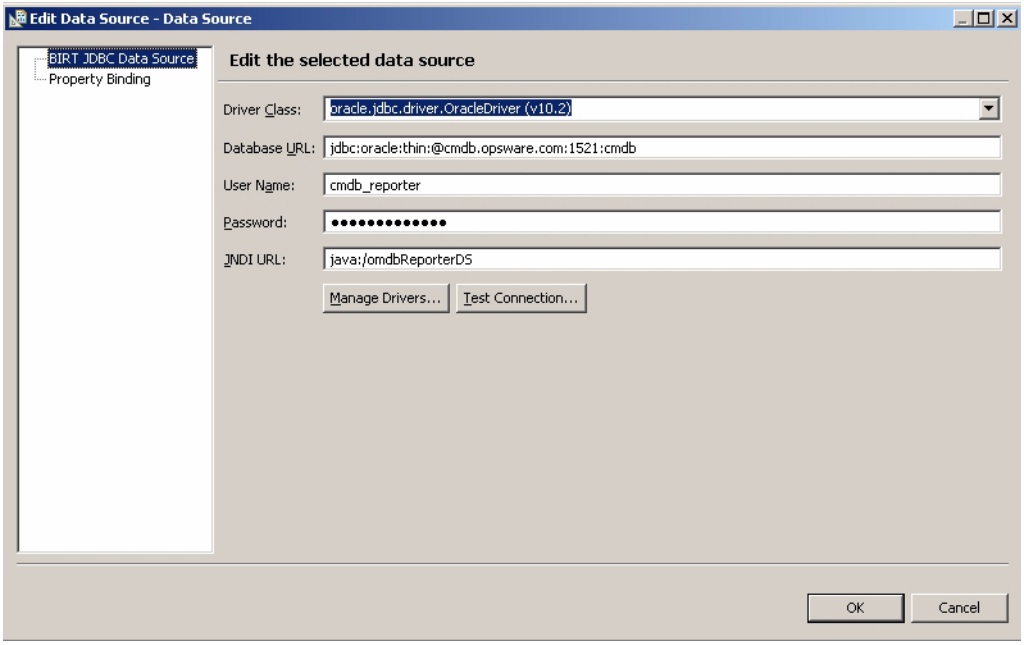
Creating OMDB Reports

To create an OMDB report, perform the following steps:

1. Launch BIRT RCP Designer.
2. Select **File ➤ New ➤ New Report**. The New Report window appears.
3. Select a directory to save the report into. The directory must contain the following two files:
   `opsw-common-reporting.rptlibrary`
   `cmdb-data-sources.rptlibrary`
   These two files are located in `/opt/opsware/omdb/reports/resources`.
4. Type the file name in the File Name field.
5. Click **Next**.
6. (Optional) Select a report template.
7. Click **Finish**.
8. Click the Library Explorer tab.
9. Expand the `cmdb-data-sources.rptlibrary` item.
10. Select `cmdb-jdbc`.
11. Drag `cmdb-jdbc` to the Outline pane, onto the Data Sources folder icon.
12. Click the Data Explorer tab,
13. Right-click **Data Source ➤ cmdb-jdbc**. The Edit Data Source window appears.
14. View the data connection in the Edit Data Source window shown in Figure 4-18.

15 To test the data connection, click **Test Connection**.

Figure 4-18: Edit Data Source



16 Create and name a new data set as shown in Figure 4-19 and Figure 4-20.

Figure 4-19: New Data Set

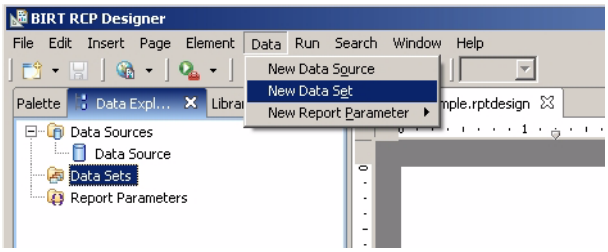
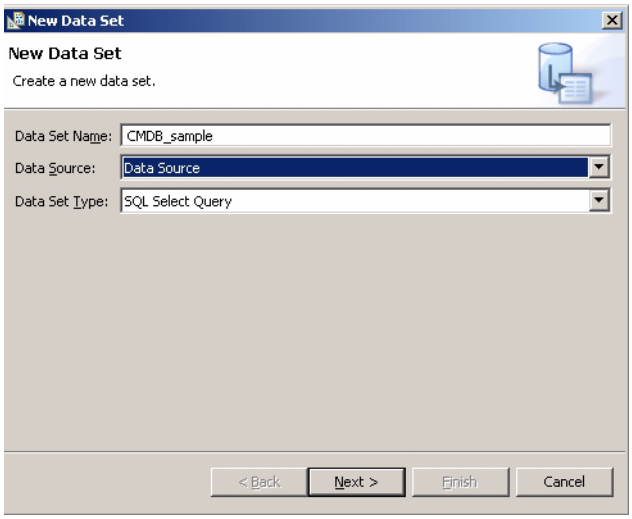


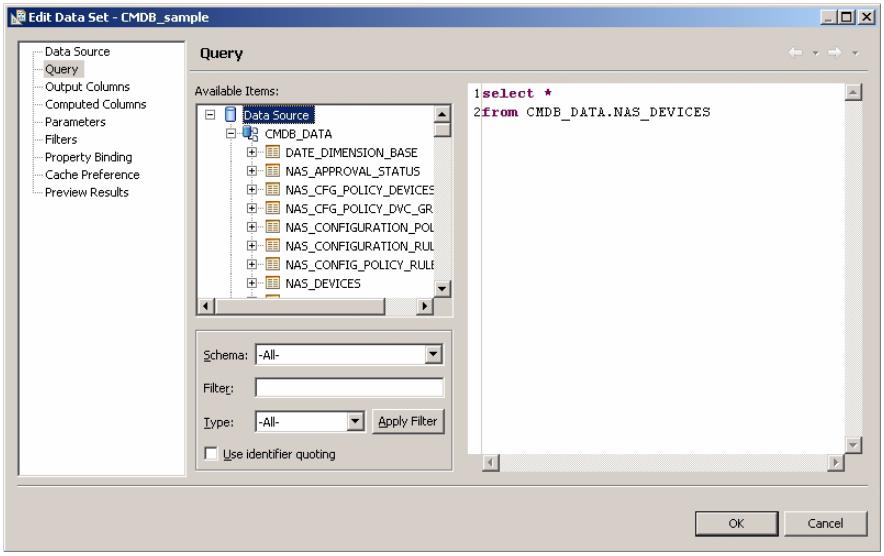
Figure 4-20: Name New Data Set



17 Click **Next**.

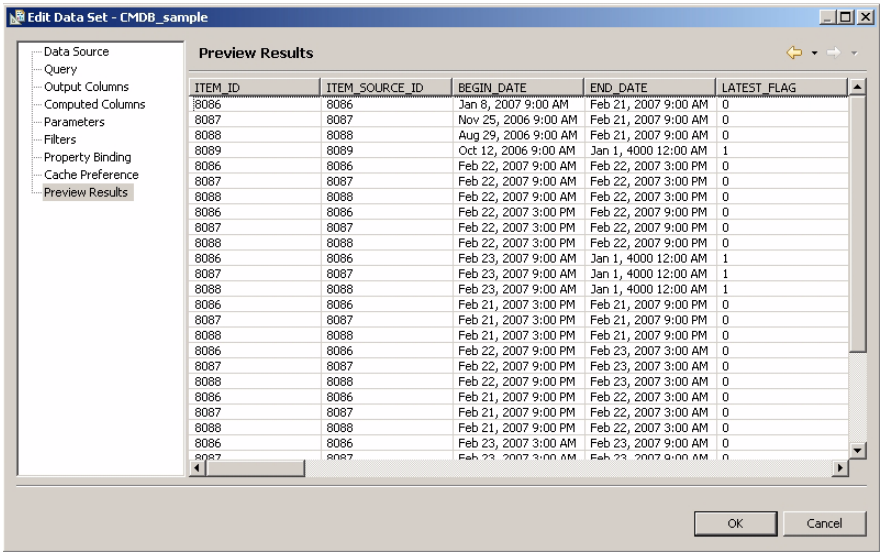
18 Create the SQL query. Drag and drop the selected data rows into the SQL panel on the right, remembering to add SQL commands, commas, and spaces, as needed.

Figure 4-21: Creating SQL Query



19 Click **Preview Results** to see if the SQL parses and runs.

Figure 4-22: Preview Results

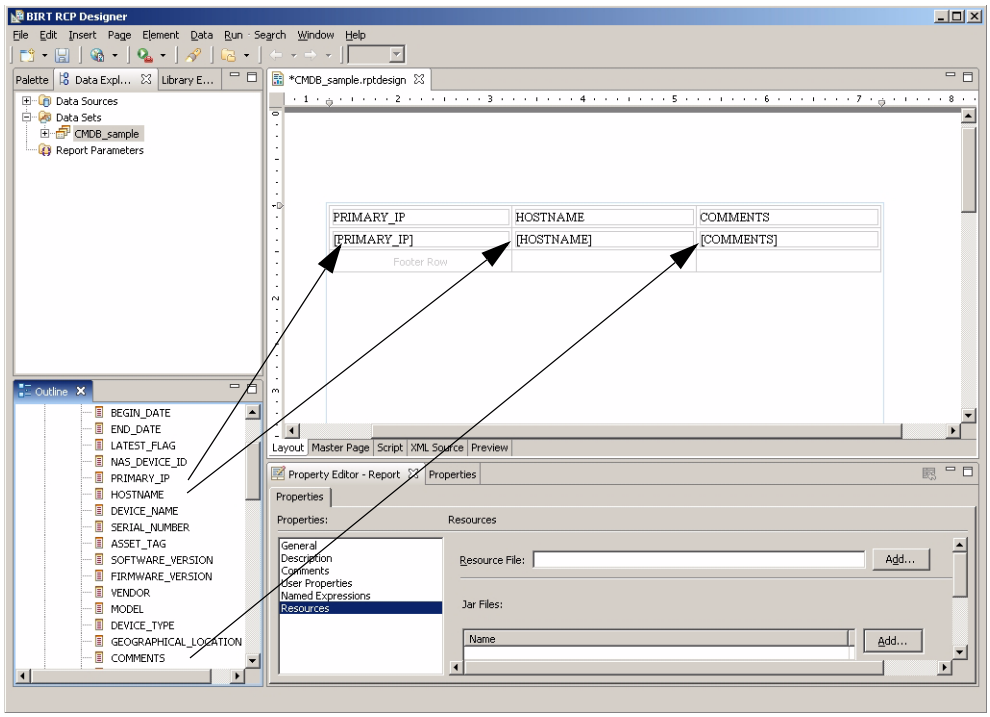


20 Drag the Table icon from the Palette to the middle row of the layout grid.

21 When the Insert Table window appears, set the number of columns to three.

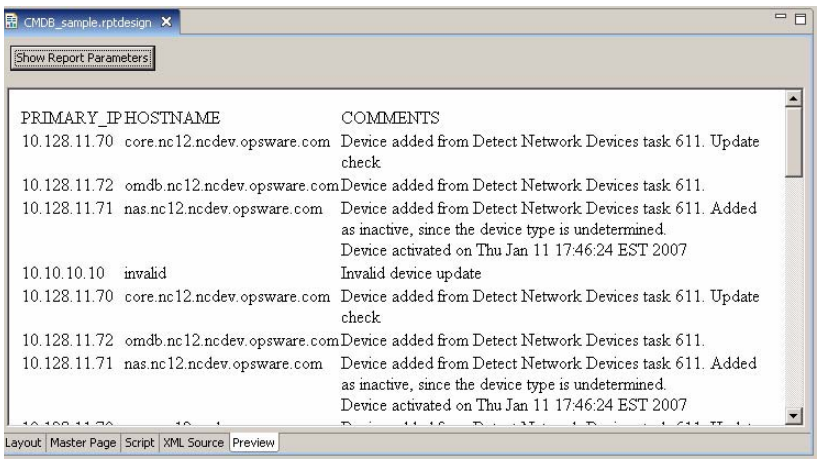
22 Drag the desired fields from the Outline tab on the left into position on the table.

Figure 4-23: BIRT RCP Designer



23 Select the Preview tab to preview your report.

Figure 4-24: Show Report Parameters



24 Integrate the new report into the Opsware OMDB Client. The procedure is described in “Integrating a Custom Report into the OMDB Client” on page 82.

Parameter Substitution Configuration

Parameter substitution can be configured in one of two ways:

- Using the `opsw-common-reporting` Report Library
- Using the `com.opsware.reporting.util` package

Using the `opsw-common-reporting` report library is recommended.

Using the opsw-common-reporting Report Library

To enable parameter substitution in a custom report using the opsw-common-reporting report library, perform the following steps:

1 From the `opsw-common-reporting` Report Library, add the **Report items ➤ Grid - Report Header** to the report.

2 Add the following short script to the beforeOpen script:

```
queryText = prepareSql(queryText);
```

Using the com.opsware.reporting.util package

Report parameter substitution is not supported in local previews using the `com.opsware.reporting.util` package. To test this feature, you must deploy it to the OMDB server.

For OMDB, a `com.opsware.reporting.util` package was created to use with BIRT. Reports are JDBC-based and include embedded SQL. In the data-set of the BIRT Reports for the OMDB, set the beforeOpen script to:

```
importPackage(Packages.com.opsware.reporting.util)
request = reportContext.getHttpServletRequest();
var requestParamMap = new Packages.java.util.HashMap();
for (i = 1 ; i <  ${Number of Parameters  + 1} ; i++)

{
requestParamMap.put("PARAM" +
i,reportContext.getParameterValue("PARAM" + i));
```

```
requestParamMap.put("PARAM" + i +
"CO",reportContext.getParameterValue("PARAM" + i + "CO"));
requestParamMap.put("PARAM" + i +
"DT",reportContext.getParameterValue("PARAM" + i + "DT"));
}

queryText = SqlUtilities.processBeforeOpenEvent(queryText,
requestParamMap, request);
```

This will retrieve the SQL query for the report and pass it to a parser to replace any runtime variables. Runtime variables for the OMDB reporter are denoted in the SQL as ansi style C comments and have a begin and end tag. The begin tag is /*PARAM'n'*/ and the end tag is `/*/PARAM'n'*/` where 'n' is greater than 0. In addition to the begin and end tags, there is a operator position tag `/*C*/`.

In the above code the token `${Number of Parameters}` should be replaced with the number of parameters that the report has + 1. For example, if the report has 4 parameters, replace the token `${Number of Parameters}` with the number `5`.

For example, the query below for a report with runtime value:

```
select full_date
from cmdb_data.date_dimension
where 1 = 1
/*PARAM1*/and full_date /*C*/ = trunc(sysdate)/*/PARAM1*/
```

When the report is run, one of the following events occur:

- If the user selects Any Value for the parameter, then the string between the begin and end tags is removed.
- If a value is picked with an operator (in, equal, not equal) then the string between the operator position tag and end tag is replaced with the appropriate operator/parameter value string.
- If the parameter value is text and case-insensitive (by default), then the left-side expression between AND or OR and the operator position tag will be enclosed by an UPPER function. The parameter value will also be upper-case.

Parameters in `custom_def.xml` for OMDB take a string of SQL for their lookup values. This is different from the way reports are parameterized in SAS, with a resource type and resource field.

Parameter Substitution of Dates

The OMDB reporting data source `omdb-reporter-ds.xml` used by the OMDB BIRT engine is configured to set all session connections to the current user's time zone as these connections are accessed by BIRT. This allows for the use of certain functionality within Oracle to ensure that date processing occurs and is displayed relative to the user's time zone.

The OMDB `CMDB-DATA` schema includes a DATE_DIMENSION view that is useful in creating the date-based SQL typically used in OMDB's historical reporting. This view contains a number of date-related columns for reporting including FULL_DATE_LOCAL and FULL_DATE_UTC. All columns are relative to the user's local midnight boundary (including FULL_DATE_LOCAL) except for FULL_DATE_UTC. FULL_DATE_UTC is a calculated value based on the offset of the user's time zone from FULL_DATE_LOCAL. The time component of FULL_DATE_LOCAL is always midnight (00:00:00), so for someone in New York (EST), FULL_DATE_UTC will be 5 hours later than FULL_DATE_LOCAL meaning its time component will be 05:00:00.

When doing parameter substitution of single dates or date ranges, these values will be substituted in the current user's time zone and should always be compared to FULL_DATE_LOCAL. When using the resulting DATE_DIMENSION records to access historical data tables, the FULL_DATE_UTC column must be used as all OMDB data time stamps are UTC.

The following two functions are available for performing time zone offsets:

- **UTC_TO_LOCAL**: Use this to convert almost all OMDB time stamp columns to local time for display in the user's local time zone
- **LOCAL_TO_UTC**: This will convert a local time stamp to UTC, which may not be useful for return to BIRT, but may be useful in other scenarios.

Almost all time stamp columns returned for display in BIRT should be wrapped in the UTC_TO_LOCAL function for correct display. The only time you wouldn't do this is if there is a need to display the date in UTC or if a BIRT expression is being used to convert the UTC time stamp to some other desired value.

You can substitute a single date, or the begin date or end date of a date range, into a query rather than having to create a full AND or OR conditional statement. To do so, use the following syntax:

```
/*PARAMnVAL*/ sysdate /*/PARAMnVAL*/

/*PARAMnBEGIN*/  sysdate /*/PARAMnBEGIN*/

/*PARAMnEND*/ sysdate /*PARAMnEND*/
```

Actionability

OMDB reports can also support actionable items. For example, a server entry in a report can be set as actionable. Right-clicking on that server displays a pop-up menu of actions available for that server.

Setting a Table as Actionable

To set a table as actionable, perform the following steps:

1. Launch BIRT RCP Designer.
2. In the Outline pane, expand the report name, and then expand Body.
3. Select the table name.
4. In the Property Editor -table name, click the Properties tab.
5. In the Properties list, select Bookmark.
6. In the text field, enter the following string:

   ```
   id=''actionable''
   ```

7. From the File menu, select **Save**.

Adding Source and Item IDs to a Custom Report

To add the source and item id to your custom report, perform the following steps:

1. Launch BIRT RCP Designer.
2. Expand Data Set.
3. Double-click the data set that is associated with the report.
4. In the query text field, add an actionable text string. See for the acceptable formats and values.

5 In the left list of the Edit Data Set window, click Output Columns.

6 Click **OK**.

7 Expand the Data Set.

8 Drag the new column into the table as the first column of the Detail Row of the table.

OMDB Actionable Item Formatting

The preferred format for OMDB actionable items is:

```
source_type:item_id
```

For example:

```
SAS_SERVER:1001
```

where SAS is the source type and 1001 is the item id of the specific item. The item id is a numeric value unique to your OMDB installation. The supported data source values for this syntax are:

```
asas_fibre_fabric:
asas_storage_device:
asas_fibre_alias:
asas_fibre_zone:
asas_fibre_zone_set:
asas_file_system:
asas_port:

nas_device:
nas_user:
nas_usergroup:

sas_server:
sas_sw_policy:
sas_patch_policy:
sas_app_config:
sas_job:
sas_user:
sas_usergroup:
sas_audit:
sas_audit_result:
sas_customer:
sas_package:
sas_facility:
device:
software_policy:
```

```
patch_policy:
configuration:
compliance_test:
job:
user:
usergroup:
audit_policy:
audit_task:
audit_result:
customer:
software_unit:
facility:

device:
device_group:
software_policy:
patch_policy:
configuration:
compliance_test:
job:
user:
usergroup:
audit_policy:
audit_task:
audit_result:
customer:
software_unit:
facility:
```

An older and alternate supported format for OMDB actionable items is:

```
source:object_type:id
```

The actionable `source` and `object_type` pairs are limited to:

```
sas:device:
sas:patch_policy:
sas:configuration:
sas:compliance_test:
sas:configuration:
sas:compliance_test:
sas:job:
sas:user:
sas:usergroup:
sas:audit_policy:
sas:audit_task:
sas:audit_result:
```


Set the `objectid` to the object id in SAS or NAS. Do not set `objectid` to an item id in OMDB.

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