Introduction to eHealth Report Center

eHealth Report Center is a new, optional, eHealth reporting system that is available with eHealth Release 6.0 and later. Report Center offers an alternative to the eHealth Report Developer Language (RDL), which is used to customize existing types of eHealth reports. Report Center allows users to create and customize entirely new types of eHealth reports. These reports can answer different types of questions about the performance of network, system, and application resources.

Report Center offers a large amount of flexibility with customization, and many capabilities that allow users to manipulate the appearance of reports, and how existing eHealth data is represented.

This powerful performance management application allows eHealth administrators to set up user accounts with various permissions. Administrators can assign user accounts to various roles. The roles range from those which allow users to perform very basic tasks, to those which provide permissions to accomplish the most complex report development tasks.

Report Center offers a web-based, Windows folder-style interface which users can change based on their preferences. This intuitive interface makes it easy to quickly identify, view, and run reports. Report Center provides valuable sample reports that users can run to view the performance of their resources, or use as templates when creating new reports.

Benefits of Report Center

• More report customization options for report authors who want to: change the location of charts and tables on the page; specify the content; control the appearance of titles, branding, and colors; add text notes; define drilldown links to other reports and locations; and create prompts for the subjects, time ranges, and other input values for the report.

Report Center also provides users with the ability to easily customize reports that are run on demand. For example, users can limit a report to show only the data that interests them with the dimensions (such as date, time, group, and granularity) of their choice.

• A document management system that allows users to create and organize personal folders, providing a more intuitive way to locate reports. It offers a search feature and maintains a history, so that users can access previous versions of reports. The document management system also offers better security of content on a per-user basis, and the ability to share content among users.

• A Web-based report scheduler allows users to schedule their reports to run during off-hours and to be ready for review when they arrive at work.

• Universal accessibility to users as well as report authors. Report Center is Web-based; any authorized user can access the system from any desktop or workstation that has network access to the Report Center server.

• Sample reports that help report users to answer new types of questions about their eHealth resources. The sample reports also provide examples for report authors who want to customize reports or create similar types of reports.

This topic provides an overview of eHealth Report Center and its applications. It also describes some sample reports and how to run them. For information about how to use the Report Center applications, see the Creating Custom Reports with eHealth Report Center topic. eHealth administrators should review the eHealth Report Center Installation and Administration Guide.
User Roles and Applications

It is important to understand the different types of Report Center user roles. Users have access to various Report Center applications, depending upon the permissions that are set for the roles to which they are assigned.

- **eHealth Administrators** by default, have access to all Report Center tools and applications. They provide access to others, and then assign users to other roles. They have the ability to manage user accounts, public and personal folders, access permissions, and the eHealth system.
- **Report Consumers** view and run reports to answer questions about their eHealth elements.
- **Report Authors** create and customize reports that usually address questions from consumers such as IT management or service customers.
- **Report Administrators** set Report Center security permissions, import and export content, and perform other Report Center administrative tasks, but do not have access to eHealth-only administrative functions.

**Report Center Home Page.** Figure 1 shows the home page from which all users can run reports. Users can navigate to folders, access online help, and use a variety of tools to customize their windows. eHealth or report administrators can control access to folders and reports on a user-by-user basis.

**Report Studio.** Figure 2 shows the Report Studio application, which report authors use to create new reports as well as customize existing reports. Report Studio is a highly versatile report authoring tool that allows users to create a variety of multi-page, multi-chart reports, design page layouts, create programmatic prompts for report information, and even write SQL queries to read information from the eHealth database and include it in reports. Typically, authors use Report Studio to create reports that other users will run or schedule for more frequent use.

**Query Studio.** Figure 3 shows the Query Studio application, which report consumers and authors can use to run reports on demand and create quick tests of possible report content. Advanced report consumers can quickly run a report to answer a specific question about their eHealth data. The information can include element information or variables, or both. The report is a simple tabular or single-chart report.

For details about using these applications, see the Creating Custom Reports with Report Center topic.
Sample Report Overviews

Report Center offers new sample reports that users can run to obtain different insights to their eHealth data. Some of the sample reports are variations of standard eHealth reports such as Top N. Others are examples of new types of reports.

Report authors can also use the sample reports as templates that they can edit in Report Studio to learn how to create similar types of reports. The following sections describe a few reports that offer new ways to represent eHealth data.

Incident Report on System Average CPU Utilization

This report lists each time, and for how long, a system CPU exceeded a service threshold specified for a group of systems. Users specify the threshold when they run the report.

Specifically, the report shows each polling interval when the element’s average CPU utilization exceeded threshold and the duration of the poll. This data can help to explain a performance problem that could have resulted in time-over-threshold Live Health alarms.

The report displays a page for each system in the group, and a page for each day of the report period in which an incident occurred. The report also summarizes the total amount of time that the element operated above the threshold.

Figure 4 shows a sample report for system CPUs with a threshold of 95%. For the system newport-1691-SH, the system exceeded the threshold 13 times at various points throughout the day on July 7. The total time above threshold is almost 65 minutes.

For report authors, this report provides an example that uses queries to compare variable values to a threshold or goal value. Authors could use similar queries to create reports where variables such as memory, availability, or disk space are below a certain threshold.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Avg. CPU Utilization</th>
<th>Duration (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/7/05</td>
<td>2:30:00 AM</td>
<td>96.8%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>5:50:00 AM</td>
<td>96.4%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>10:45:00 AM</td>
<td>96.3%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>1:40:00 PM</td>
<td>97.6%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>1:45:00 PM</td>
<td>100.0%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>1:50:00 PM</td>
<td>100.0%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>2:25:00 PM</td>
<td>96.0%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>2:30:00 PM</td>
<td>96.0%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>3:00:00 PM</td>
<td>96.0%</td>
<td>267</td>
</tr>
<tr>
<td></td>
<td>4:30:00 PM</td>
<td>97.9%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>4:50:00 PM</td>
<td>97.3%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>4:55:00 PM</td>
<td>100.0%</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>11:25:00 PM</td>
<td>96.0%</td>
<td>300</td>
</tr>
</tbody>
</table>

Figure 4. Incident Report on System Average CPU Utilization

Total Duration (secs) 3,067
**Daily Busy Hour Report for Interfaces**

This report identifies the 60-minute interval when the traffic or volume for a LAN/WAN interface was at its highest. For each day of the report period, the report lists each element in the group and its highest hourly volume and overall data rate in bits per second (total, incoming, and outgoing).

By identifying the highest traffic hour, you can evaluate whether the interface is operating at expected utilization rates, or whether you might have capacity issues to address.

Figure 5 shows the busy hour volume for a group of LAN/WAN elements in alphabetical order. The report shows that the Area5 Ethernet links had peak utilizations of about 67Kbps each day. For 10 Mbps Ethernet links, these utilizations are very low and the elements are likely underutilized.

The report shows a different list of elements on July 7 than on July 6. This usually indicates that the group membership changed; the AtmRoute211 elements were discovered and added to the group on July 7.

<table>
<thead>
<tr>
<th>Date</th>
<th>Interface</th>
<th>Peak Bits/sec</th>
<th>Peak Bits in/sec</th>
<th>Peak Bits Out/sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/6/05</td>
<td>AREA5-1561-SH-enet-port-1</td>
<td>66,747</td>
<td>64,104</td>
<td>2,888</td>
</tr>
<tr>
<td></td>
<td>AREA5-1561-SH-enet-port-16</td>
<td>66,521</td>
<td>63,880</td>
<td>2,997</td>
</tr>
<tr>
<td>7/7/05</td>
<td>AREA5-1561-SH-enet-port-1</td>
<td>66,410</td>
<td>63,821</td>
<td>3,042</td>
</tr>
<tr>
<td></td>
<td>AREA5-1561-SH-enet-port-16</td>
<td>66,267</td>
<td>63,796</td>
<td>3,486</td>
</tr>
<tr>
<td></td>
<td>AtmRoute211-Ethernet10</td>
<td>797</td>
<td>359</td>
<td>441</td>
</tr>
<tr>
<td></td>
<td>AtmRoute211-Serial10</td>
<td>66</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>AtmRoute211-Serial1.1-dci-101</td>
<td>84</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>7/8/05</td>
<td>AREA5-1561-SH-enet-port-1</td>
<td>64,455</td>
<td>61,503</td>
<td>2,959</td>
</tr>
<tr>
<td></td>
<td>AREA5-1561-SH-enet-port-16</td>
<td>64,104</td>
<td>61,311</td>
<td>2,925</td>
</tr>
</tbody>
</table>

*Figure 5. Daily Busy Hour Report for Interfaces*

**Daily Top N Utilization Report**

This report is similar to the Element Summary table of an IT Manager report. For each element in a LAN/WAN group, it lists the values for the following key performance variables for each day of the report time range:

- Daily bandwidth utilization
- Business day bandwidth utilization (Users specify the business hour range when they run the report.)
- Number of times (polls) in which utilization was in the range of 70-80%
- Number of times (polls) in which utilization was in the range of 80-90%
- Number of times (polls) in which utilization was over 90%
- Daily average latency (the network time for ping traffic to cross from the eHealth system to the device and back)
- Average latency during business hours

Unlike standard eHealth Top N reports, which can only compare up to 6 variable values, Report Center allows you to create reports for any number of variables. Also, you can compute new columns using a variety of math functions such as percentiles, time over threshold, deviations, and busy hour.

<table>
<thead>
<tr>
<th>Element</th>
<th>Full Day Bandwidth Utilization</th>
<th>Business Day Bandwidth Utilization</th>
<th>Time Util Between 70% &amp; 80%</th>
<th>Time Util Between 80% &amp; 90%</th>
<th>Time Util Above 90%</th>
<th>Full Day Latency (secs)</th>
<th>Business Day Latency (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/2/05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bom-1691-Sh-enet</td>
<td>0.03%</td>
<td>0.03%</td>
<td>0</td>
<td>0</td>
<td>0.001</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>FISCES-SH-enet</td>
<td>0.05%</td>
<td>0.05%</td>
<td>0</td>
<td>0</td>
<td>0.001</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>RABBIT-1591-Sh-enet</td>
<td>0.04%</td>
<td>0.03%</td>
<td>0</td>
<td>0</td>
<td>0.001</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>TAZMANIA-Sh-enet</td>
<td>0.04%</td>
<td>0.03%</td>
<td>0</td>
<td>0</td>
<td>0.001</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>cspecot-1691-Sh-enet</td>
<td>0.03%</td>
<td>0.03%</td>
<td>0</td>
<td>0</td>
<td>0.001</td>
<td>0.001</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 6. Daily Top N Utilization Report*
Comparison Report – Response Time vs. CPU Utilization

This report helps identify possible correlations between increases in server CPU utilization and resulting response time degradations for an application response path to that server. This report can help to answer questions about response time impacts when a server CPU is overutilized.

A correlation occurs when the datapoints show a linear increase; that is, as the variable on the horizontal axis increases, the variable on the vertical axis should also increase—or decrease—in a linear trend.

The example in Figure 7 shows no such linear change, which indicates that there is no correlation between increases in server CPU utilization and increased response time. The response time problems for this path must be a result of either network or client delays, not the CPU of the application server.

The example in Figure 8 shows some evidence for a correlation between increased response time and increased CPU utilization. The report also shows that there were times when response time was high at low CPU utilization times, and where response times were low during high CPU utilization. These exceptions are common and indicate that the response time impacts are likely due to other causes, such as network or client response time.

For report authors, this sample report is important because it compares two variables from two elements of different technology types over the same time period. This comparison is not possible with standard eHealth reports. The scatterplot-style report format is also not available for standard Trend reports.
Aggregate Throughput Report for Interfaces

Within a network, you may have a set of links that carry the traffic between sites. The links share the workload, and if one link should fail, the traffic is routed to a backup link. These configurations are referred to as link (or path) bundles.

The Aggregate Throughput Report for Interfaces helps you to visualize the traffic volume that normally crosses a set of links, and whether the capacity of a backup link is capable of carrying the volume of the primary links in the event of an emergency. You can compare the total traffic to a bottleneck speed to see when, and how often, the traffic reaches and exceeds the point at which discards and delays might affect the end users.

Figure 9 shows the total traffic for a group of interfaces for inbound and outbound (not shown in picture) traffic, and a tabular summary for each interface. The red line on the chart is the speed of the backup interface, specified when the report was run. The speed of the backup is 56,000 bps.

The chart shows that aggregate traffic for the first few hours of the day is the same as the bottleneck speed. However, the traffic increased at 4:30 AM and remained in excess of the backup.

If a network problem had occurred and re-routed the traffic to the backup, the backup would have been congested; discards and other problems would have caused performance problems for users.

The report allows you to change the bottleneck speed and rerun the report to determine how an increase (or decrease) in the capacity of the backup might better support the traffic. In this example, if the backup bottleneck speed increased to a T1 line (1.544 Mbps), it would have the capacity needed to support the traffic.

<table>
<thead>
<tr>
<th>Date and Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interfaces in the Link Bundle</td>
</tr>
<tr>
<td><strong>Element Name</strong></td>
</tr>
<tr>
<td>AR1691-SH-enet-port</td>
</tr>
<tr>
<td>AR51-enet-port</td>
</tr>
</tbody>
</table>

Figure 9. Aggregate Throughput Report for Interfaces
Running Reports with Report Center

To run reports, connect to the eHealth system using the URL http://ehsystem, where ehsystem is the hostname or IP address of the eHealth system where Report Center is installed. Log in using your web user account and password.

For report consumers, there are four common tasks in Report Center:

- Running reports on demand
- Running and saving reports
- Scheduling reports to run periodically
- Emailing reports

Running Reports On Demand

1. Click the Report Center tab to access the Report Center home page. If you do not see this tab, see your eHealth administrator for permissions.

2. To navigate to the sample reports, click eHealth Reporting > Sample Reports.

3. Click the name of the report to run it. Most reports first open a prompt page for input. Specify any input for the report, such as subject, time ranges, or other information, and click Finish. The defaults are usually the values specified by the last person to run the report.

The finished report appears in your Web browser. Note that once you click to move on to another report or page, the report closes and you must re-run the report to view the information again.

For the sample eHealth reports, you can click the “Save the report as a report view” icon (shown in Figure 12) and specify the location for the saved file. You should create and use a folder in the My Folders area to keep your report views. You can open the report view by clicking the link in the folder where you saved the view.

Running and Saving Reports

When you run and save a report, you save the generated report on top of the report specification, or a previously run report. You can then view the saved report at any time without re-running that report.

1. To run and save a report, on the Sample Reports page in the Actions column, click the Run with options icon to the right of the report.

The Run with options page appears, as shown in Figure 13.
2. Specify values, and click **Run**.

**Important:** When you select a format, note that Microsoft Excel 2002 and earlier versions support 256 columns. If you believe your report will span a larger number of columns, choose another format such as HTML or PDF.

---

**Run with options - Asset Summary Report**

<table>
<thead>
<tr>
<th>Format:</th>
<th>HTML</th>
</tr>
</thead>
</table>

**Language:**

- English

**Delivery:**

- View the report now
- Save the report
- Print the report in PDF format:

**Prompt values:**

- No values saved
- Prompt for values

**Run**  **Cancel**

---

**Figure 13. Run with Options Page**

3. On the generated report, click **Save the report** to save it over the specification. If this option does not appear, you do not have permission to save the report. You can, however, create a copy of the report (select **More** under Actions on the Sample Reports page) and then run the copy of the report to save it.

   The next time you view the Sample Reports page, the saved report shows a different icon. For example, the Asset Summary Report below shows the icon for a saved Web/HTML report, while the Incident Report shows a report specification icon. When anyone clicks the Asset Summary Report link, the saved report appears.

You can re-run and save the report again to save the latest version, and you can manage the versions of the report to delete one or more saved reports.

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**Scheduling Reports**

Users can schedule reports to automate them and have them available when they arrive at work. Running reports during off-peak hours also helps to reduce impacts on the eHealth system during peak hours. It is also useful for reports that take a long time to run; the report can start during the night and finish before the report consumers arrive at work. Users typically save their reports as report views or as saved reports, so that they can review the report when they want to see it.

To schedule a report:

1. Click the schedule icon for a report. The Schedule page appears.

2. Specify the options for how often you want the report to run as well as the start and end options. As a best practice, do not use the **No end date** option. Schedules should have specific end dates so that you avoid the performance impact of many scheduled reports that continue to run even though users may no longer read them.

3. Make sure that you deselect **Prompt for Values** (scroll to the bottom of the page) so that the scheduled report does not wait indefinitely for user input.

4. Specify the output formats and delivery methods, then click **Okay** to save the schedule.
Emailing Reports

Report Center provides users with the ability to email saved reports. Users can email the saved report as an attachment to users who do not have access to the eHealth system or they can send an URL to a saved report. As a best practice, email the URL of the saved report because it requires users to log in to the eHealth system to view the reports, and it helps keep emails very small. Actual reports can be quite large, up to several megabytes in size.

For more information, see the following:

- Report Center online help and tutorials
- eHealth Report Center Installation and Administration Guide
- Creating Custom Reports with eHealth Report Studio