HP Storage Essentials SRM Report Optimizer

Software Version: 9.5.1

Quick Start Guide

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Contents

Chapter 1

Report Optimizer Quick Start Instructions

This section provides a basic overview of several common SRM Report Optimizer tasks, and provides references to other documents for more detailed information.

Before you begin any of the steps, complete all of the configuration steps provided in the *Installation Guide*. The configuration steps include changing the default passwords for Report Optimizer. For more information, see the "Required Configuration Steps After Installing Reporter" chapter in the *Installation Guide*.

SRM Report Optimizer requires Java Plug-in 1.5.0 or later. The plug-in can be downloaded from: http://www.java.com/download/.

You should disable pop-up blocking software.

This section consists of the following topics:

Product Name

SRM Report Optimizer is sometimes referred to as BusinessObjects Enterprise in the user interface and online help. Both of these terms refer to the same product.

Accessing the Central Management Console

To access the Central Management Console:

1. Use a web browser to go to: http://<fqdn_or_ip_address_of_Report_Server>:8080/CmcApp/logon.faces

2. Log on to the Central Management Console with the following credentials:

   - Username: Administrator

   - Password:

     ○ HP Storage Essentials versions 9.4 or later. The default password is Changeme123.

     ○ Versions earlier than 9.4. The default password is <blank>.

Accessing the Report Optimizer Web Interface

To access the SRM Report Optimizer web interface:

1. Go to: http://<fqdn_or_ip_address_of_Report_Server>:8080/InfoViewApp/logon.jsp

   If you changed the port number during installation, enter the selected port number instead of 8080.

2. Log on with a valid username and password.

For more information, see the "Logging on to InfoView" section of *InfoView User's Guide*.

Displaying a Logon Banner

You can create a banner that is displayed when users logon to Report Optimizer. The banner can provide any customized message, such as to alert users that they are logging onto a secure system subject to auditing.

This section describes how to create a logon banner for:

- InfoView. See <u>"Logon Banner for InfoView" (on page 9)</u>.

- Central Management Console (CMC) To create a logon banner when Report Optimizer is running on Windows. See <u>"Logon Banner for the Central Management Console for Report Optimizer" (on page 10)</u>.

Logon Banner for InfoView

To create a logon banner for InfoView:

1. Go to one of the following directories:

   - **Linux**. `$RO_INSTALL_DIR/bobje/tomcat/webapps/InfoViewApp`

   - **Windows**. `%RO_INSTALL_DIR%\Tomcat55\webapps\InfoViewApp`

2. Open the logon.jsp file in a text editor.

3. Search for the Disclaimer Section section (`<div class="disclaimerSection">`) in the logon.jsp file.

4. Change the value from "" to your own message.

   In the following example, `value=""` was changed to `value="Disclaimer message goes here.":`

   ```
   <!-- Customized Disclaimer Message in Logon Page for InfoViewApp
   should be entered/modified here -->

   <div class="disclaimerSection">

   <I>

   <c:out value="Disclaimer message goes here." />

   </I>

   </div>
   ```

   When you add your message, make sure it is surrounded by double-quotes as shown in the example.

5. Open Infoview, and verify your changes on the logon page.

Logon Banner for the Central Management Console for Report Optimizer

To change the banner when you logon to Central Management Console (CMC) for Report Optimizer:

1. Go to one of the following directories:

   - **Linux**. `$RO_INSTALL_DIR/bobje/tomcat/webapps/CmcApp`

   - **Windows**. `%RO_INSTALL_DIR%\Tomcat55\webapps\CmcApp`

2. Open the logon.jsp file in a text editor.

3. Search for the Disclaimer Section section (`<div class="disclaimerSection">`) in the logon.jsp file.

4. Change the value from '' to your own message.

   In the following example, `value=''` was changed to `value='Disclaimer message goes here.':`

   ```
   <!-- Customized Disclaimer Message in Logon Page for CmcApp should
   be entered/modified here -->

   <div class="disclaimerSection">

   <h:outputFormat value='Disclaimer message goes here.'>

   </h:outputFormat>

   </div>
   ```

When you add your message, make sure it is surrounded by single-quotes as shown in the example.

5. Open the CMC, and verify your changes on the logon page.

Creating a New Report

To create a new report:

1. Log on to the web interface as described in <u>"Accessing the Report Optimizer Web Interface"</u> <u>(on page 9)</u>.

2. Click **Document List**.

3. Select **New** > **Web Intelligence Document**.

4. Select a universe. A new Web Intelligence document is displayed. The Data tab contains objects which can be dragged and dropped onto the Result Objects pane.

5. After you add the desired objects to the Result Objects pane, click **Run Query**. The results of the new report are displayed in the Result Objects pane.

For more information, see the "To create a Web Intelligence document from InfoView" section of the *Building Reports Using the Java Report Panel Guide*.

"Select a context" Message

When you drag certain objects onto the Result Objects pane, you will be prompted to select a context. This occurs because objects in the designer interface can be related to each other. For example, Storage Systems and Hosts are related because storage systems present storage to hosts. This context defines the relationship which exists between the storage system and the host.

Because there are multiple relationships between the host and storage system, there are multiple contexts to choose from.

When you select any of the contexts, a description of that context is displayed.

For descriptions of the contexts that are defined in SRM Report Optimizer, see the *Contexts Guide*.

Saving Reports

To save a report, click the **Save** icon.
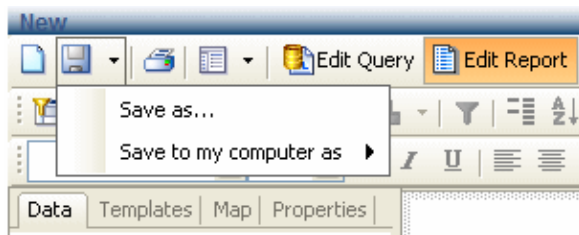
You have two options for saving the report you just created:

- To save the report on your SRM Report Optimizer server, select **Save as**, assign a name to the report, and save it to any location other than **Public Folders** > **Report Pack**. For example, if this is a frequently used report, you can save it to the **My folders** > **Favorites** folder.

- To save the report to a local disk, select **Save to my computer as**, and select an export type.

Best Practices

Create a new folder in a location other than **Public folders** > **Report Pack**. For example, you could create a folder called My Reports. This will ensure that the reports you create are not overwritten when your SRM Report Optimizer server is updated with a new version of the Report Pack. After creating a new folder, save all of your new reports in this folder or in sub-folders within this folder.

Before you save a report to a local disk, save it on the SRM Report Optimizer server so you can run it again when you log back on.

For more information, see the "Saving documents" section of the *Building Reports Using the Java Report Panel Guide*.

Exporting a Report in Excel, CSV, or PDF Format

To export a report in Excel, CSV, or PDF format, use the **Save to my computer as** option and choose the export type.

For more information, see the "Saving documents" section of the *Building Reports Using the Java Report Panel Guide*.

Setting the Report Binary Output Size Limit

The default maximum binary size for report output to an XLS or PDF format is 50 MB. If you schedule or view a report that exceeds this limit, the following error message appears:

```
Maximum binary output size limit reached. Contact your BusinessObjects
administrator. (Error: ERR_WIS_30271)
```

If you know that users will be scheduling or viewing reports with a binary output size that is greater than 50 MB, reset the Binary Stream Maximum Size property for your Web Intelligence processing server.

To set the Binary Stream Maximum Size value:

1. Log on to the Central Management Console (CMC) as the BusinessObjects Enterprise "Administrator".

2. Navigate to **Home** > **Servers**.

3. Click **Web Intelligence Processing Server** to open its properties.

4. Locate the **Binary Stream Maximum Size (MB)** property.

5. Change the value from 50 MB (default) to an optimal value suitable for your environment. The default value is 50 MBytes. The maximum value you can set is 65535 MBytes.

6. Apply your changes.

7. Restart the Web Intelligence Processing Server.

If you increase the output size limit too high, there is the possibility that users can impact Web Intelligence server performance if they repeatedly attempt to save excessively large files.

Using Existing Reports as a Baseline to Create New Reports

To use an existing report as a baseline for a new report, use the "Save as" functionality described in . Assign the report a new name and save it in a new location. For

example, save the hba summary report as My HBA Summary in **Public Folders** > **My Folder**.

Best Practices

Use existing reports as a baseline and save them as a new report in your reports folder. Modify this clone rather than modifying the original report.

For more information, see the "Saving documents" section of the *Building Reports Using the Java Report Panel Guide*.

Modifying an Existing Report

To modify an existing report:

1. In the Folders pane, browse to the location where you saved the report.

2. Right-click the report you want to modify, and select **Modify**. This will bring you to the Report View for the report you selected.

Adding New Charts to Reports

To add a new chart to a report:

1. While modifying a report, verify that you are in Report View. The Edit Report button is highlighted when you are working in Report View. In the report objects pane, select a report you created by clicking the top edge of the table. A gray box appears around the table.

Host Name	Free in GB	Total in GB	Used in GB
ainbck3	1,124.62	1,907.44	782.82
bibck1	70,565.85	105,140.92	34,575.08
CELLBCK5	1,376.17	5,564.37	4,188.19
lin64bck1	1,250.81	1,808.64	557.83
SAP64DBS	1,887.48	19,813.85	17,926.38

2. While pressing the CTRL key, drag and drop the report onto an empty space on the same window. A copy of the report is created.

3. Select the copied report by clicking the top edge of the table. A gray box appears around the table. Right-click and select the **Turn To** option. A pop-up window displays the available chart types.

4. Select a chart type and click **OK**.

For more information, see the "To apply a different template to a table with Turn To" section of the *Building Reports Using the Java Report Panel Guide*.

Emailing Reports

To email a report while viewing it, select **Send** >**To Email**.

For more information, see the "InfoView" section of the *InfoView User's Guide*.

Scheduling a Report to be E-Mailed

To schedule a report to be e-mailed:

1. In the Folders pane, browse to the location where you saved the report.

2. Right-click the report you want to email, and click **Schedule**.

3. Click **Formats and Destinations**.

4. Click the **Email Recipients** checkbox.

5. Click **Schedule**.

When you schedule a report, the last saved filter selections are used. Before scheduling a report, save the report with appropriate filter options.

The recipient of the email will need to log in to SRM Report Optimizer to view the report. They can log in as ReportUser or any other existing user. The default password for ReportUser is `Welcome`.

For more information, see the "Scheduling objects" section of the "Working with Objects" chapter of the *InfoView User's Guide*.

You can schedule a report in mHTML format and send it across available destinations. However, there are known issues associated with the reports saved in mHTML format, listed as follows:

- After the report is saved in mHTML format, it is not possible to drill down the report.

- When you select **Email** as **Destination** while scheduling a report in mHTML format, the report is sent as the content of the email instead of an attachment.

For more information about scheduling a report in mHTML format, see "To create a new publication in InfoView" and "To set the schedule output format" section in the "Publishing Wizard procedures" chapter of the *BusinessObjects Administrator's Guide*.
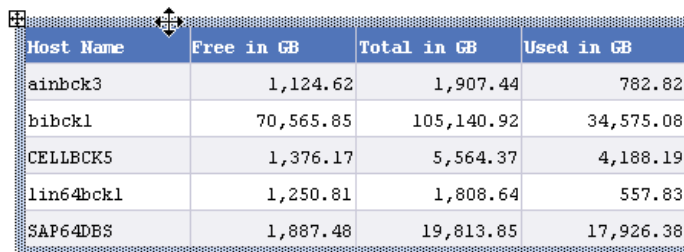
Sending a Unique Report URL in an E-Mail

To send a unique report URL in an e-mail:

1. In the Folders pane, browse to the location where you saved the report.

2. Right-click the report you want to email, and click **Schedule**.

3. Click **Formats and Destinations**.

4. Click the **Email Recipients** checkbox.

5. Click **Destinations Options and Settings**.

6. Uncheck the **Use the Job Server's defaults** option.

7. In the **Add Placeholder** menu next to the Message box, select the **Viewer Hyperlink** option. When a user receives the email, it will include the URL.

Best Practices

You can embed hyperlinks in intranet web pages on your document management portals. By directing your end users to the URL, you ensure that they always get the latest version of the report.

Using URLs also helps in reducing capacity utilization because reports do not have to be saved in multiple locations.

For more information, see the "Configuring the destination properties for job servers" section of the "Managing and Configuring Servers" chapter of the *Administrator's Guide*.

Scheduling Reports to a SharePoint Directory using UNC Path

Before scheduling the reports to a SharePoint directory, do the following

Enable the Webclient service on Windows Server 2003

To enable the service, follow these steps:

1. Click **Start** > **Run**.

2. Type services.msc and press **Enter**.

3. In the Services window, search and select the Webclient service.

4. Right-click on the service name, and select **Enable**.

Disable Internet Explorer Enhanced Security Configuration

To disable, follow these steps:

1. Click **Start** > **Control Panel** > **Add or Remove Programs** > **Add/Remove Windows Components**.

2. Click **Internet Explorer Enhanced Security Configuration**, and then click **Details**.

3. Select the group for which you want to enable or disable Enhanced Security Configuration, and then click **OK**.

Add information on the trusted sites in the Internet Explorer

To add information, follow these steps:

1. Log-on to the Business Objects server computer using the service account used for authenticating on the SharePoint Server.

2. Open the Internet Explorer browser.

3. Go to **Tools** > **Internet Options** > **Security** > **Local Intranet** > **Sites** > **Advanced**.

4. Add the hostname and hostname.domain.com of the SharePoint Server to the list of trusted sites.

   Note: Do not prefix the name with http or https.

5. Now, go to **Tools** > **Internet Options** > **Security** > **Local Intranet** > **Custom Level** > **User Authentication** > **Logon**.

6. Select **Automatic logon with current username and password** and then click **OK**.

Create new registry entry on Business Objects Server computer

1. Click **Start** > **Run**.

2. Type regedit and press **Enter**.

3. In the Registry Editor window, browse to the following location:

   ```
   HKEY_LOCAL_
   MACHINE\SYSTEM\CurrentControlSet\Services\WebClient\Parameters\
   ```

4. In the right pane, right-click and select **New** > **Multi-string value** to create a new registry entry.

5. Rename the new entry as **AuthForwardServerList**.

6. Right-click on the new registry entry and select **Modify**.

7. Add the names of the computers, each on a separate line, hosting the SharePoint service, in the Value Data dialog box, and then click **OK**.

8. Restart the Business Object Server.

Scheduling a report

Follow these steps to schedule a report in the Report Optimizer:

1. In the Folders pane, browse to the location where you have saved the report.

2. Right-click the report, you want to schedule, and click **Schedule**.

3. On the Schedule page, click **Formats and Destinations**.

4. In the Output Format and Destination area, select the **Destination** as File location.

5. Click the **Destinations Options and Settings** link.

6. In the Options and Setting area, uncheck the **Use the Job Server's defaults** checkbox.

7. In the Directory textbox, type the UNC path of the SharePoint server's drive. Enter the path in any of the following formats:

   ```
   \\<hostname>\Docs\Documents
   ```

   ```
   \\<hostname.domain.com>\Docs\Documents
   ```

8. Under File name, select **Specific name** and specify the user to whom you want to send the instance of the object that you are scheduling.

9. Provide the credentials of the user who has write access to the above mentioned location in Step 7.

10. Click the **Schedule** button.

Backing Up New Reports

To back up new reports, you must export a BIAR file. For information about exporting BIAR files, see the "Backing up and restoring server configuration settings" section of the *Administrator's Guide*.

Ideally, while taking back up of the BIAR file, you must also back up the MySQL database and the Filestore directory in the Report Optimizer. MySQL database and Filestore directory must be backed up preferably at the same time when backing up the BIAR file. The BIAR, FileStore, and MySQL database dump files contain all the information required to retrieve the Report Optimizer details, in case, if there are any issues with Report Optimizer server.

To back up MySQL database, see "Backing up MySQL Database" (on page 17).

To back up Filestore directory, see "Backing up Filestore directory" (on page 18).

Tip: You must save the backups at some safe location, preferably at some FTP location from where the files can be easily accessed when restoring them.

Backing up MySQL Database

On Windows

1. Stop the Server Intelligence Agent (SIA) using the Central Configuration Manager (CCM). For more information on how to stop the SIA, see the *Script Utilities* topic in the *UNIX Tools* chapter in the *SAP BusinessObjects Enterprise Administrator's Guide*.

2. Open a command prompt window and go to the following directory:
   `%RO_INSTALL_DIR%/MySQL5/bin`

3. Run the following command:
   `mysqldump -u <Username> -p <Database Name> > <SQL Filename>`

   Parameters

   `-u` – Specifies username of the account. Specify **root** as the username.

   `-p` – Specifies password for the root user account. You are prompted for entering the password after you run the command at the command prompt.
   Note
   - The default password of the root user for Report Optimizer version 6.3 is *Password*.

   - The default password of the root user for other supported Report Optimizer versions is *Password123*.

   `Database Name` – Specify **BOE120** as the database name.

   `SQL Filename` – Specify the logical disk path and a filename with .sql extension, in which you want to store the backup of the MySQL database.

   Example

   `mysqldump -u root -p BOE120 > C:\Mysql_DB_Backup.sql`

   `Enter Password: Password 123`

   In the example,the backup of the MySQL database is stored in the Mysql_DB_Backup.sql file on the C drive.

4. Restart the SIA. For more information on how to start the SIA, see *Script Utilities* topic in the *UNIX Tools* chapter in the *SAP BusinessObjects Enterprise Administrator's Guide*.

On Linux

1. Go to the following directory:
   `%RO_INSTALL_DIR%/bobje/mysql/bin`

2. Run the following command:
   `mysqldump -u <Username> -p <Database Name> --socket %RO_Install_ DIR%/bobje/mysql/mysql.sock > <SQL Filename>`

   Parameters

   `-u` – Specifies username of the account. Specify **root** as the username.

`-p` – Specifies password for the root user account. You are prompted for entering the password after you run the command at the command prompt.
Note

- The default password of the root user for Report Optimizer version 6.3 is *Password*.

- The default password of the root user for other supported Report Optimizer versions is *Password123*.

`Database Name` – Specify **BOE120** as the database name.

`SQL Filename` – Specify the logical disk path and a filename with .sql extension, in which you want to store the backup of the MySQL database.

Example

```
mysqldump -u root -p BOE120 --socket
/opt/HP/ReportOptimizer/bobje/mysql/mysql.sock >/Mysql_DB_
Backup.sql

Enter Password: Password 123
```

In the example,the backup of the MySQL database is stored in the Mysql_DB_Backup.sql file.

Backing up Filestore directory

On Windows

1. Stop the Server Intelligence Agent (SIA) using the Central Configuration Manager(CCM). For more information on how to stop the SIA, see the *Script Utilities* topic in the *UNIX Tools* chapter in the *SAP BusinessObjects Enterprise Administrator's Guide*.

2. Open a command prompt window and go to the following directory:
   `%RO_INSTALL_DIR%\BusinessObjects Enterprise 12.0\FileStore`

3. Copy the files in the directory and store them along-with the backup of other files, that is along-with backup of BIAR file and MySQL database.

4. Restart the SIA. For more information on how to start the SIA, see *Script Utilities* topic in the *UNIX Tools* chapter in the *SAP BusinessObjects Enterprise Administrator's Guide*.

On Linux

1. Go to the following directory:
   `%RO_INSTALL_DIR%/bobje/enterprise120/FileStore`

2. Copy the files in the directory and store them along-with the backup of other files, that is along-with backup of the BIAR file and MySQL database.

Best Practices

The new reports you create are not stored in the SRM Report Optimizer server database. You should back them up according to your organization's backup policies.

Restoring Backed Up Reports

To restore backed up reports, you must import a BIAR file. For information about importing BIAR files, see the "Backing up and restoring server configuration settings" section of the "Managing and Configuring Servers" chapter of the *Administrator's Guide*.

If there are any issues with the Report Optimizer server, while restoring the backup of a BIAR file, you must also restore the backed up MySQL database and Filestore directory.

To restore MySQL database, see Restoring Backed Up MySQL Database.

To restore Filestore directory, see Restoring Backed Up Filestore Directory.

Restoring Backed Up MySQL Database

On Windows

1. Stop the Server Intelligence Agent (SIA) using the Central Configuration Manager(CCM). For more information on how to stop the SIA, see *Script Utilities* topic in the *UNIX Tools* chapter in the *SAP BusinessObjects Enterprise Administrator's Guide.*

2. Open a command prompt window and go to the following directory:
   `%RO_INSTALL_DIR%/MySQL5/bin`

3. Run the following command:
   `mysql -u <Username> -p <Database name> < <SQL Filename>`

   Parameters

   `-u` – Specifies username of the account. Specify **root** as the username.

   `-p` – Specifies password for the root user account. You are prompted for entering the password after you run the command at the command prompt.
   Note
   - The default password of the root user for Report Optimizer version 6.3 is *Password*.

   - The default password of the root user for other supported Report Optimizer versions is *Password123*.

   `Database Name` – Specify **BOE120** as the database name.

   `SQL Filename` – Specify the logical disk path and the backup filename with a .sql extension containing the MySQL database backup.

   Example

   `mysql -u root -p BOE120 < C:\Mysql_DB_Backup.sql`

   `Enter Password: Password 123`

4. Restart the SIA. For more information on how to start the SIA, see *Script Utilities* topic in the *UNIX Tools* chapter in the *SAP BusinessObjects Enterprise Administrator's Guide*.

On Linux

1. Go to the following directory:
   `%RO_INSTALL_DIR%/bobje/mysql/bin`

2. Run the following command:
   `mysql -u <Username> -p <Database Name> --socket %RO_Install_DIR%/bobje/mysql/mysql.sock < <SQL Filename>`

   Parameters

   `-u` – Specifies username of the account. Specify **root** as the username.

`-p` – Specifies password for the root user account. You are prompted for entering the password after you run the command at the command prompt.
Note

- The default password of the root user for Report Optimizer version 6.3 is *Password*.

- The default password of the root user for other supported Report Optimizer versions is *Password123*.

`Database Name` – Specify **BOE120** as the database name.

`SQL Filename` – Specify the logical disk path and the backup filename with a .sql extension containing the MySQL database backup.

Example

```
mysql -u root -p BOE120 --socket
/opt/HP/ReportOptimizer/bobje/mysql/mysql.sock </Mysql_DB_
Backup.sql

Enter Password: Password 123
```

In the example,the MySQL database is restored in the Mysql_DB_Backup.sql file.

Restoring Backed Up Filestore Directory

On Windows

1. Copy the backed up Filestore directory, containing the backup files from the location.

2. Open a command prompt window on the system where the Report Optimizer is installed and go to the following directory:
   `%RO_INSTALL_DIR%\BusinessObjects Enterprise 12.0\Filestore`

3. Rename the existing Filestore directory to any other name. For example, Filestore_old.

4. Paste the backed up FileStore directory containing the backup files.

5. Restart the SIA. For more information on how to start the SIA, see *Script Utilities* topic in the *UNIX Tools* chapter in the *SAP BusinessObjects Enterprise Administrator's Guide*.

On Linux

1. Go to the following directory:
   `%RO_INSTALL_DIR%/bobje/enterprise120/FileStore`

2. Copy the files in the directory and store them along-with the backup of other files, that is along-with backup of BIAR file and MySQL database files.

Refreshing Out-of-Date Report Data

To refresh out-of-date data, click **Refresh All** when viewing your report. This triggers a fresh database fetch operation.

The first time you run a default report, it will not contain data until you click **Refresh All**.

Best Practices

When you save a report, you have the option to refresh the data when opening the report. If the report takes a long time to run, you will have to wait for the report contents to display. For this

reason, you can leave the "Refresh on open" checkbox un-checked when saving the report. This will enable you to see the last version of the report data when you view the report.

Using File-Based Events with Scheduled Reports

When scheduling a report, you must use the "Reporter Event" so that data will be synchronized with Report Refresh Cache.

To use file-based events with scheduled reports:

1. Log in to InfoView as described in "Accessing the Report Optimizer Web Interface" (on page 9).

2. Select the folder that contains the report you want to schedule, and click **Schedule** link for that report

3. In the Events section, move "Reporter Event" from "Available Events" to "Events to wait for."

If the file already exists prior to the creation of the event, the event is not triggered. In this case, the event is triggered only when the file is removed and then recreated. If you want an event to be triggered multiple times, you must remove and recreate the file each time.

Selecting Elements for Scheduled Reports

There are some performance issues associated with selecting a large number of elements for scheduled reports. For example, in an environment with 2000 hosts or 200 switches, selecting all of the elements (or a very large subset) may result in a long run time or the report may fail to load.

Seeing How Many Users are Logged On

To see how many users are logged on:

1. Launch the Central Management Console as described in "Accessing the Central Management Console" (on page 9).

2. Click the **Settings** link in the Manage section.

3. Click **View global system metrics** to see how many users are logged on.

For more information, see the "Viewing current server metrics" section of the "Improving Performance" chapter of the *Administrator's Guide*.

Troubleshooting

This section consists of the following topics:

- "Error Message: Refreshing Data" (on page 22)

- "Error Message: Unable to Reconnect to CMS" (on page 22)

- "Error Message: Cannot Retrieve Document with Passed Obsolete Token" (on page 22)

- "SRM Report Optimizer Closes when Saving PDF" (on page 22)

- "Host Unused Storage Report Shows Used LUNs as Unused" (on page 22)

- "Available White Space Report Values" (on page 23)

- "Host Unused Capacity Report and Greyspace Values" (on page 24)

Error Message: Refreshing Data

The Refreshing Data error message is displayed if you attempt to run a report at a time when the management server is not reachable. The message displays text similar to the following:

```
An internal error occurred while calling the 'processDPcommands API.
(Error: WIS 30270) (Error: INF)
```

This message appears for the following reasons:

- The `tnsnames.ora` file is incorrect. Verify that the file is formatted correctly and points to the correct management server. Use the `tnsnames.ora_template` file located in the root directory of the SRM Report Optimizer DVD to ensure that the file is formatted correctly.

- Report cache refresh is running on the management server. Wait for the report cache refresh to complete, and run the report again.

Error Message: Unable to Reconnect to CMS

When SRM Report Optimizer is launched from HP Storage Essentials and closed multiple times consecutively, the following error message might appear:

```
An error has occured: unable to reconnect to the CMS
```

To resolve this problem, sign out of HP Storage Essentials and open it in a new browser.

Error Message: Cannot Retrieve Document with Passed Obsolete Token

When opening a Web Intelligence report in Report Optimizer, you might see the following error:

```
Cannot retrieve the document with the passed obsolete token (Error:
RWI 00323).
```

The error is most likely to occur if you are not using Windows Internet Explorer to display the report.

SRM Report Optimizer Closes when Saving PDF

If the SRM Report Optimizercloses when you save a report to an Adobe PDF format, you can enable Automatic prompting for file downloads in Internet Explorer to prevent this. Do the following:

1. In Internet Explorer, select **Tools** > **Internet Options** > **Security** > **Custom Level**.

2. In the Downloads section, select the **Enable** radio button for Automatic prompting for file downloads.

Host Unused Storage Report Shows Used LUNs as Unused

If an IBM AIX storage environment has more than one virtual target device (for example, VX7_hd0 and VX7_hd1) with multiple vhosts (for example, vhost0 and vhost1) on the same virtual client, the Host Unused Storage report displays LUNS for the multiple vhosts as "unused" when in actuality they might be "used".

This occurs because it is not possible to get the respective vhost number for the different virtual target devices on virtual clients. Therefore, the first vhost is recognized, but the second is not, resulting in fewer LUNs recognized as "unused" than might be the actual case. To get the proper values, you must access the Hardware Management Console (HMC) provided by IBM.

Host Unused Capacity Report for VIO Hosts Displays Incorrect Data

The Host Unused Capacity Report for VIO host displays incorrect data for the following fields:

- Allocated Capacity in GB

- User Capacity in GB

- Used Capacity in GB

- Grey Space Capacity in GB

Available White Space Report Values

The following known issues affect the data that is displayed in the Available White Space standard report (**Public Folders** > **Report Pack** > **Standard Reports** > **Hosts** > **Available White Space**):

- White space field incorrectly displays zero when disk group is inactive—If a disk group is inactive on the host, Report Optimizer cannot access the details of that disk group. When this occurs, these disks are treated as normal disks, and the disk allocated size is zero . If the allocated size is zero, than the Available White Space report treats the data as white space, although it is not.

- The value "#MULTIVALUES" displays when disks are not part of the same volume group. For disks that are part of a multi-path configuration, all the disks should be part of the same volume group. The host provider only collects the data/state of the Host operating system. Therefore, when one disk is in one volume group and the other is not, the "Available Space Size in GB" column shows a multi-value error. To avoid this error, place disks that are part of a multi-path configuration in the same volume group.

- White space field value should be zero (0) for Fencing disks in Veritas Cluster Server (VCS) clusters—These disks are used by Veritas software internally and cannot be reclaimed. Grey space value should also be zero (0).

  For Veritas Cluster Servers, HP recommends that when you configure Fencing /Quorum disks that you use the multipath device name or specify *all* of the subpaths. If the Fencing /Quorum disks are configured on one subpath, for example `/dev/dsk/c1t1d1` (which is one of the subpaths of a multipath disk), then the Available White Space and Host Unused Capacity reports might not be able to show LUNs for these clusters as "Used" because the Fencing /Quorum disk should be configured to specify its multipath device name and not one of its subpaths.

- White space values for Oracle raw disks show the value for disk size instead of a value of zero (0)— In the Available White Space report, the white space value for a raw disk assigned to an Oracle server does not show the expected value of zero (0) for the disk used by the server parameter file, but instead shows the size of the disk. In the case of Oracle servers on raw disks, there is a separate raw disk for the server parameter file which is used to store all Oracle-instance related information. The Available White Space report shows such disks as unused and therefore, displays the white space value as the size of the disk.

  To set the white space value correctly to zero, you can set permissions in the `jbossproperties` file for the disk to be excluded from reclaimable space. In this way, you can get the correct white space value for OCR, Voting disks, SPfile disks, and any other disks used by Oracle binaries.

Use the following settings to add permissions to the `jbossproperties` file. Permissions may be set globally for all hosts or for single hosts as described below.

For all hosts:

`permissions.allhosts=oracle:dba,sybase:dba`

For a specific host:

`permissions.<myhostname>=oracle:dba`

In this instance, *<myhostname>* is the name of the specific host to be excluded.

When you generate the Available White Space report, the white space value should display as zero (0).

Host Unused Capacity Report and Greyspace Values

The following known issue affects greyspace data displayed in the Host Unused Capacity standard report.

Set permissions to display greyspace value as zero— In the Host Unused Capacity report, the greyspace value displayed for disks used by Oracle binaries (OCR, Voting disks, SPfile disks, and other disks) will not display correctly as zero (0) unless you set specific permissions in the `jbossproperties` file.

If you want a specific disk to be excluded from reclaimable space, use the following settings to add permissions in the `jbossproperties` file. Permissions may be set globally for all hosts or for single hosts as described below:.

For all hosts:

`permissions.allhosts=oracle:dba,sybase:dba`

For a specific host:

`permissions.<myhostname>=oracle:dba`

In this instance, *<myhostname>* is the name of the specific host to be excluded.

When you generate the Host Unused Capacity report, the greyspace value should display as zero (0), and the Allocated, Used, and User space values should show the size of the disk for all disks with permissions.

Greyspace and Whitespace Reports Require CIM Extensions Version 6.3 or Later

The greyspace and whitespace reports, such as "Available White Space" and "Host Unused Capacity," require CIM extensions version 6.3 or later installed on the hosts.

Chapter 2

List of Reports

This section lists the reports for this release. For information about which reports are supported on the various operating systems, see the Others tab in the support matrix.

- "Reports Provided by Report Optimizer" (on page 26)
- "Finding the Report Descriptions" (on page 63)
- "Greyspace and Whitespace Reports Require CIM Extensions Version 6.3 or Later" (on page 24)

Reports Provided by Report Optimizer

Report Optimizer provides a large number of pre-designed reports that help you assess and analyze the hosts and applications, storage devices, connections, performance, capacity, and much more on your storage system. To open the Report Pack module in Report Optimizer, expand **Document List** > **Public Folders** > **Report Packs**. These reports are grouped into the following report pack categories:

- "Global Reports" (on page 26)
- "Report Database Reports" (on page 27)
- "Standard Reports" (on page 27)

Also see "Finding the Report Descriptions" (on page 63).

Global Reports

The following table lists Global Reports provided in the Report Optimizer 9.5.1 release (**Document List** > **Public Folders** > **Report Pack** > **Global Reports**). These reports are installed as a standard component of Report Optimizer and enable you to generate reports using collected historical data available in the database.

Report Name	Description
Global Reports	
Global Application Utilization Details	Displays the drill-down details for application utilization at global sites.
Global Host Utilization Details	Displays the drill-down details for host utilization at global sites.
Global Storage System Utilization Details	Displays the drill-down details for storage system utilization at global sites.
Global Switch Utilization Details	Displays the drill-down details for switch utilization at global sites.

Report Database Reports

The following table lists the Report Database Reports provided in the Report Optimizer 9.5.1 release (**Document List** > **Public Folders** > **Report Pack** > **Report Database Reports**). These reports are installed as a standard component of Report Optimizer.

Report Name	Description
Report Database	
Report Database Configuration Summary	Displays the report database configuration details.
Report Database Detail History	Displays the history of the report cache refresh from the various CMSs. The data is ordered by Site Name and Start Refresh Time in descending order.

Standard Reports

The followng table lists the Standard Reports provided in the Report Optimizer 9.5.1 release (**Document List** > **Public Folders** > **Report Pack** > **Standard Reports**). These reports are installed as a standard component of Report Optimizer and enable you to generate basic reports by accessing collected historical data available in the database.

The first time you open a report, only the report title displays without data. To see report data, click **Refresh All** in the upper toolbar. You are then prompted to enter parameters, such as start and end dates, that determine which data to use to populate the report.

Reports that are new or modified for this release are marked with an asterisk (*).

Report Name	Description
Application	
Application Asset Summary	Shows a detailed accounting of the asset management data for each application.
Application Capacity (ThP)	Displays the capacity utilization for each application and the corresponding storage system volume usage.
Application Dependency	Shows application dependencies on server and storage area network (SAN) resources.
Application Events	Lists all applications managed by the management server and displays all non-cleared events related to managed applications.
Application Utilization Summary	Displays application-specific data related to utilization of a managed application. For example, it shows table-space utilization for a database application; for a Microsoft Exchange application, it shows mail-store utilization.

Report Name	Description
Application Capacity	Shows capacity statistics for each application.
Database Applications Utilization	Shows historic data for database application utilization with aggregate (%) and number of GBs of storage used by all managed applications.
Exchange Application Utilization	Shows historic data for Microsoft Exchange application utilization with aggregate (%) and number of GBs of storage used by all managed applications.
Top N Exchange Mailboxes	Shows top N mailboxes for all Microsoft Exchange servers based on storage usage. N is the number of mailboxes you select to display in the report.
Top N Public Folders	Shows top N public folders based on storage size. N is the number of public folders you select to display in the report.
Virtual Applications Utilization	Shows historic data for virtual application utilization with aggregate (%) and number of GBs of storage used by all managed applications.
Application Cluster	
Application Cluster Dependency	Shows dependent host, storage systems, and switches for each application cluster.
Application Cluster Utilization Summary	Shows the application cluster-specific utilization for a managed application. For example, it shows table-space utilization for a database, or mail-store utilization for Microsoft Exchange.
Asset Management	
Asset Count Summary	Displays the asset count of storage elements, such as applications, hosts, storage systems, switches, and so forth.
Quarantined Elements	Displays any elements that are set to "Quarantined" in the Discovery Details pane.
Backup	
Backup Drill Down	Shows the session data and status over a specified period of time.
Backup Failure Analysis - Most common Failure	Shows the number and type of backup errors on clients managed by the management server.
Backup Image	Shows the size, ownership, and properties of the images stored on tape and disk for clients.
Backup Session	Shows backup activity over a specified period of time.
Drive Utilization	Shows tape drive utilization over a specified period of time. This report

Report Name	Description
	provides data that helps you determine which media is in which drive during a specified time period.
Library Utilization	Shows all of the drives in a library and the number in use and available during the specified time period. This report is similar to the Drive Utilization report, but it shows all of the drives in the library as an aggregate.
Media Availability	Shows whether media is available or being used.
Media Trend - Media Summary	Shows media utilization trends over the specified time period.
Media Used	Shows which media was used during the specified time period.
Most Frequently Failing Client	Shows client failure rate and sorts clients that fail most frequently to the top of the report.
Session Queue Time	Shows the queue time of sessions during a period of time. Queue time is defined as the length of time a session waits before execution begins.
SLA Summary	Shows failure, success, and partial completion statistics for the executed back-up jobs.
Backup - Association	
Client Backup State	Shows the back-up state of the client host.
CPU and Memory Utilization of Backup Clients	Shows CPU and physical memory utilization for the Backup client host.
Host Volumes Not Backed Up	Lists the drives or mount points where Backup failed.
Hosts Not Part of Backup Specifications	Lists those hosts which are not configured for Backup.
Policies and Schedules for Hosts and Applications	Lists policies and schedules defined for applications and hosts.
Backup - Data Protector Reporter	
Backup - Data Protector Reporter - Backup Client Reports	
Backup Volume	Shows the number of files and size of each file backed up.
Clients Status	Shows daily historical information about client and session status for the last seven days with drill-down links to session details.
Clients with	Shows those clients which failed consecutively.

Report Name	Description
Consecutive Failed Sessions	
Failed Clients with Error Codes	Lists errors that occurred on each client showing the error count for each error code and error message displayed.
Schedule Summary	Displays schedule details.
Session Details	Displays client session details.
Backup - Data Protector Reporter - Capacity Planning Reports	
Backup Volume Growth	Displays the growth in back-up volume size.
Capacity Dashboard	Shows usage of top five (5) clients, media usage, session summary, and back-up size for last 14 days (2 weeks).
Clients Usage	Lists the top 5 clients showing most Backup activity based on total back-up size and the number of files, media, and drives backed up.
Drive Utilization	Shows utilization rate for disk drive.
Media Pool History	Displays the daily media usage for storage pool.
Media Utilization Dashboard	Displays the media usage by count and size.
Backup - Data Protector Reporter - Hyper Link Reports	
Backup Session Details	Shows details of Backup sessions.
Clients Session Details	Shows Backup session details for clients.
Error Session Details	Shows details of failed back-up sessions and generated errors.
Backup - Data Protector Reporter - Performance Reports	
Client Performance	Displays historical performance statistics for the client.
Drive Throughput	Shows throughput (I/O rate) statistics for disk drive.
Library Performance	Displays historical performance data for each library.
Backup - Data Protector Reporter - Product Analysis Reports	
Disabled Schedules	Lists schedules that are defined but disabled or idle.

Report Name	Description
Sessions Not Executed in Schedule Window	Shows those sessions that were not executed during the schedule window.
Backup - Data Protector Reporter - SLA Reports	
Backup SLA Summary	Shows number of successful, partially successful, and failed Backup sessions.
Effective SLA	Displays the effective SLA of policies.
SLA Summary by Client	Lists for each client the number of successful, failed, and partially successful sessions.
Backup - Forecast	
Backup Volume Growth Forecast	Displays future trends in volume growth related to Backup activities on each client over the next fifteen (15) days.
Client Performance Forecast	Displays future trends in Backup throughput (I/O) forecasted for the next fifteen (15) days.
Library Performance Forecast	Displays future trends in library throughput (I/O) forecasted for the next fifteen (15) days.
Library Utilization Forecast	Displays future trends in library utilization statistics forecasted for the next fifteen (15) days.
Media Utilization Forecast	Displays future trends in media utilization for the next fifteen (15) days.
SLA Forecast	Forecasts the back-up success rate of Backup Manager for the next fifteen (15) days.
Chargeback	
Array-based Chargeback	Shows storage tier information for each storage pool; includes host name, department, storage volume, volume size, and cost.
Asset -based Chargeback	Shows asset-based chargeback information for each department; includes department name, asset name, depreciation value, ownership ratio, chargeback amount, and total asset-based cost per month.
Chargeback by Application	Shows a summary of capacity and cost information by department; includes details related to application capacity and cost per tier.
Storage Element by Tier	Shows storage tier information including members and cost.

Report Name	Description
Storage Tier Criteria	Shows the criterias used for dynamically allocating elements to storage tiers.
Storage-based Chargeback by Organization	Shows a summary of total storage capacity and cost for the organization; includes storage capacity details and cost for each tier.
Configuration	
Elements by Group Hierarchy	Lists the elements of the selected group hierarchy.
Elements Group	Lists groups and elements with user-defined metadata in custom fields.
MAP Usage Summary	Shows MAP usage details.
Organization Details	Displays the details of the organizations created.
Fabric	
LSAN Zone Inventory	Displays LSAN zones in each fabric.
SAN Components Not Zoned	Shows switches and ports used by used by the storage area network (SAN) in the fabric but which are not part of a zone.
WWN that appear in zones but not in SAN	Shows the World Wide Name (WWN).
File Server	
File Server Users	Shows quota and used space statistics for file server users.
File Server Users Details	Shows detailed information for file server users; includes quota and used space statistics.
Rule Based Directory Details	Displays all Directories in a rule (selected in the filter).
Rule Based Duplicate File Details	Displays all Duplicate File Details in a rule (selected in the filter).
Rule Based File Details	Displays all File Details in a rule (selected in the filter).
Stale File Summary	Lists files in a file server over 180 days old.
Top N Aged Files	Shows top N oldest files on each file server (where N is a number selected by

Report Name	Description
	you).
Top N Directories	Shows the top N largest directories measured by directory size in gigabytes (GB) for each volume in each file server. N is the number of directories you want to display in the report and is selected prior to running the report.
Top N Directories by File Server	Shows the top N largest directories (as measured by directory size in GB) at the file server level across all file systems. N is the number of directories displayed in the report and is selected prior to running the report.
Top N Extensions	Shows the specified number of largest extensions (as measured by total size in GB) for each file server.
Top N Largest Files	Shows details for the top N largest files (as measured by file size in GB) at the volume level. N is the number of files to display in the report and is selected prior to running the report.
Top N Largest Files by File Server	Shows details for the top N largest files (as measured by file size in GB) at the file server level. N is the number of files you want displayed in the report and is specified prior to running the report.
Top N Largest Users by File Server	Shows details for the specified number of largest File SRM users (as measured by used space in GB) at the file server level. N is the number of users you want displayed in the report and is specified prior to running the report.
Top N Stale Files	Shows details for the specified number of stale files as measured by the last file access date at the file server level. N is the number of files you want displayed in the report and is specified prior to running the report.
Top N Stale Files by File Server	Shows the top N files which have not been accessed for 180 days, N is the number of files you want displayed in the report and is specified prior to running the report.
Top N Volumes with Stale Files	Shows the top N volumes with stale files measured by the file access dates at the volume level. Stale files have not been accessed for 180 days. N is the number of volumes you want displayed in the report and is specified prior to running the report.
Host Cluster	
Host Cluster Dependency	Lists the dependent host members. storage system, and switch details.
Host Cluster Summary	Lists the cluster host total capacity and its members.
Hosts	
Aggregated Host Storage by OS	Displays host storage statistics grouped by operating system.
Available White	Shows details for available white space.

Report Name	Description
Space	
HBA Summary	Shows details for host bus adapters (HBAs) managed by the management server.
	The following data is not available for Linux hosts discovered using the agentless discovery due to limitations:
	• Vendor name
	• Serial number
	• Hardware version number.
Host Capacity Forecast	Shows future trends in host capacity forecasted over the next 18 months (1.5 years).
Host Capacity with Drill Down	Shows host capacity statistics with drill-down to volumes for details.
Host CIM Extension Version	Displays host information and CIM Extension version number.
Host Connectivity	Shows information related to connectivity from host to switch and storage system.
Host Dependency	Lists all applications running on a host (non-virtual machine) and shows their dependencies on switches and storage resources for each mounted file system on a managed server.
Host Details - Disks	Shows disk details for hosts (non-virtual machines).
Host Details - Ports	Shows port details for hosts (non-virtual machines).
Host Events	Shows all events related to a managed storage element.
Host File System Utilization	Displays host file system usage details over a specified time period.
Host Remote Storage Summary	Shows used (mounted with a file system) and unused SAN resources for all managed hosts.
Host Storage Summary	Shows deleted information for all host file systems; includes high-level aggregate utilization.
Host Summary	Displays a list of all managed hosts and their properties.
Host Unused Capacity	Displays grey space details.
Host Unused Storage	Shows the total amount of SAN storage that is not utilized; includes enterprise wide statistics broken out by host, allowing reclamation of

Report Name	Description
	potentially over-allocated storage.
Host Utilization	Lists the mounted file system utilization for a managed host.
Host Utilization History	Displays the aggregated utilization of managed hosts per each operating system (OS) or all OS based on statistics.
Presented Storage Summary	Lists managed and unmanaged hosts, including storage system details.
Virtual Machine Dependency	Shows all applications running on a virtual machine host and the application dependencies, switches, and storage resources.
Virtual Machine Details	Shows detailed information about virtual machines in your storage environment.
NAS	
Array Centric Report - NetAPP	Uses management server data to calculate data that mimics vendor-specific tools.
Last known NAS Replication Pair Status	Displays the replication status of the NAS host at a particular time.
NAS Dependency	Displays NAS information for the client host and application.
NAS Host Details	Displays detailed NAS host information.
NAS Replication Pairs	Displays replication pair information for the NAS host.
NAS Share Report	Displays the share type, mount point, and list of hosts attached for all shares on a filer.
NAS Volumes Report	Shows volumes that are close to running out of disk space or file inode space and lists the aggregate or plex name to which the volume is attached.
NetApp Aggregate report	Shows aggregates that are close to running out of disk space or file inode space and lists the volumes that are attached to the aggregate.
NetApp Quota Report	Displays information for quotas on a single filer or across all filers, listing those filers closest to reaching capacity at the top of the list.
NetApp Snapshots Reports	Lists those volumes that are close to running out of reserved snapshot space.
NetApp Utilization Report	Shows utilization statistics for NetApp disks.
NAS - Celerra	
Celerra Array	Uses management server data to calculate data that mimics the vendor tool.

Report Name	Description
Centric	
Celerra Checkpoints	Lists checkpoints created and their corresponding source file systems.
Celerra Details	Displays Celerra information details.
Celerra Quota	Displays the details of all created quotas.
Celerra Virtual Provisioning	Lists the Celerra file systems that are enabled for virtual provisioning.
NAS Cluster	
NAS Cluster Summary	Lists the NAS host cluster and its members.
Performance	
Performance - NetApp	
NetApp FC Port Total Request Rate	Displays the Fibre Channel (FC) port request rates for the selected NetApp ports.
	Data: NetApp System Name, Front End Port Name, Collection Time; Metric: Total Requests/ Second
NetApp FC Port Total Throughput	Displays the Fibre Channel (FC) port throughput for the selected NetApp ports.
	Data: NetApp System Name, Front End Port Name, Collection Time; Metric: Total Throughput Rate (Bytes/Sec)
NetApp IP Port Total Request Rate	Displays the Ethernet IP port request rate for the selected NetApp ports.
	Data: NetApp System Name, Front End Port Name, Collection Time; Metric: Total Requests/ Second
NetApp IP Port Total Throughput	Displays the Ethernet IP port throughput for the selected NetApp ports.
	Data: NetApp System Name, Front End Port Name, Collection Time; Metric: Total Throughput Rate (KBytes/Sec)
NetApp System Latency and Operations	Displays the NetApp system latency and operations per second (req/s) for each protocol.
	Data: NetApp System Name, Collection Time; Metrics: CIFS Latency, FCP Write Latency, FCP Read Latency, iSCSI Read Latency, iSCSI Write Latency, NFS Read latency, NFS Write latency, CIFS Operations/Second, FCP Read Operations/Second, FCP Write Operations/Second, iSCSI Read Operations/Second, iSCSI Write Operations/Second, NFS Read Operations/Second, NFS Write Operations/Second
NetApp Top N Aggregate Total	Displays the top 20 NetApp aggregates with the largest average request rate

Report Name	Description
Request Rate	for the selected NetApps. The number (N) of displayed aggregates varies if multiple aggregates have the same calculated average total request rate.
	Data: NetApp System Name, Aggregate Name, Collection Time; Metrics: Total OPS, Read OPS, Write OPS
NetApp Top N Disk Utilization	Displays the top 20 NetApp disks with the highest average utilization for the selected NetApps. The number (N) of displayed disks varies if multiple disks have the same calculated average, such as "100," and this average falls within the top 20 calculated.
	Data: NetApp System Name, Disk Name, Collection Time; Metrics: Utilization Rate, Disk Size, Disk Type
NetApp Top N Ethernet Port Total Request Rate	Displays the top 10 Ethernet ports with the largest average request rate for the selected NetApps. The number (N) of displayed ports varies if multiple ports have the same calculated average total request rate.
	Data: NetApp System Name, Controller, Port, Port Speed, Collection Time; Metrics: Packets Received, Packets Transmitted, Total Packets
NetApp Top N Ethernet Port Total Throughput	Displays the top 10 Ethernet ports with the largest average data throughput rate for the selected NetApps. The number (N) of displayed ports varies if multiple ports have the same calculated average total throughput.
	NetApp System Name, Controller, Port, Port Speed, Collection Time; Metrics: Bytes Received, Bytes Transmitted, Total Bytes
NetApp Top N FC Port Total Request Rate	Displays the top 10 NetApp front-end Fibre Channel ports with the largest average request rate for the selected NetApps. The number (N) of displayed ports varies if multiple ports have the same calculated average total operations per second.
	Data: NetApp System Name, Controller, Port, Port Speed, Collection Time; Metrics: Read Operations (ops/sec), Write Operations (ops/sec), Other Operations (ops/sec), Total Operations (ops/sec)
NetApp Top N FC Port Total Throughput	Displays the top 10 NetApp front-end Fibre Channel ports with the largest average throughput for the selected NetApps. The number (N) of displayed ports varies if multiple ports have the same calculated throughput.
	Data: NetApp System Name, Controller, Port, Port Speed, Collection Time; Metrics: Read Bytes, Write Bytes, Total Bytes
NetApp Top N LUN Latency	Displays the top 20 NetApp LUNs with the longest average latency for the selected NetApps. The number (N) of displayed LUNs varies if multiple volumes have the same calculated average latency.
	Data: NetApp System Name, Volume Name, Collection Time; Metrics: Average Latency, Read Latency, Write Latency, Other Latency
NetApp Top N LUN Total Requests	Displays the top 20 NetApp LUNs with the highest average rate of total

Report Name	Description
	operations per second for the selected NetApps. The number (N) of displayed LUNs varies if multiple volumes have the same calculated average total requests per second. **Data:** NetApp System Name, LUN Name, Collection Time; **Metrics:** Total OPS, Read OPS, Write OPS, Other OPS
NetApp Top N LUN Total Throughput	Displays the top 20 NetApp LUNs with the highest average rate of total bytes per second for the selected NetApps. The number (N) of displayed LUNs varies if multiple LUNs have the same calculated average total throughput. Data: NetApp System Name, LUN Name, Collection Time; Metrics: Total KBytes/sec, Read KBytes/sec, Write KBytes/sec
NetApp Top N Volume Latency	Displays the top 20 NetApp volumes with the longest average latency for the selected NetApps. The number (N) of displayed volumes varies if multiple volumes have the same calculated average latency. Data: NetApp System Name, Volume Name, Collection Time; Metrics: Average Latency, Read Latency, Write Latency, Other Latency
NetApp Top N Volume Total Request Rate	Displays the top 20 NetApp volumes with the highest average request rate for the selected NetApps. The number (N) of volumes displayed in the report varies if multiple volumes have the same calculated average total request rate. Data: NetApp System Name, Volume Name, Collection Time; Metrics: Total OPS, Read OPS, Write OPS, Other OPS
NetApp Top N Volume Total Throughput	Displays the top 20 NetApp volumes with the highest average request rate for the selected NetApps. The number (N) of volumes displayed in the report varies if multiple volumes have the same calculated average total request rate. Data: NetApp System Name, Volume Name, Collection Time; Metrics: Total KBytes/sec, Read KBytes/sec, Write Kbytes/sec
Performance - Storage System - EMC Symmetrix	
Symmetrix Bottom N Front End Controller Hit Rate	Displays the bottom 10 EMC Symmetrix controllers with the lowest average cache hit rate for the selected array(s). Data: Storage System Name, Front End Controller Name, Collection Time; Metric: Total I/O (Req/Sec)
Symmetrix Bottom N Volume Cache Hit Rate	Displays the bottom N EMC Symmetrix volumes that have the lowest average cache hit rate for the selected array(s). **Data:** Symmetrix System Name, Volume Name, Collection Time; **Metrics:** % Hit I/Os, % Miss I/Os, % Read Hit I/Os, % Read Miss I/Os, % Write Hit I/Os, % Write Miss I/Os
Symmetrix Cache Usage	Displays the EMC Symmetrix cache utilization statistics for the selected

Report Name	Description
	array(s).
	Data: Storage System Name; **Metrics:** Read Hit %, Write Hit %, Total Hit %, Max Pending Flush Limit, Pending Flush, Total Permacache Slots, Used Permacache Slots, Delayed Fast Write Rate
Symmetrix Front End Controller Total Request Rate	Displays the EMC Symmetrix controller request rate (req/s) for the array(s) and controller(s) you select.
	Data: Storage System Name, Front End Controller Name, Collection Time; **Metrics:** Total I/O Rate (Req/Sec)
Symmetrix Front End Port Total Request Rate	Displays the EMC Symmetrix port request rate (req/s) for the selected array port(s).
	Data: Storage System Name, Front End Port Name, Collection Time; **Metric:** Total I/O (Req/Sec)
Symmetrix Front End Port Total Throughput	Displays the EMC Symmetrix front-end port data throughput (KB/s) for the selected array port(s).
	Data: Storage System Name, Front End Port Name, Collection Time; **Metric:** Total Data Rate (KBytes/Sec)
Symmetrix Top N Front End Controller Total Request Rate	Displays the top 10 EMC Symmetrix controllers
	Data: Storage System Name, Front End Controller Name, Collection Time; **Metrics:** Total IOPS, Read IOPS, Write IOPS, Total Cache Hit IOPS
Symmetrix Top N Front End Port Total Request Rate	Displays the top 20 EMC Symmetrix ports that have the highest average request rate (req/s) for the selected array(s).
	Data: Storage System Name, Front End Port Name, Collection Time; **Metric:** Total I/O (Req/Sec)
Symmetrix Top N Front End Port Total Throughput	Displays the top 20 EMC Symmetrix ports with the highest average data throughput (KB/s) for the selected array(s).
	Data: Storage System Name, Front End Port Name, Collection Time; **Metrics:** Total Data Rate (KBytes/Sec)
Symmetrix Top N Volume Request Rate	Displays the top N EMC Symmetrix volumes with the highest average request rate (req/s) for the selected array(s).
	Data: Symmetrix System Name, Volume Name, Collection Time; **Metrics:** Total req/sec, Read req/sec, Write req/sec, Total Hit req./sec, Total Miss req/sec
Symmetrix Top N Volume Response Time	Displays the top 20 EMC Symmetrix volumes that have the highest average latency for the selected array(s).
	Data: Symmetrix System Name, Volume Name, Collection Time; **Metrics:** Sampled AVG Read Time (ms), Sampled AVG Write Time (ms)

Report Name	Description
Symmetrix Top N Volume Throughput	Displays the top N EMC Symmetrix volumes with the highest average throughput rates (KB/s) for the array(s) you select. **Data:** Symmetrix System Name, Volume Name, Collection Time; **Metrics:** Sampled AVG Read Time (ms), Sampled AVG Write Time (ms)
Symmetrix Volume Cache Hit Rate	Displays the EMC Symmetrix volume cache hit rate for the selected volume(s). **Data:** Symmetrix System Name, Volume Name, Volume Pool Name, Raid Type, Collection Time; **Metrics:** % Hit I/O, % Read Hit I/O - Random, % Read Hit I/O - Total, % Write Hit I/O
Symmetrix Volume Request Rate	Displays the EMC Symmetrix volume request rate (req/s) for the selected volume(s). **Data:** Symmetrix System Name, Volume Name, Volume Pool Name, Raid Type, Collection Time: **Metrics:** Total I/O Req/Sec, Total Miss I/O Req/Sec, Read I/O - Total Req/Sec, Read I/O - Random Req/Sec, Read Miss I/O Req/Sec, Write I/O Req/Sec, Write Miss I/O Req/Sec
Symmetrix Volume Response Times	Displays the EMC Symmetrix volume response times for the selected volume(s). **Data:** Symmetrix System Name, Volume Name, Volume Pool Name, Raid Type, Collection Time; **Metrics:** Sampled AVG Read Time (ms), Sampled AVG Write Time (ms)
Symmetrix Volume Throughput	Displays the EMC Symmetrix volume throughput rates for the selected volume(s). **Data:** Symmetrix System Name, Volume Name, Volume Pool Name, Raid Type, Collection Time; **Metrics:** Total Data (KBytes/sec), Read Data (KBytes/sec), Write Data (KBytes/sec)
Performance - Storage System - EVA	
EVA Physical Disk Average Drive Latency	Displays the average drive latency for a physical disk over a time period that you specify. **Data:** Storage System Name, Disk Drive Name, Collection Time; **Metric:** Drive Latency.
EVA Physical Disk Average Queue Depth	Displays the average queue depth for a physical disk drive in the collection time range selected. **Data:** Storage System Name, Disk Drive Name, Collection Time; **Metric:** Queue Depth.

Report Name	Description
EVA Physical Disk Latency	Displays the read and write latencies for a physical disk drive in the collection time range selected. **Data:** Storage System Name, Disk Drive Name, Collection Time; **Metrics:** Average Read Latency, Average Write Latency.
EVA Physical Disk Request Rate	Displays the request rates for a physical disk drive. **Data:** Storage System Name, Disk Drive Name, Collection Time; **Metrics:** Total I/O, Read I/O, Write I/O, % Read I/O, % Write I/O.
EVA Physical Disk Throughput	Displays the throughputs for a physical disk drive. **Data:** Storage System Name, Disk Drive Name, Collection Time; **Metrics:** Total MB/s, Read MB/s, Write MB/s.
EVA Storage Controller CPU Utilization	Displays the EVA controller utilization over a selected time period. **Data:** Storage System Name, Storage Processor Name; **Metric:** % CPU.
EVA Storage Controller Data Transfer	Displays the EVA controller data transfer over a selected period of time. **Data:** Storage System Name, Storage Processor Name; **Metric:** % Data Transfer.
EVA Storage Controller Latency	Displays the EVA controller average read and average write latency over a selected time period. **Data:** Storage System Name, Storage Processor Name; **Metrics:** Average Read Latency, Average Write Latency.
EVA Storage Controller Request Rate	Displays the I/O request rates for a storage controller over a selected time period. **Data:** Storage System Name, Storage Processor Name; **Metrics:** Total I/O, Read I/O, Write I/O, % Read I/O, % Write I/O.
EVA Storage Controller Throughput	Displays the throughputs for a storage controller over a selected time period. **Data:** Storage System Name, Storage Processor Name; **Metrics:** Read MB/s, Write MB/s.
EVA Storage FC Port Average Queue Depth	Displays the average queue depth statistics of storage Fibre Channel (FC) ports over a selected time period. **Data:** Storage System Name, Storage Processor Name, FC Port Name, Collection Time; **Metric:** Average Queue Depth.
EVA Storage FC Port Latency	Lists the storage Fibre Channel (FC) port latency statistics over a selected time period. **Data:** Storage System Name, Storage Processor Name, FC Port Name, Collection Time; **Metrics:** Average Read Latency, Average Write Latency.

Report Name	Description
EVA Storage FC Port Request Rate	Displays the I/O request rates for a storage Fibre Channel (FC) port over a selected time period. **Data:** Storage System Name, Storage Processor Name, FC Port Name, Collection Time; **Metrics:** Total I/O, Read I/O, Write I/O, % Read I/O, % Write I/O.
EVA Storage FC Port Throughput	Lists the throughput statistics of storage fibre channel (FC) port over a selected time period. **Data:** Storage System Name, Storage Processor Name, FC Port Name, Collection Time; **Metrics:** Read MB/s, Write MB/s.
EVA Storage Pool Latency	Displays the EVA storage pool's average read miss, average read hit, and average write latency statistics over a selected time period. **Data:** Storage System Name, Storage Pool Name, Collection Time; **Metrics:** Average Read Hit Latency, Average Read Miss Latency, Average Write Latency.
EVA Storage Pool Request Rate	Displays the I/O request rates of an EVA storage pool over a selected period of time. **Data:** Storage System Name, Storage Pool Name, Collection Time; **Metrics:** Total I/O, Read I/O, Read Hit I/O, Read Miss I/O, Write I/O, % Read I/O, % Write I/O.
EVA Storage Pool Throughput	Displays the EVA throughput statistics of a storage pool over a selected time period. **Data:** Storage System Name, Storage Pool Name, Collection Time; **Metrics:** Read Hit MB/s, Read Miss MB/s, Write MB/s.
EVA Storage System Request Rate	Displays the EVA storage system request (I/O) rate over a selected time period. **Data:** Storage System Name, Collection Time; **Metrics:** Total I/O, Read I/O, Write I/O, % Read I/O, % Write I/O.
EVA Storage System Throughput	Displays the EVA throughputs for a storage system over a selected period of time. **Data:** Storage System Name, Collection Time; **Metrics:** Read MB/s, Write MB/s.
EVA Storage Volume Latency	Displays the EVA storage volume average read miss, average read hit, and average write latency over a selected time period. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Average Read Hit Latency, Average Read Miss Latency, Average Write Latency.
EVA Storage Volume Request	Displays the EVA storage volume request rate statistics over a selected time period.

Report Name	Description
Rate	**Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Total I/O, Read I/O, Read Hit I/O, Read Miss I/O, Write I/O, % Read I/O, % Write I/O.
EVA Storage Volume Throughput	Displays the EVA storage volume throughput over a selected time period. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Read Miss MB/s, Read Hit MB/s, Write MB/s.
EVA Top N Volumes by Activity	Displays the top N storage volumes for each storage pool based on the average of the Total I/O per storage volume for a specified period of time. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name; **Metrics:** Read Response, % Utilization, Total I/O, Read Hit I/O, Read Miss I/O, Write I/O.
Performance - Storage System - HDS	
HDS Array Group Cache	Displays the HDS array group cache performance statistics over a selected time period. **Data:** Storage System Name, Array Group Name, Collection Time; **Metrics:** Total I/O (Req/Sec), Read I/O (Req/Sec), Write I/O (Req/Sec), % Read Hit , % Sequential Read Hit, % Random Read Hit.
HDS Array Group Request Rate	Displays the HDS array group request (I/O) rate statistics over a selected period of time. **Data:** Storage System Name, Array Group Name, Collection Time; **Metrics:** Total I/O (Req/Sec), Read I/O (Req/Sec), Read Hit I/O (Req/Sec), Write I/O (Req/Sec), % Read I/O, % Write I/O.
HDS Array Group Response Time	Displays the read and write response times for each HDS storage array group over a selected period of time. **Data:** Storage System Name, Array Group Name, Collection Time; **Metrics:** Read Response Time, Write Response Time.
HDS Array Group Throughput	Displays the throughput (MB/s) for each array group on HDS arrays over time. **Data:** Storage System Name, Array Group Name, Collection Time; **Metrics:** Read (MB/s), Sequential Read (MB/s), Random Read (MB/s), Write (MB/s), Sequential Write (MB/s), Random Write (MB/s).
HDS Bottom N Array Groups by Random Read Hit Percent	Displays the bottom N HDS array groups by read hit (random) percent rate for each storage system based on the average of the % Random Read Hit statistic per array group over a selected time period. N is the number of array groups to display in the report and is specified prior to generating the report. **Data:** Storage System Name, Collection Time; **Metrics:** Array Group name, % Utilization, Total I/O, Read Hit I/O, % Random Read Hit.

Report Name	Description
HDS Bottom N Array Groups by Sequential Read Hit Percent	Displays the bottom N HDS array groups by read hit (sequential) percent rate for each storage system based on the average of % Sequential Read Hit statistic per array group over a selected time period. N is the number of array groups to display in the report. **Data:** Storage System Name, Collection Time; **Metrics:** Array Group name,% Utilization, Total I/O, Read Hit I/O, % Sequential Read Hit.
HDS Bottom N Volumes by Random Read Hit Percent	Displays the bottom N HDS volumes by read hit (random) percent rate for each storage pool based on the average of the % Random Read Hit statistic per storage volume over a selected time period. N is the number of volumes to display in the report. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** % Utilization, Total I/O (Req/Sec), Read Hits I/O (Req/Sec), % Random Read Hit.
HDS Bottom N Volumes by Sequential Read Hit Percent	Displays the bottom N HDS volumes by read hit (sequential) percent rate for each storage pool based on the average of % Sequential Read Hit statistics per storage volume over a selected period of time. N is the number of volumes to display in the report. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** % Utilization, Total I/O (Req/Sec), Read Hits I/O (Req/Sec), % Sequential Read Hit.
HDS Storage Controller Utilization	Displays the HDS storage controller utilization percent rate based on Utilization statistics over a specified period of time. **Data:** Storage System Name,Storage Controller Name, Collection Time; **Metrics:** % MP#0 Utilization, % MP#1 Utilization, % MP#2 Utilization, % MP#3 Utilization, % MP#4 Utilization, % MP#5 Utilization, % MP#6 Utilization, % MP#7 Utilization.
HDS Storage FC Port Total Request Rate	Displays the storage Fibre Channel (FC) port total I/O request rate statistics for FC ports on an HDS array during a specified time period. **Data:** Storage System Name, Storage Controller Name, FC Port Name, Collection Time; **Metric:** Total I/O.
HDS Storage FC Port Total Throughput	Displays the storage Fibre Channel (FC) port total throughput of each HDS FC port over a selected time period. **Data:** Storage System Name, Storage Controller Name, FC Port Name, Collection Time; **Metric:** Total MB/s.
HDS Storage Volume Cache	Displays the cache hit details for each HDS storage volume over a selected time period. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time **Metrics:** Total I/O (Req/Sec), Read I/O (Req/Sec), Write I/O (Req/Sec), % Read Hit , % Sequential Read Hit , % Random Read Hit.

Report Name	Description
HDS Storage Volume Request Rate	Displays the request (I/O) rate for each HDS storage volume over a selected time period. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Total I/O (Req/Sec), Read I/O (Req/Sec), Read Hit I/O (Req/Sec), Write I/O (Req/ Sec), % Read I/O, % Write I/O.
HDS Storage Volume Response Time	Displays the response time for each HDS storage volume over a selected period of time. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Read Response Time, Write Response Time.
HDS Storage Volume Throughput	Displays the throughput for each HDS storage volume based on the Read Response Time and Write Response Time statistics for the storage volumes over a specified time period. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Read Response Time, Write Response Time.
HDS Top N Array Groups by Read Response Time	Displays the top N HDS array groups based on the average of Read Response Time per array group over a selected time period. N is the number of array groups to display in the report and is specified prior to generating the report. **Data:** Array Group Name; **Metrics:** Read Response Time, % Utilization, Total I/O, Read Hit I/O, % Sequential Read Hit, % Random Read Hit.
HDS Top N Array Groups by Utilization	Displays the top N HDS array groups based on the average of the % Utilization statistic per array group over a selected time period. N is the number of array groups to display in the report. **Data:** Array Group Name; **Metrics:** % Utilization, Total I/O, Read Hit I/O, % Sequential Read Hit, % Random Read Hit.
HDS Top N Array Groups by Write Response Time	Displays the top N HDS array groups based on the average of Write Response Time statistics per array group over a selected time period. N is the number of array groups to display in the report. **Data:** Array Group Name; **Metrics:** Write Response Time, % Utilization, Total I/O.
HDS Top N FC Port Total Throughput	Displays the top N Fibre Channel (FC) ports on HDS arrays based on total throughput per FC Port over a selected time period . N is the number of ports to display in the report. **Data:** Storage System Name, Storage Processor Name, FC Port Name, Collection Time; **Metric:** Total MB/s.
HDS Top N Storage FC Port Total Request Rate	Displays the top N FC ports for each storage controller on HDS arrays based on the average of Total I/O per FC port over a selected time period. N is the number of ports to display in the report.

Report Name	Description
	Data: Storage System Name, Storage Controller Name, FC Port Name; **Metric:** Total I/O.
HDS Top N Volumes by Read Response Time	Displays the top N storage volumes for each HDS storage pool based on the average of Read Response Time statistics per storage volume over a selected time period. N is the number of volumes to display in the report.
	Data: Storage System Name, Storage Pool Name, Storage Volume Name; **Metrics:** Read Response Time, % Utilization, Total I/O, Read I/O, % Read Hit I/O, % Sequential Read Hit, % Random Read Hit.
HDS Top N Volumes by Utilization	Displays the top N storage volumes for each HDS storage pool based on the average of the % Utilization statistic per storage volume over a selected time period. N is the number of volumes to display in the report.
	Data: Storage System Name, Storage Pool Name, Storage Volume Name; **Metrics:** % Utilization, Total I/O, Read I/O, % Read Hit I/O, % Sequential Read Hit, % Random Read Hit.
HDS Top N Volumes by Write Response Time	Displays the top N storage volumes for each HDS storage pool, based on the average of Write Response Time statistics per storage volume over a selected time period. N is the number of volumes to display in the report.
	Data: Storage System Name, Storage Pool Name, Storage Volume Name; **Metrics:** Write Response Time, % Utilization, Total I/O.
Performance - Storage System - HP 3PAR	
HP 3PAR - Controller Total Request Rate*	Displays the front-end Fiber Channel (FC) controller total request rate for the HP 3PAR storage system controllers selected.
	Data: Storage System Name, Serial Number, Processor Name, Collection Time, Statistics Type, Site Name; **Metrics:** Total I/O Rate (Req/s)
HP 3PAR - Controller Total Throughput*	Displays front-end Fibre Channel (FC) controller total throughput performance for the HP 3PAR storage system controllers selected.
	Data: Storage System Name, Serial Number, Processor Name, Collection Time, Statistics Type, Site Name; **Metrics:** Total Throughput (Bytes/s)
HP 3PAR - Disk Total Request Rate*	Displays the total disk request rate for the HP 3PAR storage array disks selected.
	Data: Storage System Name, Serial Number, Disk Name, Collection Time, Statistics Type, Site Name; **Metrics:** Total I/O (Req/s)
HP 3PAR - Disk Total Throughput*	Displays the total disk throughput performance for the HP 3PAR storage array disks selected.
	Data: Storage System Name, Serial Number, Disk Name, Collection Time, Statistics Type, Site Name; **Metrics:** Total Throughput (Bytes/s)
HP 3PAR - Pool Total	Displays the total pool throughput performance for the HP 3PAR storage array pools selected.

Report Name	Description
Throughput*	**Data:** Storage System Name, Serial Number, Pool Name, Collection Time, Statistics Type, Site Name; **Metrics:** Total Throughput (KBytes/s)
HP 3PAR - Port Total Request Rate*	Displays the Fibre Channel (FC) port total request rate for the HP 3PAR storage system ports selected. **Data:** Storage System Name, Serial Number, Port Name, Collection Time, Statistics Type, Site Name; **Metrics:** Total I/O (Req/s)
HP 3PAR - Port Total Throughput*	Displays port total throughput performance for the HP 3PAR storage array ports selected. **Data:** Storage System Name, Serial Number, Port Name, Collection Time, Statistics Type, Site Name; **Metrics:** Total Throughput (KBytes/s)
HP 3PAR - Storage System Aggregated Volume Statistics*	Displays the aggregated volume total I/O rate for the HP 3PAR storage arrays selected. **Data:** Storage System Name, Serial Number, Collection Time, Volume Name, Statistics Type, Site Name; **Metrics:** Total I/O (Req/s)
HP 3PAR - Storage System Statistics*	Displays the HP 3PAR storage system total I/O rate performance for the storage array controllers selected. **Data:** Storage System Name, Serial Number, Collection Time, Statistics Type, Site Name; **Metrics:** Total I/O (Req/s)
HP 3PAR - Storage System Storage Pool Aggregated Volume Statistics*	Displays the pool aggregated volume total I/O rate for the HP 3PAR storage arrays selected. **Data:** Storage System Name, Serial Number, Collection Time, Pool Name, Statistics Type, Site Name; **Metrics:** Total I/O (Req/s)
HP 3PAR - Storage System Total Throughput	Displays storage volume total throughput performance for the HP 3PAR storage arrays selected. **Data:** Storage System Name, Serial Number, Collection Time, Statistics Type, Site Name; **Metrics:** Total Data Rate (Byte/s), Computed AVG IO Rate (Bytes/s)
HP 3PAR - Storage System Volume Statistics*	Displays volume total I/O rate performance for the HP 3PAR storage arrays selected. **Data:** Storage System Name, Serial Number, Collection Time, Volume Name, Statistics Type, Site Name; **Metrics:** Total I/O (Req/s)

Report Name	Description
HP 3PAR - Top 20 Storage Pools Based on Request Rate*	Displays the top 20 pools for the HP 3PAR storage arrays selected based on the average number of I/Os per second (IOPS) over a selected time period per pool. **Data:** Site Name, Storage System Name, Pool Name, Collection Time; **Metrics:** Total I/O Rate (Req/s)
HP 3PAR - Top 20 Storage Pools Based on Throughput*	Displays the top 20 storage pools for the HP 3PAR storage arrays selected based on the average of Total Bytes/s over a selected time period per pool. **Data:** Site Name, Storage System Name, Storage Pool Name, Collection Time; **Metrics:** Total Data Rate (KBytes/s)
HP 3PAR - Top 20 Storage Ports Based on Request Rate*	Displays the top 20 Fibre Channel (FC) ports for the HP 3PAR storage arrays selected, based on the average number of I/Os per second (IOPS) over a selected time period per port. **Data:** Site Name, Storage System Name, Port Name, Collection Time; **Metrics:** Total I/O Rate (Req/s)
HP 3PAR - Top 20 Storage Ports Based on Throughput*	Displays the top 20 Fibre Channel (FC) ports for the HP 3PAR storage arrays selected based on the average of Total Bytes/s over a selected time period per port. **Data:** Site Name, Storage System Name, Port Name, Collection Time; **Metrics:** Total Data Rate (KBytes/s)
HP 3PAR - Top 20 Volumes Based on Request Rate*	Displays the top 20 volumes for the HP 3PAR storage arrays selected based on the average number of I/Os per second (IOPS) over a selected time period per volume. **Data:** Site Name, Storage System Name, Volume Name, Collection Time; **Metrics:** Total I/O Rate (Req/s)
HP 3PAR - Top 20 Volumes Based on Throughput*	Displays the top 20 storage volumes for the HP 3PAR storage arrays selected based on the average of Total Bytes/s over a selected time period per volume. **Data:** Site Name, Storage System Name, Volume Name, Collection Time; **Metrics:** Total Data Rate (KBytes/s)
HP 3PAR - Volume Total Throughput*	Displays volume total throughput performance for the HP 3PAR storage array volumes selected. **Data:** Storage System Name, Serial Number, Volume Name, Collection Time, Statistics Type, Site Name; **Metrics:** Total Throughput (Bytes/s)
Performance - Storage System - HP XP	
P9000 MP Blade Utilization Report	Displays the MP Blade Utilization for the selected arrays. **Data:** Storage System Name; **Metrics:** % Utilization.

Report Name	Description
P9000 Top 20 Volume Data Rate per MP Blade	Displays the top 20 P9000 volumes with the highest average data rate per MP Blade for the arrays selected. **Data:** Storage System Name; Volume Name; Collection Time; **Metrics:** Total Data Rate.
P9000 Top 20 Volume Request Rate per MP Blade	Displays the top 20 P9000 volumes with the highest average request rate per MP Blade for the arrays selected. **Data:** Storage System Name; Volume Name; Collection Time; **Metrics:** Total I/O.
XP Array Group Cache	Displays the XP array group cache performance statistics over a selected time period. **Data:** Storage System Name, Array Group Name, Collection Time; **Metrics:** Total I/O (Req/Sec), Read I/O (Req/Sec), Write I/O (Req/Sec), % Read Hit , % Sequential Read Hit, % Random Read Hit.
XP Array Group Request Rate	Displays the XP array group I/O request rate statistics over a selected time period. **Data:** Storage System Name, Array Group Name,Collection Time; **Metrics:** Total I/O (Req/Sec), Read I/O (Req/Sec), Read Hit I/O (Req/Sec), Write I/O (Req/Sec), % Read I/O, % Write I/O.
XP Array Group Response Time	Displays the read and write response times for each XP storage array group over a selected period of time. **Data:** Storage System Name, Array Group Name, Collection Time; **Metrics:** Read Response Time, Write Response Time.
XP Array Group Throughput	Displays the throughput (MB/s) for each array group on XP arrays over a selected period of time. **Data:** Storage System Name, Array Group Name, Collection Time; **Metrics:** Read (MB/s), Sequential Read (MB/s), Random Read (MB/s), Write (MB/s), Sequential Write (MB/s), Random Write (MB/s).
XP Bottom N Array Groups by Random Read Hit Percent	Displays the bottom N XP array groups by read hit (random) percent rate for each storage system based on the average of the % Random Read Hit statistic per array group over a selected time period. N is the number of array groups to display in the report and is specified prior to generating the report. **Data:** Storage System Name, Collection Time; **Metrics:** Array Group name, % Utilization, Total I/O, Read Hit I/O, % Random Read Hit.

Report Name	Description
XP Bottom N Array Groups by Sequential Read Hit Percent	Displays the bottom N XP array groups by read hit (sequential) percent rate for each storage system based on the average of % Sequential Read Hit statistic per array group over a selected time period. N is the number of array groups to display in the report. **Data:** Storage System Name, Collection Time; **Metrics:** Array Group name, % Utilization, Total I/O, Read Hit I/O, % Sequential Read Hit.
XP Bottom N Volumes by Random Read Hit Percent	Displays the bottom N XP volumes by read hit (random) percent rate for each storage pool based on the average of the % Random Read Hit statistic per storage volume over a selected time period. N is the number of volumes to display in the report. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** % Utilization, Total I/O (Req/Sec), Read Hits I/O (Req/Sec), % Random Read Hit.
XP Bottom N Volumes by Sequential Read Hit Percent	Displays the bottom N XP volumes by read hit (sequential) percent rate for each storage pool based on the average of % Sequential Read Hit statistics per storage volume over a selected period of time. N is the number of volumes to display in the report. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** % Utilization, Total I/O (Req/Sec), Read Hits I/O (Req/Sec), % Sequential Read Hit.
XP Storage Controller Utilization	Displays the XP storage controller utilization percent rate based on Utilization statistics over a specified period of time. **Data:** Storage System Name, Storage Controller Name, Collection Time; **Metrics:** % MP#0 Utilization , % MP#1 Utilization, % MP#2 Utilization, % MP#3 Utilization, % MP#4 Utilization, % MP#5 Utilization, % MP#6 Utilization, % MP#7 Utilization.
XP Storage FC Port Total Request Rate	Displays the storage Fibre Channel (FC) port total I/O request rate statistics for FC ports on an XP array over a specified time period. **Data:** Storage System Name, Storage Controller Name, FC Port Name, Collection Time; **Metric:** Total I/O.
XP Storage FC Port Total Throughput	Displays the storage Fibre Channel (FC) port total throughput of each XP FC port over a selected time period. **Data:** Storage System Name, Storage Controller Name, FC Port Name, Collection Time; **Metric:** Total MB/s.
XP Storage Volume Cache	Displays the cache hit details for each XP storage volume over a selected time period. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Total I/O (Req/Sec), Read I/O (Req/Sec), Write I/O (Req/Sec), % Read Hit, % Sequential Read Hit , % Random Read Hit.

Report Name	Description
XP Storage Volume Request Rate	Displays the request (I/O) rate over a selected time period for each XP storage volume. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Total I/O (Req/Sec), Read I/O (Req/Sec), Read Hit I/O (Req/Sec), Write I/O (Req/ Sec), % Read I/O, % Write I/O.
XP Storage Volume Response Time	Displays the response time for each XP storage volume over a selected period of time. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Read Response Time, Write Response Time.
XP Storage Volume Throughput	Displays the throughput for each XP storage volume based on the Read Response Time and Write Response Time statistics for the storage volumes over a specified time period. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name, Collection Time; **Metrics:** Read Response Time, Write Response Time.
XP Top N Array Groups by Read Response Time	Displays the top N XP array groups based on the average of Read Response Time per array group over a selected time period. N is the number of array groups to display in the report and is specified prior to generating the report. **Data:** Array Group Name; **Metrics:** Read Response Time, % Utilization, Total I/O, Read Hit I/O, % Sequential Read Hit, % Random Read Hit.
XP Top N Array Groups by Utilization	Displays the top N XP array groups based on the average of the % Utilization statistic per array group over a selected time period. N is the number of array groups to display in the report. **Data:** Array Group Name; **Metrics:** % Utilization, Total I/O, Read Hit I/O, % Sequential Read Hit, % Random Read Hit.
XP Top N Array Groups by Write Response Time	Displays the top N XP array groups based on the average of Write Response Time statistics per array group over a selected time period. N is the number of array groups to display in the report. **Data:** Array Group Name; **Metrics:** Write Response Time, % Utilization, Total I/O.
XP Top N FC Port Total Throughput	Displays the top N Fibre Channel (FC) ports for XP arrays based on total throughput per FC port over a selected time period. N is the number of ports to display in the report. **Data:** Storage System Name, Storage Processor Name, FC Port Name, Collection Time; **Metric:** Total MB/s.

Report Name	Description
XP Top N Storage FC Port Total Request Rate	Displays the top N FC ports for each storage controller on XP arrays based on the average of Total I/O per FC port over a selected time period. N is the number of ports to display in the report. **Data:** Storage System Name, Storage Controller Name, FC Port Name; **Metric:** Total I/O.
XP Top N Volumes by Read Response Time	Displays the top N storage volumes for each XP storage pool based on the average of Read Response Time statistics per storage volume over a selected time period. N is the number of volumes to display in the report. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name; **Metrics:** Read Response Time, % Utilization, Total I/O, Read I/O, % Read Hit I/O, % Sequential Read Hit, % Random Read Hit.
XP Top N Volumes by Utilization	Displays the top N storage volumes for each XP storage pool, based on the average of the % Utilization statistic per storage volume over a selected time period. N is the number of volumes to display in the report. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name; **Metrics:** % Utilization, Total I/O, Read I/O, % Read Hit I/O, % Sequential Read Hit, % Random Read Hit.
XP Top N Volume by Write Response Time	Displays the top N storage volumes for each XP storage pool based on the average of Write Response Time statistics per storage volume over a selected time period. N is the number of volumes to display in the report. **Data:** Storage System Name, Storage Pool Name, Storage Volume Name; **Metrics:** Write Response Time, % Utilization, Total I/O.
Performance - Storage System - IBM SVC	
IBM SVC - Bottom 20 Volume Hit Rates*	Displays IBM SVC volume hit rate statistics for the bottom 20 volumes. **Data:** Site Name, Storage System Name, Volume Name, Collection Time, Statistics Type, Site Name; **Metrics:** Read Hit Data Rate (KB/Sec), Write Hit Data Rate (KB/Sec).
IBM SVC - Cluster I/O Request Statistics*	Displays IBM SVC cluster I/O request statistics for the storage array clusters selected. **Data:** Storage System Name, Serial Number, Collection Time, Statistics Type, Site Name; **Metrics:** Total I/O Rate (Req/Sec), Read I/O Rate (Req/Sec), Write I/O Rate (Req/Sec).
IBM SVC - Cluster Throughput Statistics*	Displays IBM SVC cluster throughput statistics for the storage array clusters selected. **Data:** Site Name, Storage System Name, Serial Number, Collection Time, Statistics Type; **Metrics:** Total Data Rate (KB/Sec), Read Data Rate (KB/Sec), Write Data Rate (KB/Sec).
IBM SVC - IOGroup I/O Request	Displays IBM SVC IOGroup request statistics for the storage array IOGroups selected.

Report Name	Description
Statistics*	**Data:** Site Name, Storage System Name, Serial Number, IOGroup Name, Collection Time, Statistics Type; **Metrics:** Total Data Rate (KB/Sec), Read Data Rate (KB/Sec), Write Data Rate (KB/Sec).
IBM SVC - IOGroup Throughput Statistics*	Displays IBM SVC IOGroup throughput statistics for the storage array IOgroups selected. **Data:** Site Name, Storage System Name, Serial Number, IOGroup Name, Collection Time, Statistics Type; **Metrics:** Total Data Rate (KB/Sec), Read Data Rate (KB/Sec), Write Data Rate (KB/Sec).
IBM SVC - MDisk I/O Request Statistics*	Displays IBM SVC MDisk I/O statistics for the MDisks selected. **Data:** Site Name, Storage System Name,Volume Name, Collection Time, Statistics Type, MDisk Name; **Metrics:** Total I/O Rate (Req/Sec), Read I/O Rate (Req/Sec), Write I/O Rate (Req/Sec).
IBM SVC - MDisk Throughput Statistics*	Displays IBM SVC MDisk throughput statistics for the MDisks selected. **Data:** Site Name, Storage System Name,Volume Name, Collection Time, Statistics Type, MDisk Name; **Metrics:** Total Data Rate (Bytes/Sec), Read Data Rate (Bytes/Sec), Write Data Rate (Bytes/Sec).
IBM SVC - Node I/O Request Statistics*	Displays IBM SVC node statistics for the storage array nodes selected. **Data:** Site Name, Storage System Name, Serial Number, Node Name, Collection Time, Statistics Type; **Metrics:** Total I/O Rate (Req/Sec), Read I/O Rate (Req/Sec), Write I/O Rate(Req/Sec).
IBM SVC - Pool I/O Request Statistics*	Displays IBM SVC pool I/O statistics for the pools selected. **Data:** Site Name, Storage System Name, Pool Name, Collection Time, Statistics Type; **Metrics:** Total I/O Rate (Req/Sec), Read I/O Rate (Req/Sec), Write I/O Rate (Req/Sec).
IBM SVC - Pool Response Time Statistics*	Displays IBM SVC pool response times for the pools selected. **Data:** Site Name, Storage System Name, Pool Name, Collection Time, Statistics Type; **Metrics:** Response time (ms), Average Response Time.
IBM SVC - Pool Throughput Statistics*	Displays IBM SVC pool throughput statistics for the pools selected. **Data:** Site Name, Storage System Name, Pool Name, Collection Time, Statistics Type; **Metrics:** Total Data Rate (KB/Sec), Read Data Rate (KB/Sec), Write Data Rate (KB/Sec).
IBM SVC - Top 20 Volume I/O Request Statistics*	Displays IBM SVC Volume I/O statistics for the volumes selected. **Data:** Site Name, Storage System Name, Volume Name, Collection Time, Statistics Type; **Metrics:** Total I/O Rate(Req/Sec), Read I/O Rate (Req/Sec), Write I/O Rate (Req/Sec).
IBM SVC - Top 20 Volume IO Request	Displays IBM SVC Volume I/O statistics for the volumes selected.

Report Name	Description
Statistics*	**Data:** Site Name, Storage System Name, Volume Name, Collection Time, Statistics Type; **Metrics:** Total I/O Rate(Req/Sec), Read I/O Rate (Req/Sec), Write I/O Rate(Req/Sec).
IBM SVC - IBM SVC - Top 20 Volume Response Times*	Displays IBM SVC Volume response time statistics for the top 20 volumes. **Data** : Site Name, Storage System Name, Volume Name, Collection Time, Statistics Type; **Metrics:** Response Time (ms)
IBM SVC - Top 20 Volume Throughput Statistics*	Displays IBM SVC volume throughput statistics for the volumes selected. **Data:** Site Name, Storage System Name,Volume Name, Collection Time, Statistics Type; **Metrics:** Total Data Rate (KB/Sec), Read Data Rate (KB/Sec), Write Data Rate (KB/Sec).
IBM SVC - Volume Hit Rates*	Displays IBM SVC volume hit rate statistics for the volumes selected. **Data:** Site Name, Storage System Name,Volume Name, Collection Time, Statistics Type; **Metrics:**Read Hit Data Rate (KB/Sec), Write Hit Data Rate (KB/Sec).
IBM SVC - Volume I/O Request Statistics*	Displays IBM SVC volume I/O request statistics for the volumes selected. **Data:** Site Name, Storage System Name,Volume Name, Collection Time, Statistics Type; **Metrics:**Total I/O Rate (Req/Sec), Read I/O Rate (Req/Sec), Write I/O Rate (Req/Sec).
IBM SVC - Volume Response Times*	Displays IBM SVC volume response time statistics for the volumes selected. **Data:** Site Name, Storage System Name,Volume Name, Collection Time, Statistics Type; **Metrics:** Average response time (ms).
IBM SVC - Volume Throughput Statistics*	Displays IBM SVC volume throughput statistics for the volumes selected. **Data:** Site Name, Storage System Name,Volume Name, Collection Time, Statistics Type; **Metrics:** Total Data Rate (KB/Sec), Read Data Rate (KB/Sec), Write Data Rate (KB/Sec).
Performance - Switch	
Switch Port Input and Output Performance	User selects the specific performance metrics and switch ports for which they want performance I/O statistics. Report columns and metrics are not predetermined.
Storage	
Array Centric Report - EMC Symmetrix	Uses management server data to calculate data that mimics the vendor tool.
Array Centric Report - HP EVA	Uses management server data to calculate data that mimics the vendor tool.

Report Name	Description
Array Centric Report - HP P4000	Displays utilization details found on the device's Central Management Console. This report is for only the P4000 array and not for the P4300 or P4500 arrays.
Array Centric Report - HP XP	Uses management server data to calculate data that mimics the vendor tool.
Array Centric Report - IBM SVC	Uses management server data to calculate data that mimics the vendor tool. Shows IBM SVC capacity and external storage information for each mdisk.
Array Centric Report - MSA 23xxfc	Uses management server data to calculate data that mimics the vendor tool.
Array Centric Report - P2000 G3	Uses management server data to calculate data that mimics the vendor tool.
Available Volumes	Displays volumes that are configured on managed arrays but which are not assigned to Fibre Channel (FC) ports within the array.
Imported Storage Summary	Displays capacity statistics for storage virtualizers.
Last Known Storage System Replication Pair Status	Lists the last status of a replication pair in a timestamp.
LUN Mount	Displays the LUN usage of each storage system.
Storage Dependency	Lists storage dependencies on application, host, and switch resources.
Storage Details	Displays detailed information about storage systems.
Storage System Capacity Details (aka Storage System Physical/ Internal Capacity)	Displays detailed capacity information for storage arrays and pools. There are four views for this report: ● Storage System Physical Capacity ● Storage System Logical Capacity ● Storage System External Capacity ● Storage Pool Capacities
Storage System Capacity Forecast	Displays forecast trends in Storage System Total Size and Allocated Size for the next 18 months. Graph displays data for the last 7 days and next 18-month forecast. Table shows next 18 month forecast. By default, this report lists all of the storage systems managed by the management server.

Report Name	Description
	Arrays supporting Thin Provisioning may show Allocated Size that is greater than Total Size in configurations with over-allocation of the device.
Storage System Dashboard Summary	Displays capacity summary information for your storage system environment based on data collected and calculated in the Capacity Dashboard. The report is separated into two sections: Environment Capacity Summary and Storage System Capacity.
Storage System Historical Utilization	Displays storage system summary utilization statistics derived from historical data for managed arrays. There are three report views for this report: • Storage System Historical Utilization - Logical—shows logical volume capacity presented from the storage system. • Storage System Historical Utilization - Physical—shows the actual capacity allocated, unallocated and used. Allocated and Used may differ for storage systems that support Thin Provisioning. • Storage System Historical Utilization - Raw—shows the internal raw disk space or virtualizer-managed disk capacity from which storage pools are created. Storage system statistics are shown by Organization name. Reports do not display individual storage pools.
Storage System Logical Utilization	Displays a summary of the logical volume capacity statistics presented by the storage system and individual storage pools. Statistics include all storage system types (including those that support Thin Provisioning) as follows: • Logical capacities—displays Allocated, Mapped, and UnMapped statistics. • Storage pool logical capacities—displays Allocated, Mapped, and UnMapped statistics. Where applicable, the report also shows a client / host usage summary that includes: • Total LUN capacity presented to hosts • Mounted capacity on the hosts • Used capacity on mounted volumes • Free capacity on mounted volumes • Unused capacity on LUNs
Storage System Physical Utilization	Displays a summary of the storage system physical utilization for each storage system (array) and lists individual storage pools (including reserved pools). The report shows total capacities, internal size, and external size statistics, and provides a breakdown of statistics into allocated/unallocated and used/unused capacities. These statistics include:

Report Name	Description
	• Actual Allocated—physical space allocated for storage volumes and Thin Provisioning storage.
	• Actual Used—space consumed or used from the Actual Allocated space. This statistic may differ for storage systems that support Thin Provisioning.
	The report also summarizes reserved capacity from storage pools dedicated for uses such as Thin Provisioning snapshot volume delta storage and journaling, and includes:
	• Physical capacities—displays Total, Unallocated, Actual Allocated, and Actual Used statistics.
	• Reserved pool capacities—applicable for storage systems with reserved pools, such as XP arrays and EMC Symmetrix.
Storage System Replication Pair	Displays storage volumes on a storage system replicated on the storage volume.
Storage System Reserved Pool Utilization	Displays storage system reserved pool utilization. Lists only reserved pools and is applicable only to storage arrays that support Thin Provisioning.
Storage Virtualizer Backend Storage Summary	Displays the back-end storage summary for each virtualizer.
Top 25 Thin Volumes and Pools	Lists thin provisioned volumes sorted by how close they are to being full. Also shows pools containing thin volumes that are close to full.
Total iSCSI and FC Summary	Displays the amount of storage mapped and sorted by protocol (iSCSI or FC).
Storage - Centera	
Centera Device Capacity Historical Utilization	Displays historical utilization data for managed Centera storage showing both raw statistics and percentages.
Centera Device Capacity Utilization	Shows capacity statistics for the Centera device.
Centera Device Details	Shows utilization statistics for managed Centera devices in raw and percentage terms. The report uses management server data to calculate data that mimics vendor-specific tools.

Report Name	Description
Centera Disk Capacity	Displays capacity statistics for Centera disks.
Centera Node Historical Utilization	Displays historical utilization data for Centera virtual pools showing both raw statistics and percentages.
Centera Node Information	Shows detailed information about Centera nodes.
Centera Node Utilization	Shows capacity statistics for Centera nodes.
Centera Profile	Lists all Centera profiles and enabled capabilities and roles.
Centera Virtual Pool Capacity	Shows capacity statistics for Centera virtual pools.
Centera Virtual Pool Capacity- Historical	Shows historical data for storage pool utilization.
Storage - X9000	
X9000 Capacity Utilization Summary	Displays details of the latest capacity utilization data for X9000 NAS Storage Systems at the storage system, file server node, and file system levels.
X9000 Configuration Report	Displays details for file server nodes on an X9000 NAS Storage System.
X9000 Historical Capacity Utilization Summary	Displays the historical capacity utilization data for X9000 NAS Storage Systems at the storage system, file server node, and file system levels. By default, the report lists capacity utilization for all XP9000 NAS Storage Systems managed by the management server.
X9000 NAS Dependency Report	Displays details for all NAS clients that access shares from the X9000 NAS Storage System. The report shows file systems on the client, its corresponding share, and file system.
X9000 Quota Report	Displays details of all created quotas.
X9000 Storage Composition Report	Displays the storage composition of an X9000 NAS Storage System by showing details for physical volumes, volume groups, and logical volumes. It also shows the logical volume segments and the file server nodes that own them.
X9000 Storage System Capacity Forecast	Displays the next 18 months of of forecasted capacity for an X9000 NAS Storage System.

Report Name	Description
X9000 Usage of Clients	Lists all NAS clients, their file systems that access shares from the X9000 NAS Storage System, and file system usage details, such as total, used, and free.
Switch	
Available Switch Ports	Displays total ports, used ports, free ports, and the percentage of ports in use for all switches in a fabric.
Fabric Switch Details	Displays the switch details for each fabric switch. Details include switch and port properties (including WWN connections), zones, zone alias, and zone set properties.
Physical Switch Details	Displays the details for each physical switch. Details include the switch properties and its logical switches.
Port Availability	Displays total ports, connected ports, and available ports for all selected ports.
Switch Dependency	Displays switch dependencies. Details include hosts and application that are dependent on the switch, and switches that are connected to the switch.
Switch Summary	Lists the following information for all switches: switch model and version, total ports, connected ports, available ports, trunked ports, NPIV ports, and percentage of ports used.
Switch Utilization Forecast	Displays the forecast trends in switch utilization for the next 18 months.
Utilization Summary	Lists the following information for each switch: total ports, connected ports, available ports, trunked ports, NPIV ports, and percentage of ports used and free.
Virtual Library System	
Virtual Library System Capacity Utilization Summary	Displays capacity statistics for the Virtual Library System.
Virtual Library System Configuration	Displays configuration information for the Virtual Library System, Virtual Libraries, and Media Access Device.
Virtual Library System Historical Capacity Summary	Displays historical utilization statistics related to the physical capacity of the Virtual Library System.
VLS Media Details	Displays configuration information such as storage media location and cartridges.

Report Name	Description
Virtual Server	
Top 25 Virtual Machines	Three separate report views that show capacity based on Fibre Channel (FC) usage, Network Attached Storage (NAS) usage, and iSCSI usage. The reports are: • Top 25 VMs by FC Capacity • Top 25 VMs by NAS Capacity • Top 25 VMs by iSCSI Capacity
Virtual Machines on Virtual Servers	Displays the virtual machines that use the most storage space on a specific virtual server.
Virtual Server Dependency	Lists the dependent virtual machines, storage systems, and switch details.
Virtual Server Details - Disks	Displays disk details for the virtual server.
Virtual Server Details - Ports	Displays port details for the virtual server.
Virtual Servers Capacity Planning	Shows the capacity usage statistics for selected virtual server(s).
VM End to End Connectivity	Shows the end-to-end connectivity from virtual machine to storage volume.
VMs Protected by Array Replication	Shows virtual machines that are configured for replication within an array.

*These reports are new or were modified in this 9.5.1 release.

Forecast Trending Reports

Forecast reports use historical data points to calculate data trends for some pre-determined period of time in the future. Report Optimizer provides the following types of standard forecast reports:

• Backup — Six forecast reports that display data for a future period of fifteen (15) days.

• Element — Three forecast reports that show future capacity trends for storage elements in your environment. In these reports, data is forecasted based on the daily roll-up of data. They include:

  ▪ Host — Capacity forecast report that displays future data trends for the next 18 months

  ▪ Storage System — Capacity forecast report that displays future data trends for the next 18 months

  ▪ Switch — Capacity forecast report that displays future data trends for the next 18 months

Forecast Calculation

Trending is calculated based on a linear regression algorithm. Reports require a minimum of two data entries for calculation. If there is only one data point, the Forecast is the same as History (based on historical data only). If there is no change in historical values (or the slope calculated is zero), the graphed trend shows the average of the historical values (a straight line). If the trend goes below zero (negative values), the Forecast is restricted to zero. If there is no History for the last seven (7) days, only Forecast data is shown in the report graph.

Forecasted data is calculated using the following formula:

Projected Total = ((< Future_Month > - to_date('01-JAN-1970','dd-mm-yyyy'))- [Intercept]) / [Slope]

In this instance,

- Intercept = ((Sum of Y) - (Slope x (Sum of X))) / N>

- Slope = Numerator / Denominator ((Sum of Y) - (Slope x (Sum of X))) / N

- N = count(collectiontime)

- Y = collectiontime - to_date('01-JAN-1970','dd-mm-yyy')

- X = totalGB

- Numerator = (N x Sum(X x Y)) - ((Sum of X) x (Sum of Y))

- Denominator = (N x Sum of (X x X)) - ((Sum of X) x (Sum of X))

Forecast Report List

The following table lists the forecast reports provided as standard reports in Report Optimizer. To access these reports select **Document List** > **Public Folders** > **Report Pack** > **Standard Reports**.

The first time you open a report, only the report title displays without data. To see report data, click **Refresh All** in the upper toolbar. You are then prompted to enter parameters that determine which data to use to populate the report.

The following table shows where to find a specific forecast trending report in Standard Reports. For example, if the header shows "Backup - Forecast", expand the "Backup" node in the navigation tree and then the "Forecast" node. You should then see the list of Backup forecast reports.

Report Name	Description
Backup > **Forecast**	
Backup Volume Growth Forecast	Displays future trends in volume growth related to Backup activities on each client over the next fifteen (15) days.

Report Name	Description
Client Performance Forecast	Displays future trends in Backup throughput (I/O) forecasted for the next fifteen (15) days.
Library Performance Forecast	Displays future trends in library throughput (I/O) forecasted for the next fifteen (15) days.
Library Utilization Forecast	Displays future trends in library utilization statistics forecasted for the next fifteen (15) days.
Media Utilization Forecast	Displays future trends in media utilization for the next fifteen (15) days.
SLA Forecast	Forecasts the back-up success rate of Backup Manager for the next fifteen (15) days.
Host	
Host Capacity Forecast	Shows future trends in host capacity forecasted over the next 18 months. Report uses the Host Total Capacity and Host Used Capacity historical statistics to calculate future trends.
Storage	
Storage System Capacity Forecast	Displays forecast trends in Storage System Total Size and Allocated Size for the next 18 months. Graph displays data for the last 7 days and next 18-month forecast. Table shows next 18-month forecast. By default, this report lists all of the storage systems managed by the management server. Arrays supporting Thin Provisioning may show Allocated Size that is greater than Total Size in configurations with over-allocation of the device.
Switch	
Switch Utilization Forecast*	Displays the forecast trends in switch utilization for the next 18 months. Report uses the Switch Total Ports and Switch Used Ports historical statistics to calculate future trends.

The following figure shows the Client Performance Forecast report in backup reports. The chart shows 7 days of historical data and 15 days of forecasted data.
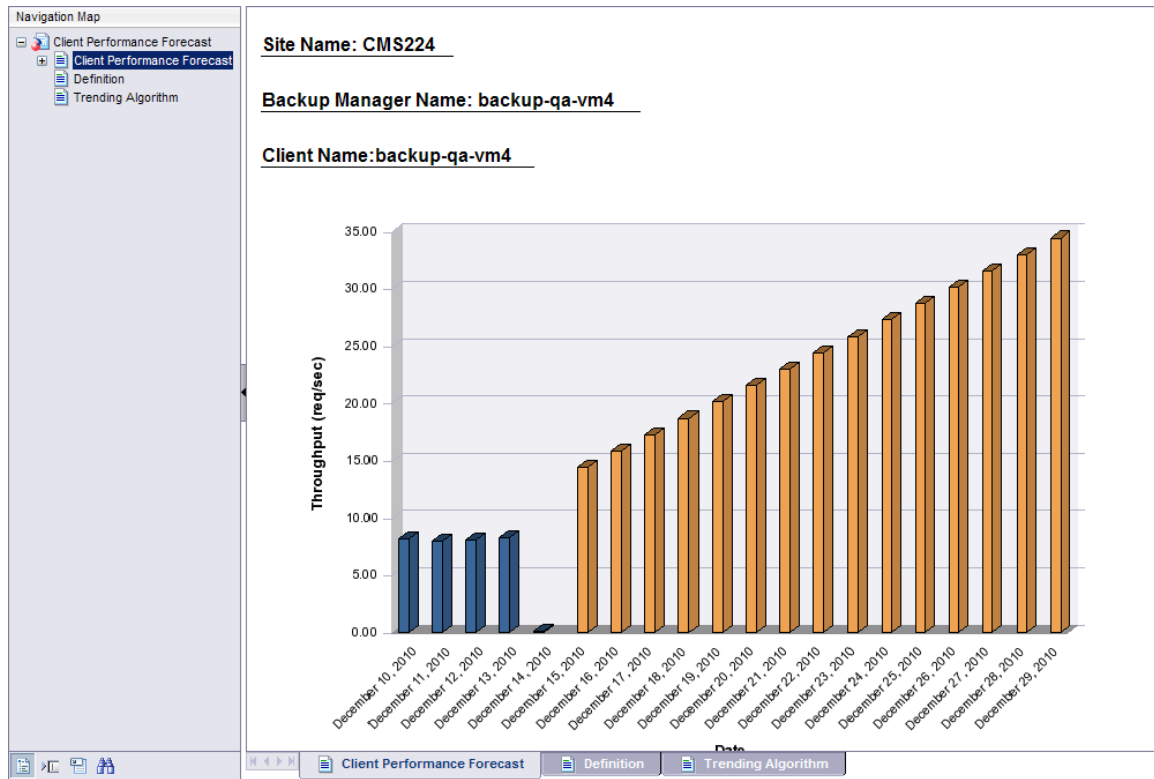
Finding the Report Descriptions

To find the report descriptions:

1. Click the **Documentation List** menu in Report Optimizer.

2. Expand **Public Folders**.

3. Expand **Report Pack**.

4. Expand **Standard Reports**.

5. In the expanded Standard Reports list, click the report type you want. A list of standard reports for that type is displayed in the right pane.

6. Double-click a report name to generate the report. The generated report is displayed in the right pane.

7. To see a report description, click **Definition** in the left pane or, at the bottom of the window, click the **Definition** tab.