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1.0 Preface: About This Document

Advanced Application Reporting provides an enterprise-wide visibility into the composition of traffic on WAN links and early detection of threatening traffic patterns. Network groups can quickly identify the source of performance problems, validate the impact of planned and unplanned changes within the network, and avoid unnecessary WAN costs. This also ensures that management can make accurate decisions regarding cost reduction, capacity planning, troubleshooting, and network traffic analysis across the enterprise.

This document addresses the following topics, providing information and procedures to help you effectively use the Advanced Application Reporting product’s reporting capabilities.

<table>
<thead>
<tr>
<th>Chapter Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1, “Introducing Advanced Application Reporting”</td>
<td>Introduces the product components and explains key concepts to establish the knowledge required to be an effective user.</td>
</tr>
<tr>
<td>Chapter 2, “Using the Interface Reports”</td>
<td>Describes how to use the Enterprise Reports page in Advanced Application Reporting to access Interface-level reports, which you can use to identify and then pinpoint the cause of network problems as they occur or anticipate network traffic problems.</td>
</tr>
</tbody>
</table>

2.0 Conventions

These following conventions are used in this book:

- In instructions, **boldface** type highlights information that you enter or GUI elements that you select.
- All syntax and literal examples are presented in this typeface.
- In syntax, path names, or system messages, text enclosed in angle brackets (<>) represents a variable as shown in the following example: `http://<address>/ra>`
Chapter 1: Introducing Advanced Application Reporting

Advanced Application Reporting provides the information you need to understand how application traffic is affecting your network’s performance. The Advanced Application Reporting product enables you to see which applications are using bandwidth, what hosts are using the bandwidth, and when. When you know which applications and hosts are consuming network resources, you can make timely and cost-effective decisions to optimize network performance.

This chapter covers the following topics:

- “Features and Benefits” on page 7
- “Product Components” on page 8
- “Key Terms and Concepts” on page 9
- “About Collected Data and Reports” on page 10
- “Using the Advanced Application Reporting Console” on page 11
The Advanced Application Reporting product provides a complete set of features that allow you to analyze network traffic and make informed short- and long-term decisions about resolving identified issues. The Advanced Application Reporting product can provide valuable data for capacity planning, troubleshooting, and traffic analysis.

<table>
<thead>
<tr>
<th>Advanced Application Reporting Capabilities</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifies network traffic that has exceeded a specified threshold.</td>
<td>Proactive management of your network</td>
</tr>
<tr>
<td>Identifies bandwidth requirements for applications on the network.</td>
<td>Precise evaluation of network capacity</td>
</tr>
<tr>
<td>Immediately identifies the interfaces, hosts, and applications that are generating the most traffic in your enterprise.</td>
<td>Proactive short- and long-term troubleshooting</td>
</tr>
<tr>
<td>View the impact of application rollouts on WAN links and measure application traffic growth using the protocol-level trend analyses, baseline trend comparisons, and percent growth tables.</td>
<td>More informed infrastructure investments</td>
</tr>
<tr>
<td>Pinpoints the exact cause of a network problem by examining 100% of all NetFlow/IPFIX traffic.</td>
<td>Proactive problem resolution</td>
</tr>
<tr>
<td>Provides detailed reports.</td>
<td>Rapid discovery of network problems</td>
</tr>
<tr>
<td>View real-time NetFlow/IPFIX monitoring reports and alarms for every WAN interface on the network for past 30 days.</td>
<td>Solve problems faster</td>
</tr>
<tr>
<td>Provides baselines for protocol data.</td>
<td>Comparison of current data with past performance</td>
</tr>
<tr>
<td>Analyze trends in applications, and hosts per class of service.</td>
<td>Optimize the network infrastructure for application performance</td>
</tr>
<tr>
<td>Displays the trend settings for the historical data and the future projections.</td>
<td>Capacity planning</td>
</tr>
</tbody>
</table>
5.0 Product Components

The Advanced Application Reporting product includes both hardware and software components. Each required software component is installed on a server, and those servers are installed in the Windstream network.

The Advanced Application Reporting product includes the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvester</td>
<td>Located at multiple points within the Windstream Network, the Harvester passively collects and processes data from NetFlow-enabled routers.</td>
</tr>
<tr>
<td>Reporting Console</td>
<td>This provides a Web interface to display collected data.</td>
</tr>
</tbody>
</table>

5.1 How the Components Work Together

The Advanced Application Reporting components work together as follows to collect information about your network traffic and report the results:

- The NetFlow/IPFIX-enabled routers continuously send statistical data to the Harvesters at regular intervals.
- The Harvesters distill NetFlow/IPFIX records and parse, store and compile the data.
- The Advanced Application Reporting Console gathers data from the Harvesters and aggregates that data.
- The Advanced Application Reporting Console then sends the aggregated data to the DSA.
- The Advanced Application Reporting Console pulls the data from the DSA and displays it in a Web interface.
- The DSA stores the collected data.
5.2 Advanced Application Reporting Center

You can access the Advanced Application Reporting Center through Windstream Online or Windstreambusiness.com. To learn more about the Advanced Application Reporting center and how it enables you to view data from Enterprise Interfaces, see Chapter 2, “Using the Interface Reports”.

6.0 Key Terms and Concepts

To understand and use the data that the Advanced Application Reporting product collects and displays, you should be familiar with the following terms and concepts:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Router</td>
<td>A router is a networking device with hardware and software components. A router contains routing or forwarding information and can have one or more interfaces.</td>
</tr>
<tr>
<td>Interface</td>
<td>The Advanced Application Reporting product reports on any logical interface enabled on a supported router where NetFlow is enabled. Types of interfaces include: Serial, Frame Relay, Fast Ethernet, ATM, PVC, and others. When working with the Advanced Application Reporting console, you will see that it displays the interfaces being monitored in your environment.</td>
</tr>
<tr>
<td>Flow</td>
<td>A set of IP packets passing an observation point in the network during a certain time interval. All packets belonging to a flow have the same values for the following properties:</td>
</tr>
<tr>
<td></td>
<td>◆ Source IP address</td>
</tr>
<tr>
<td></td>
<td>◆ Destination IP address</td>
</tr>
<tr>
<td></td>
<td>◆ Source Port</td>
</tr>
<tr>
<td></td>
<td>◆ Destination Port</td>
</tr>
<tr>
<td></td>
<td>◆ Protocol Type</td>
</tr>
<tr>
<td></td>
<td>◆ Type of Service (ToS)</td>
</tr>
<tr>
<td></td>
<td>◆ Input Logical Interface (ifIndex)</td>
</tr>
<tr>
<td>NetFlow/IPFIX</td>
<td>NetFlow is a software feature in a Cisco router that can measure statistics for network traffic. A flow is considered to be a transaction between two hosts using a unique pair of port numbers and IP addresses. A Cisco router can be configured to export NetFlow information by sending UDP packets containing flow statistics to one or more collectors such as the Harvesters. The Advanced Application Reporting product supports IPFIX and NetFlow version 9.0.</td>
</tr>
<tr>
<td>Protocol</td>
<td>A protocol is a standard that regulates communication between computers. Common protocols include: HTTP, SNMP, FTP, VoIP, and so on. The Advanced Application Reporting console displays information such as the top protocols in and out for a particular interface. This can help you identify the application that is causing network traffic congestion. You can also create and run reports to determine which protocols and applications are being used by different groups within your organization.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Host</td>
<td>A host is a specific computer engaged in an exchange across the network. In the Advanced Application Reporting solution, hosts are identified by name or IP address. If you notice significant traffic on a particular interface, you can investigate further to determine if a specific enterprise server or end-user system is responsible for the reported traffic. You can also create and run reports that provide information about traffic being generated or received by a specified host or hosts.</td>
</tr>
<tr>
<td>Conversation</td>
<td>The Advanced Application Reporting console displays conversation information, which means that it enables you to identify subnet to subnet or end-user to end-user (host to host) traffic. If you notice significant traffic on a particular interface, you can investigate further to determine whether a particular conversation is causing the traffic spike. You can also create and run reports to identify the top volume-based conversations.</td>
</tr>
<tr>
<td>Baseline</td>
<td>Shows normal behavior by charting past data. The baseline in a trend plot is computed using data from six weeks preceding the selected date range, excluding the data point already in the trend plot.</td>
</tr>
<tr>
<td>QoS (Quality of Service)</td>
<td>A defined level of performance – quality of transmission and service availability – in a data transmission system.</td>
</tr>
</tbody>
</table>

#### 7.0 About Collected Data and Reports

Advanced Application Reporting utilizes the collected data to generate statistics formatted and displayed in informative reports. Reports can be customized to suit your enterprise and your reporting requirements. This section provides information about the collected data and the types of Advanced Application Reporting reports that are available. To learn how to access the available reports, see the subsequent chapters.

The Advanced Application Reporting product collects, displays, and stores NetFlow/IPFIX data. It collects and stores data as follows:

- Protocol data: 15-minute granularity for the past 13 months
- Host data: 15-minute granularity for the past two months

**Note:** To calculate the values for display, the Advanced Application Reporting product uses 1000 bytes as opposed to 1024 bytes as units of measurement. This usage is compatible with the International Systems of Units.
Advanced Application Reporting analyzes, formats, and displays collected data in the following view:

<table>
<thead>
<tr>
<th>Report</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interfaces</td>
<td>Views that provide drill-down access to interface-specific data. You can click a specific interface to view an interface report, which provides the type of summary information you select, such as a protocol summary for the timeframe you establish.</td>
</tr>
</tbody>
</table>

8.0 Using the Advanced Application Reporting Console

The primary Advanced Application Reporting user interface is called the Advanced Application Reporting console, a web interface that you use to view the collected data. The console is accessed via Windstream Online, www.windstreamonline.com. All new or first-time users of Windstream Online must register following the below process:

https://www.windstreamonline.com/pol/Home.action

https://www.windstreamonline.com/pol/Registration.action

Registration

Why Register?

Register now to manage your relationship with Windstream, including access to your data, voice, network and cloud services.

Need Help Registering? Visit our FAQ to learn more about how to register and other Windstream Online related questions.
Once validation completes, the User can login with their registered email and password.
Once logged into Windstream Online, select “My Network Tools”.

Next, select “Advance Application Reports”.
If the portal doesn’t display immediately, select “click here” as shown below and the User will be directed to Advanced Application Reporting.

Upon successful entry, users will default land on the page listed below.
8.1 Console Organization

When you log into the Advanced Application Reporting Console, the Circuit Utilization Details page is loaded by default. There are nine different reports that you can access using the main menu bar in the Advanced Application Reporting console:

<table>
<thead>
<tr>
<th>Reports</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit Utilization Details</td>
<td>Top Circuit Utilization for Enterprise Interfaces</td>
</tr>
<tr>
<td>Circuit SLA Report</td>
<td>Top Least Available Enterprise Interfaces</td>
</tr>
<tr>
<td>Traffic Summary</td>
<td>Top Enterprise Interface Utilization</td>
</tr>
<tr>
<td>Enterprise Top Utilization Summary Report</td>
<td>Top Enterprise Protocol and Host Reports</td>
</tr>
<tr>
<td>Traffic Changes</td>
<td>Deviation from Normal on the Top Enterprise Interfaces</td>
</tr>
<tr>
<td>QoS Report</td>
<td>QoS markings of the Packets on the Top Enterprise Interfaces</td>
</tr>
<tr>
<td>Alarm Report</td>
<td>Top Enterprise Interfaces Closest to Threshold</td>
</tr>
<tr>
<td>Baseline Report</td>
<td>Top Enterprise Interfaces Closest to Threshold</td>
</tr>
<tr>
<td>Trending Reports</td>
<td>Protocol Trends on Top Enterprise Interfaces</td>
</tr>
</tbody>
</table>

As you use the navigation links to move between the pages of the Advanced Application Reporting console, some product settings persist while others are cleared when you leave a page. For example, if you navigate to Traffic Summary from QoS Report, the Advanced Application Reporting console preserves the previous settings.

8.2 Console Usage Tips and Shortcuts

The Advanced Application Reporting console is designed to provide an interactive user interface to simplify viewing and using the collected Advanced Application Reporting data. As you become familiar with the Advanced Application Reporting console, you will notice a number of features that facilitate your usage of this powerful tool:

8.2.1 Hover Text

On many items, the report views provide detailed information when you hover over the displayed item. This is very useful for items within report views, such as controls or portions of graphs. For example, if you place the pointer over a bar representing an interface in a graph, a text window displays more details about that interface, such as its router, description, and speed.
8.2.2 Changing a Selected Interface

Interface reports include the [change] option at the top of the report page. Click this option to select another interface from the Interface Index and update the report data according to your selection.

For more information about using the Interface Index to select an interface, see “Using the Interface Index” on page 16.

8.2.3 Print and Email Functions

Print and email functions are easily accessible at the top of each report page. If your Advanced Application Reporting user account is assigned a Power User role, you can print or email any data displayed in the Advanced Application Reporting console by clicking the print and email icons shown here.

PRINT  EMAIL

For more information about printing reports, see “Printing a Report” on page 15. For more information about sending reports via email, see “Emailing a Report” on page 13.

8.2.4 Saving Data to CSV

The report views include a view menu that you can access using the downward-right blue arrow located at the top left of the view. This menu includes a command that you can select to save the displayed report view data to a Comma Separated (CSV) file.

8.2.5 Online Help

The Advanced Application Reporting User Guide is available at any time by clicking the Help link located in the top-right corner on every web portal page.

9.0 Printing and Sending Reports

In the Advanced Application Reporting console, you can easily print or send all types of reports. The Print and Email icons appear in the upper left corner of all displayed report pages.

PRINT  EMAIL

9.1 Emailing a Report

It is easy to send any displayed report via email. You can send the displayed report in an email immediately, or set up a schedule to automatically generate an updated, complete report as a PDF file.
To email a report:

01 Select the completed report to display it.

02 Click the Email icon at the top-right corner of the report page.

The Email Information dialog box opens.

03 Enter the following information:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send To</td>
<td>Enter the email address to which you want to send the report page. Separate multiple email addresses with commas.</td>
</tr>
<tr>
<td>Subject</td>
<td>Enter the subject line for the email.</td>
</tr>
<tr>
<td>Message</td>
<td>Enter a message to explain the report or the purpose of the email.</td>
</tr>
<tr>
<td>Time Zone</td>
<td>This includes a drop down menu, allowing you to select a city.</td>
</tr>
<tr>
<td>Scheduling Options</td>
<td>Select one of the following options:</td>
</tr>
<tr>
<td></td>
<td>○ <strong>Send now</strong> - Select this option to send the email immediately.</td>
</tr>
<tr>
<td></td>
<td>○ <strong>Send on a Schedule</strong> - Select this option to schedule the email message to be sent each day, week, month, quarter, or year.</td>
</tr>
</tbody>
</table>

If you select Send on a Schedule, select one of the following options:

○ **Send daily** - Select which days of the week to send the email.

○ **Send weekly** - Select which day of the week to send the email.

○ **Send monthly** - Sends the email on the last day of the month.

○ **Send quarterly** - Select the month that designates the end of the first quarter to send the email. The reporting tool sends the email on the last day of each quarter.

○ **Send yearly** - Select the last month of the year. The reporting tool sends the email on the last day of the year.
**Note:** Scheduled emails generate the PDF using a stored URL address.

**04** Click **OK**.

- If you selected **Send Now**, the Advanced Application Reporting console sends the email with the current report page attached as a PDF file.
- If you selected to **Send on a Schedule**, the Advanced Application Reporting configures the email schedule and generates and sends the report according to that schedule.

### 9.2 Printing a Report

Print reports to share information displayed in the reports. The Advanced Application Reporting console generates a printable version of the displayed report page. You can print the report page from the browser window or save it as a PDF file.

To print a report page:

**01** Select the completed report to display it.

**02** Click the Print icon at the top-right corner of the report page.

The Advanced Application Reporting console generates a printable version of the report in a new browser window.

**03** In the browser toolbar, click the Printer icon.

Your browser displays a **Print** dialog box. Use this to select a printer and set other printing options.

**04** Click **OK** to print the PDF file.
10.0 Chapter 2: Using the Interface Reports

Advanced Application Reporting enables you to analyze your network traffic by providing several reports that you can view instantly. This chapter describes how to use the Interfaces page to generate a report for an individual interface and provides guidance for interpreting the reports.

This chapter covers the following topics:

- "Accessing Interface Reports" on page 16
- "Interface Reports" on page 17

11.0 Accessing Interface Reports

11.1 Using the Interface Index

Interface reports provide useful information specific to an interface or the interfaces within a specific group. The Advanced Application Reporting console provides multiple access points for displaying interface reports for a selected interface or group. Any time you click the name of a specific report; the Advanced Application Reporting console displays a report for the enterprise and provides access to other interface reports. Circuit Utilization Details is listed first among the drop-down options list and is the default setting.

- Circuit Utilization Details
- Circuit SLA Report
- Traffic Summary
- Enterprise Top Utilization Summary Report
- Traffic Changes
- QoS Report
- Alarm Report
- Baseline Report
- Trending Reports
Click on any of the interface graphs produced within to view detail for that particular interface and time interval.

Click on the graph a second time, it will display additional metrics based on the same, identified timeframe. Click the interface for which you want to view that report. The specific reports displayed will vary based on which of the nine Report options listed above, was selected.

The following sections topics describe the data that you can view in Overview reports pages.

11.2 Using the Interface Index Capabilities

Use the icons at the top-right to refresh, print, or email the entire Enterprise Overview.

- Click the **Auto Refresh** option in the Windstream Advanced Application Reporting URL banner to auto-refresh the report page, to enable automatic updates to reflect the most recently collected one-minute data. When this icon is green and revolving, it indicates that the auto-refresh option is on. You can click the icon to turn it off.

- Click the **Print** icon to print the entire Enterprise Overview. (Administrator or Power User accounts only.) For more information about printing reports, see “Printing a Report” on page 15.

- Click the **Email** icon to send the report via email to a selected user or to multiple users. (Administrator or Power User accounts only.) For more information about sending reports via email, see “Emailing a Report” on page 13.

There is also a refresh page option in the URL at the top of each screen display:

12.0 Interface Reports

12.1 Interface Overview Report

Selecting an interface displays the **Overview** report for that interface. For each interface you select for reporting, you can then further narrow the data included in the report by **Interface Capacity**, **Interface QoS**, **Interface Errors and Exceptions** and **Interface Details**.
12.2 Circuit Utilization Detail Report

The Circuit Utilization Detail report provides a broad summary report for the selected interface. This is the default interface report page, but you can display an Overview report from another page by selecting the Report menu at the top-left of the reporting page.

This report includes the following interface data:

- Outbound percent Utilization Trends
- Inbound percent Utilization Trends

12.2.1 Opening Interface Capacity Reports

More detailed information about the interface can be found by double-clicking on the applicable Interface Utilization Trends graph. This will produce the Interface Capacity report.

The **Interface Capacity** Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- Discard Rate Trend In
- Discard Rate Trend Out
- Errors Trend In
- Errors Trend Out
- Utilization Calendar In
- Utilization Calendar Out
- Interface Availability Trend
- Top Hosts
- Top Conversations
12.2.2 Opening Interface QoS Reports

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Trends graph. This will produce the Interface Capacity report. Then select the Interface QoS button.

The Interface QoS Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked QoS Trend In
- Stacked QoS Trend Out
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- QoS Input Class Map Dropped
- QoS Output Class Map Dropped
- QoS Input Class Map Volume
- QoS Output Class Map Volume
- QoS Input Class Map Policy
- QoS Output Class Map Policy
- Errors/Discard Rate Trend In
- Errors/Discard Rate Trend Out
- QoS Output Class Policy Maps
- QoS Input Class Policy Maps
- ToS Summary Rate
- Top Hosts
- Top Protocols
- Top Conversations
12.2.3 Opening the Errors and Exceptions Report

To drill down to more detailed, Errors and Exceptions-specific data for the selected interface, click on the Interface Utilization Trends graph. This will produce the Interface Capacity report. Then select the Errors and Exceptions button.

The Errors and Exceptions Report will provide the following detail about the interface:

- Service Exceptions - Interfaces

12.2.4 Opening the Interface Details Report

To drill down to more detailed, Interface Details-specific data for the selected interface, click on the Interface Utilization Trends graph. This will produce the Interface Capacity report. Then select the Interface Details button.

The Interface Details Report will provide the following details about the interface:

12.2.5 Changing the Report Time Period

The date and time are set to the most recent 24-hour period by default. Click the timeframe link to modify the duration and date for the reported data. The Timeframe options allow you apply time and date filters. You can select a built-in timeframe relative to the current date and time or specify a Start Date and an End Date, including the hour and minute for each.

Note: When viewing charts in the Circuit Utilization summary, graphs will only display the data shown for one (1) hour intervals. Detail on other timer periods is available by drilling down on the Circuit.

For more information about changing time periods for reports, see “Setting the Time Period for a Report” on page 69.
12.3 Circuit SLA Report

The Circuit SLA report provides a broad summary report for the top Enterprise Interfaces. You can display an Overview report from another page by selecting the Report menu at the top-left of the reporting page.

The Circuit SLA report provides information about the Top Least Available Enterprise interfaces and Top Enterprise Interfaces with Errors and/or Discards.

12.3.1 Opening Interface Capacity Reports

More detailed information about the interface can be found by double-clicking on the Interface Name. This will produce the Interface Capacity report.

The Interface Capacity Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- Discard Rate Trend In
- Discard Rate Trend Out
- Errors Trend In
12.3.2 Opening Interface QoS Reports

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Name. This will produce the Interface Capacity report. Then select the Interface QoS button.

The Interface QoS Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked QoS Trend In
- Stacked QoS Trend Out
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- QoS Input Class Map Dropped
- QoS Output Class Map Dropped
- QoS Input Class Map Volume
- QoS Output Class Map Volume
- QoS Input Class Map Policy
- QoS Output Class Map Policy
- Errors/Discard Rate Trend In
- Errors/Discard Rate Trend Out
- QoS Output Class Policy Maps
- QoS Input Class Policy Maps
ToS Summary Rate
Top Hosts
Top Protocols
Top Conversations

12.3.3 Opening the Errors and Exceptions Report

To drill down to more detailed, Interface Errors and Exceptions-specific data for the selected interface, click on the Interface Name. This will produce the Interface Capacity report. Then select the Errors and Exceptions button.

The Errors and Exceptions Report will provide the following detail about the interface:

- Service Exceptions - Interfaces

12.3.4 Opening the Interface Details Report

To drill down to more detailed, Interface Details-specific data for the selected interface, click on the Interface Name. This will produce the Interface Capacity report. Then select the Interface Details button.

The Interface Details Report will provide the following details about the interface:

12.3.5 Changing the Report Time Period

The date and time are set to the most recent 24-hour period by default. Click the timeframe link to modify the duration and date for the reported data. The Timeframe options allow you to apply time and date filters. You can select a built-in timeframe relative to the current date and time or specify a Start Date and an End Date, including the hour and minute for each.

For more information about changing time periods for reports, see “Setting the Time Period for a Report” on page 69.
The Enterprise Top Utilization Summary report provides a broad summary report for the top Enterprise Interfaces. You can display an Overview report from another page by selecting the Report menu at the top-left of the reporting page.

The Enterprise Top Utilization Summary report provides information about the protocols on the Enterprise interfaces that are generating the most traffic.

This report includes views for the following protocol data:

- Top Enterprise Protocols
- Top Enterprise Hosts
- Top Enterprise Interface Utilization

Note: When viewing charts in a Protocol summary, keep in mind that the data shown for bytes in and bytes out is relative to interfaces. If you choose to view host information, the data shown for bytes to and bytes from is relative to the displayed hosts.
12.4.1 Opening Interface Capacity Reports

More detailed information about the interface can be found by double-clicking on the Interface Utilization graph. This will produce the Interface Capacity report.

The Interface Capacity Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- Discard Rate Trend In
- Discard Rate Trend Out
- Errors Trend In
- Errors Trend Out
- Utilization Calendar In
- Utilization Calendar Out
- Interface Availability Trend
- Top Hosts
- Top Conversations

12.4.2 Opening Interface QoS Reports

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization graph. This will produce the Interface Capacity report. Then select the Interface QoS button.
The Interface QoS Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked QoS Trend In
- Stacked QoS Trend Out
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- QoS Input Class Map Dropped
- QoS Output Class Map Dropped
- QoS Input Class Map Volume
- QoS Output Class Map Volume
- QoS Input Class Map Policy
- QoS Output Class Map Policy
- Errors/Discard Rate Trend In
- Errors/Discard Rate Trend Out
- QoS Output Class Policy Maps
- QoS Input Class Policy Maps
- ToS Summary Rate
- Top Hosts
- Top Protocols
- Top Conversations

12.4.3 Opening the Errors and Exceptions Report

To drill down to more detailed, Errors and Exceptions-specific data for the selected interface, click on the Interface Utilization graph. This will produce the Interface Capacity report. Then select the Errors and Exceptions button.

The Errors and Exceptions Report will provide the following detail about the interface:

- Service Exceptions - Interfaces
12.4.4 Opening the Interface Details Report

To drill down to more detailed Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization graph. This will produce the Interface Capacity report. Then select the Interface Details button.

The Interface Details Report will provide the following details about the interface:

12.4.5 Changing the Report Time Period

The date and time are set to the most recent 24-hour period by default. Click the timeframe link to modify the duration and date for the reported data. The Timeframe options allow you apply time and date filters. You can select a built-in timeframe relative to the current date and time or specify a Start Date and an End Date, including the hour and minute for each.

For more information about changing time periods for reports, see “Setting the Time Period for a Report” on page 69.

12.5 Traffic Summary Report

The Traffic Summary report provides a broad summary report for the top Enterprise Interfaces. This is the default interface report page, but you can display an Overview report from another page by selecting the Report menu at the top-left of the reporting page.

The Traffic Summary report provides information about the Enterprise interfaces including Top Interfaces Utilization In, Top Interface Utilization Out, Interface Speed, Rate In, and Rate Out.
12.5.1 Opening Interface Capacity Reports

More detailed information about the interface can be found by double-clicking on the Interface Utilization graph or a highlighted interface on the Top Interface report. This will produce the Interface Capacity report.

The Interface Capacity Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Discard Rate Trend In
- Discard Rate Trend Out
- Errors Trend In
- Errors Trend Out
- Utilization Calendar In
- Utilization Calendar Out
- Interface Availability Trend
- Top Hosts
- Top Conversations

12.5.2 Opening Interface QoS Reports

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Top Interface Report. This will produce the Interface Capacity report. Then select the Interface QoS button.

The Interface QoS Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked QoS Trend In
- Stacked QoS Trend Out
Stacked Protocol Trend In
Stacked Protocol Trend Out
QoS Input Class Map Dropped
QoS Output Class Map Dropped
QoS Input Class Map Volume
QoS Output Class Map Volume
QoS Input Class Map Policy
QoS Output Class Map Policy
Errors/Discard Rate Trend In
Errors/Discard Rate Trend Out
QoS Output Class Policy Maps
QoS Input Class Policy Maps
ToS Summary Rate
Top Hosts
Top Protocols
Top Conversations

12.5.3 Opening the Errors and Exceptions Report

To drill down to more detailed, Errors and Exceptions-specific data for the selected interface, click on the Top Interface Report. This will produce the Interface Capacity report. Then select the Errors and Exceptions button.

The Errors and Exceptions Report will provide the following detail about the interface:

Service Exceptions - Interfaces
12.5.4 Opening the Interface Details Report

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Top Interface Report. This will produce the Interface Capacity report. Then select the Interface Details button.

The Interface Details Report will provide the following details about the interface:

12.5.5 Changing the Report Time Period

The date and time are set to the most recent 24-hour period by default. Click the timeframe link to modify the duration and date for the reported data. The Timeframe options allow you apply time and date filters. You can select a built-in timeframe relative to the current date and time or specify a Start Date and an End Date, including the hour and minute for each.

For more information about changing time periods for reports, see “Setting the Time Period for a Report” on page 69.

12.6 Traffic Changes Report

The Traffic Summary report provides a broad summary report for the top Enterprise Interfaces. This is the default interface report page, but you can display an Overview report from another page by selecting the Report menu at the top-left of the reporting page.

The Traffic Changes report provides information about the Deviation from normal, including normal and actual on the top interfaces across the Enterprise. Reports available under the Traffic Changes Report Group include:

- Interface Utilization
- Router CPU
- Router Memory
- QoS Class Map Post
- Interface Errors/Discard
Advance Application Reporting

- Device CPU Utilization
- Frame Relay Congestion
- Frame Relay PVC Utilization
- Unavailable/Errored Seconds

### 12.6.1 Opening Interface Report

More detailed information about the interface can be found by double-clicking on the Interface name on the Interface Utilization report in the Traffic Changes Report page. This will produce the Interface Capacity report.

The Interface Capacity Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Discard Rate Trend In
- Discard Rate Trend Out
- Errors Trend In
- Errors Trend Out
- Utilization Calendar In
- Utilization Calendar Out
- Interface Availability Trend
12.6.2 Opening Interface QoS Reports

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Capacity report. Then select the Interface QoS button.

The Interface QoS Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked QoS Trend In
- Stacked QoS Trend Out
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- QoS Input Class Map Dropped
- QoS Output Class Map Dropped
- QoS Input Class Map Volume
- QoS Output Class Map Volume
- QoS Input Class Map Policy
- QoS Output Class Map Policy
- Errors/Discard Rate Trend In
- Errors/Discard Rate Trend Out
- QoS Output Class Policy Maps
- QoS Input Class Policy Maps
- ToS Summary Rate
- Top Hosts
- Top Protocols
- Top Conversations
12.6.3 Opening the Errors and Exceptions Report

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Capacity report. Then select the Errors and Exceptions button.

The Errors and Exceptions Report will provide the following detail about the interface:

- Service Exceptions - Interfaces

12.6.4 Opening the Interface Details Report

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Details report. Then select the Interface Details button.

The Interface Details Report will provide the following details about the interface:

12.6.5 Opening a QoS Report

To drill down to more detailed, QoS-specific data for the selected interface, click one of the QoS names in the Top Deviation from Norm Class Map Post Utilization view. This opens an overview report for the QoS on that interface.

This will produce the Class Map Detail report.
The Class Map Detail Report will provide the following detail about the Class Mapping:

- Class Map Pre/Post Policy Volume Trend
- Class Map Pre/Post Policy Packets Trend
- Class Map Pre/Post Policy Rate Trend
- QoS Class Map Dropped Volume Trend
- QoS Class Map Dropped Packets Trend
- QoS Class Map Dropped Rate Trend
- QoS Map No SRAM Buffer Dropped Packets Trend
- Poll Instance Details

12.6.6 Opening a Class Map Capabilities Report

To drill down to more detailed, Class Map Capabilities Report-specific data for the selected Class Map, click one of the QoS names in the any of the top Deviation from Norm Class Map view. This opens a Class Map Detail report for the Class Map. Then select the Class Map Capabilities button.

The Class Map Capabilities Report will provide the following detail about the Class Mapping:

- Top QoS Nested Class Maps
- Top QoS Map Statements Pre
- Top QoS Queuing Statistics
- Top QoS Police Mapping
- Top QoS Traffic Shaping
- Top QoS RED Volume

12.6.7 Opening a Router Performance Report

To drill down to more detailed Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.
This will produce the Router Performance Report view.

The Router Performance Report will provide the following detail about the interface:

- Router Gauge
- CPU Utilization Trending
- Memory Utilization Trending
- Top Errors
- Availability Trend
- Ping Latency Calendar Chart

**12.6.8 Opening a Router Interfaces Report**

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.
The Router Performance Report will show as the default. The Router Interfaces Reports can be accessed by clicking on the Router Interface tab. Router Interface Reports will provide the following detail about the selected Enterprise Router:

- Interface Availability Distribution
- Top Interfaces
- Top Least Available Interfaces
- Top QoS Class Map Pre vs. Post
- Top QoS Class Map Post/Drop
- Top QoS Queuing Statistics
- Top QoS Match Statistics
- Top QoS Police Statistics
- Top QoS Traffic Shaping Statistics
- Top QoS RED Volume
- Top QoS RED Packets
- Top Interface Volume
- Top Discards
- Top Errors
- Performance Index

12.6.9 Opening a Router Circuits Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.
The Router Performance Report will show as the default. The Router Circuits Reports can be accessed by clicking on the Router Circuits tab. Router Circuits Reports will provide the following detail about the selected Enterprise Router:

- Top Frame Relay Circuits
- Top T1 Circuits
- Top T3 Circuits

12.6.10 Opening a Router Errors and Exceptions Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the outer names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Errors and Exceptions Reports can be accessed by clicking on the Router Errors and Exceptions tab. Router Errors and Exceptions Reports will provide the following detailed Event List for the selected Enterprise Router.

12.6.11 Opening a Router Details Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.
This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Details Report can be accessed by clicking on the Router Details tab. The Router Detail Report will provide the attribute details about the selected Enterprise Router.

12.6.12 Changing the Report Time Period

The date and time are set to the most recent 24-hour period by default. Click the timeframe link to modify the duration and date for the reported data. The Timeframe options allow you to apply time and date filters. You can select a built-in timeframe relative to the current date and time or specify a Start Date and an End Date, including the hour and minute for each.

For more information about changing time periods for reports, see “Setting the Time Period for a Report” on page 69.

12.7 QoS Report

The QoS report provides a broad summary report for the top Enterprise Interfaces. You can display an Overview report from another page by selecting the Report menu at the top-left of the reporting page.

The QoS report provides information about the Quality of Service (QoS) markings of the packets that are generating the most traffic for on an interface across the Enterprise.
This report includes views for the following QoS data:

- Input QoS Maps
- Output QoS Maps
- Top QoS Class Map Post/Drops
- Input Dropped Packets Percent per Class
- Output Dropped Packets Percent per Class
- QoS Queuing Discarded Packets
- QoS Current Queue Depth

**Note:** When viewing charts in a QoS summary, keep in mind that the data shown for **bytes in** and **bytes out** is relative to interfaces.

### 12.7.1 Opening a QoS Report

To drill down to more detailed, QoS-specific data for the selected interface, click one of the QoS names in the any of the top QoS views. This opens an overview report for the QoS on that interface.

This will produce the Class Map Detail report.

The Class Map Detail Report will provide the following detail about the Class Mapping:

- Class Map Pre/Post Policy Volume Trend
- Class Map Pre/Post Policy Packets Trend
- Class Map Pre/Post Policy Rate Trend
- QoS Class Map Dropped Volume Trend
- QoS Class Map Dropped Packets Trend
- QoS Class Map Dropped Rate Trend
- QoS Map No SRAM Buffer Dropped Packets Trend
- Poll Instance Details

### 12.7.2 Opening a Class Map Capabilities Report

To drill down to more detailed, Class Map Capabilities Report-specific data for the selected Class Map, click one of the QoS names in the any of the top QoS views. This opens a Class Map Detail report for the Class Map. Then select the Class Map Capabilities button.
The Class Map Capabilities Report will provide the following detail about the Class Mapping:

- Top QoS Nested Class Maps
- Top QoS Map Statements Pre
- Top QoS Queuing Statistics
- Top QoS Police Mapping
- Top QoS Traffic Shaping
- Top QoS RED Volume

12.7.3 Changing the Report Time Period

The date and time are set to the most recent 24-hour period by default. Click the timeframe link to modify the duration and date for the reported data. The Timeframe options allow you apply time and date filters. You can select a built-in timeframe relative to the current date and time or specify a Start Date and an End Date, including the hour and minute for each.

For more information about changing time periods for reports, see “Setting the Time Period for a Report” on page 69.

12.8 Alarm Report

The Alarm report provides a broad summary report for the top Enterprise Interfaces. You can display an Overview report from another page by selecting the Report menu at the top-left of the reporting page.

The Alarm report provides information about the Enterprise Interfaces that are closest to Threshold. This report includes views for the following data:

- Interface Utilization
- Router CPU
- Router Memory
- QoS Class Map Post
- Interface Errors/Discard
Device CPU Utilization
Frame Relay Congestion
Frame Relay PVC Utilization
Unavailable/Errored Seconds

12.8.1 Drilling into an Interface

More detailed information about the interface can be found by double-clicking on the Interface Utilization report in the Alarm Report page. This will produce the Interface Capacity report.

The Interface Capacity Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Discard Rate Trend In
- Discard Rate Trend Out
- Errors Trend In
- Errors Trend Out
- Utilization Calendar In
- Utilization Calendar Out
- Interface Availability Trend
- Top Hosts
- Top Conversations

12.8.2 Opening Interface QoS Reports

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Capacity report. Then select the Interface QoS button.
The Interface QoS Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked QoS Trend In
- Stacked QoS Trend Out
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- QoS Input Class Map Dropped
- QoS Output Class Map Dropped
- QoS Input Class Map Volume
- QoS Output Class Map Volume
- QoS Input Class Map Policy
- QoS Output Class Map Policy
- Errors/Discard Rate Trend In
- Errors/Discard Rate Trend Out
- QoS Output Class Policy Maps
- QoS Input Class Policy Maps
- ToS Summary Rate
- Top Hosts
- Top Protocols
- Top Conversations

12.8.3 Opening the Errors and Exceptions Report

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Capacity report. Then select the Errors and Exceptions button.
The Errors and Exceptions Report will provide the following detail about the interface:

- Service Exceptions – Interfaces
- Service Exceptions – Traps
- QoS Input Class Map Volume
- QoS Output Class Map Volume

12.8.4 Opening the Interface Details Report

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Capacity report. Then select the Interface Details button.

The Interface Details Report will provide the following details about the interface:

12.8.5 Opening a QoS Report

To drill down to more detailed, QoS-specific data for the selected interface, click one of the QoS names in the Top Deviation from Norm Class Map Post Utilization view. This opens an overview report for the QoS on that interface.

This will produce the Class Map Detail report.

The Class Map Detail Report will provide the following detail about the Class Mapping:
12.8.6 Opening a Class Map Capabilities Report

To drill down to more detailed, Class Map Capabilities Report-specific data for the selected Class Map, click the one of the QoS names in the any of the top Deviation from Norm Class Map view. This opens a Class Map Detail report for the Class Map. Then select the Class Map Capabilities button.

The Class Map Capabilities Report will provide the following detail about the Class Mapping:

- Top QoS Nested Class Maps
- Top QoS Map Statements Pre
- Top QoS Queuing Statistics
- Top QoS Police Mapping
- Top QoS Traffic Shaping
- Top QoS RED Volume

12.8.7 Opening a Router Performance Report

To drill down to more detailed Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will provide the following detail about the interface:

- Router Gauge
- CPU Utilization Trending
- Memory Utilization Trending
- Top Errors
- Availability Trend
- Ping Latency Calendar Chart
12.8.8 Opening a Router Interfaces Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Interfaces Reports can be accessed by clicking on the Router Interface tab. Router Interface Reports will provide the following detail about the selected Enterprise Router:

- Interface Availability Distribution
- Top Interfaces
- Top Least Available Interfaces
- Top QoS Class Map Pre vs. Post
- Top QoS Class Map Post/Drop
- Top QoS Queuing Statistics
- Top QoS Match Statistics
- Top QoS Police Statistics
- Top QoS Traffic Shaping Statistics
- Top QoS RED Volume
- Top QoS RED Packets
- Top Interface Volume
- Top Discards
- Top Errors
- Performance Index
12.8.9 Opening a Router Circuits Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Circuits Reports can be accessed by clicking on the Router Circuits tab. Router Circuits Reports will provide the following details about the selected Enterprise Router:

- Top Frame Relay Circuits
- Top T1 Circuits
- Top T3 Circuits

12.8.10 Opening a Router Errors and Exceptions Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.
This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Errors and Exceptions Reports can be accessed by clicking on the Router Errors and Exceptions tab. Router Errors and Exceptions Reports will provide the following detailed Event List for the selected Enterprise Router.

12.8.11 Opening a Router Details Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Details Report can be accessed by clicking on the Router Details tab.

12.8.12 Changing the Report Time Period

The date and time are set to the most recent 24-hour period by default. Click the timeframe link to modify the duration and date for the reported data. The Timeframe options allow you to apply time and date filters. You can select a built-in timeframe relative to the current date and time or specify a Start Date and an End Date, including the hour and minute for each.

For more information about changing time periods for reports, see “Setting the Time Period for a Report” on page 69.
12.9 Baseline Report

The Baseline report provides a broad summary report for the top Enterprise Interfaces. You can display an Overview report from another page by selecting the Report menu at the top-left of the reporting page.

The Baseline report provides information about the Enterprise Interfaces compared to Baselines for those Interfaces. This report includes views for the following data:

- Interface Utilization
- Router CPU
- Router Memory
- QoS Class Map Post Device CPU Utilization
- Frame Relay Congestion
- Frame Relay PVC Utilization
- Top Projections

12.9.1 Utilization Reports

Utilization Report will show a percent to threshold for the top identified Enterprise devices over 30, 60, and 90 days.
Drilling an Interface Report

More detailed information about the interface can be found by double-clicking on the Interface name on the Interface Utilization or Top Projection reports in the Alarm Report page. This will produce the Interface Capacity report.

The Interface Capacity Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Discard Rate Trend In
- Discard Rate Trend Out
- Errors Trend In
- Errors Trend Out
- Utilization Calendar In
- Utilization Calendar Out
- Interface Availability Trend
- Top Hosts
- Top Conversations

Opening Interface QoS Reports

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Capacity report. Then select the Interface QoS button.

The Interface QoS Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked QoS Trend In
- Stacked QoS Trend Out
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- QoS Input Class Map Dropped
- QoS Output Class Map Dropped
- QoS Input Class Map Volume
- QoS Output Class Map Volume
- QoS Input Class Map Policy
- QoS Output Class Map Policy
- Errors/Discard Rate Trend In
- Errors/Discard Rate Trend Out
- QoS Output Class Policy Maps
- QoS Input Class Policy Maps
- ToS Summary Rate
- Top Hosts
- Top Protocols
- Top Conversations

12.9.4 Opening the Errors and Exceptions Report

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Capacity report. Then select the Errors and Exceptions button.

The Errors and Exceptions Report will provide the following detail about the interface:

- Service Exceptions - Interfaces
12.9.5 Opening the Interface Details Report

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Capacity report. Then select the Interface Details button.

![Interface Details Report](image)

The Interface Details Report will provide the following details about the interface:

12.9.6 Opening a QoS Report

To drill down to more detailed, QoS-specific data for the selected interface, click one of the QoS names in the QoS Class Map Post Utilization view. This opens an overview report for the QoS on that interface.

This will produce the Class Map Detail report.

![Class Map Detail Report](image)

The Class Map Detail Report will provide the following detail about the Class Mapping:

- Class Map Pre/Post Policy Volume Trend
- Class Map Pre/Post Policy Packets Trend
- Class Map Pre/Post Policy Rate Trend
- QoS Class Map Dropped Volume Trend
- QoS Class Map Dropped Packets Trend
- QoS Class Map Dropped Rate Trend
- QoS Map No SRAM Buffer Dropped Packets Trend
- Poll Instance Details

12.9.7 Opening a Class Map Capabilities Report

To drill down to more detailed, Class Map Capabilities Report-specific data for the selected Class Map, click the one of the QoS names in the any of the top QoS views. This opens a Class Map Detail report for the Class Map. Then select the Class Map Capabilities button.
The Class Map Capabilities Report will provide the following detail about the Class Mapping:

- Top QoS Nested Class Maps
- Top QoS Map Statements Pre
- Top QoS Queuing Statistics
- Top QoS Police Mapping
- Top QoS Traffic Shaping
- Top QoS RED Volume

12.9.8 Opening a Router Performance Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will provide the following detail about the interface:

- Router Gauge
- CPU Utilization Trending
- Memory Utilization Trending
- Top Errors
- Availability Trend
- Ping Latency Calendar Chart

12.9.9 Opening a Router Interfaces Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.
The Router Performance Report will show as the default. The Router Interfaces Reports can be accessed by clicking on the Router Interface tab. Router Interface Reports will provide the following detail about the selected Enterprise Router:

- Interface Availability Distribution
- Top Interfaces
- Top Least Available Interfaces
- Top QoS Class Map Pre vs. Post
- Top QoS Class Map Post/Drop
- Top QoS Queuing Statistics
- Top QoS Match Statistics
- Top QoS Police Statistics
- Top QoS Traffic Shaping Statistics
- Top QoS RED Volume
- Top QoS RED Packets
- Top Interface Volume
- Top Discards
- Top Errors
- Performance Index

### 12.9.10 Opening a Router Circuits Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Circuits Reports can be accessed by clicking on the Router Circuits tab. Router Circuits Reports will provide the following detail about the selected Enterprise Router:

- Top Frame Relay Circuits
- Top T1 Circuits
- Top T3 Circuits
12.9.11 Opening a Router Errors and Exceptions Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Errors and Exceptions Reports can be accessed by clicking on the Router Errors and Exceptions tab. Router Errors and Exceptions Reports will provide the following detailed Event List for the selected Enterprise Router:

12.9.12 Opening a Router Details Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Details Report can be accessed by clicking on the Router Details tab. Router Detail Report will provide the details about the selected Enterprise Router:

12.9.13 Changing the Report Time Period

The date and time are set to the most recent 24-hour period by default. Click the timeframe link to modify the duration and date for the reported data. The Timeframe options allow you to apply time and date filters. You can select a built-in timeframe relative to the current date and time or specify a Start Date and an End Date, including the hour and minute for each.

For more information about changing time periods for reports, see “Setting the Time Period for a Report” on page 69.
12.10 Trending Report

The Trending report provides information about the inbound or outbound utilization for the selected interface by mapping the Protocol usage. You can display a Utilization report by selecting Utilization from the report menu at the top-left of the interface reporting page.

The Trending report provides information about the Top Protocols on the Enterprise Interfaces. This report includes views for the following data:

- Multi-Interface Stacked Protocol Trend – In -Rate
- Multi-Interface Stacked Protocol Trend – Out – Rate

12.10.1 Changing the Report Time Period

The date and time are set to the most recent 24-hour period by default. Click the timeframe link to modify the duration and date for the reported data. The Timeframe options allow you to apply time and date filters. You can select a built-in timeframe relative to the current date and time or specify a Start Date and an End Date, including the hour and minute for each.

For more information about changing time periods for reports, see “Setting the Time Period for a Report” on page 69.
13.0 Detailed Reports

13.1 Interface Capacity Report

More detailed information about the interface can be found by double-clicking on the Interface name on the Interface Utilization or Top Projection reports on the Report Overview Pages. This will produce the Interface Capacity report.

The Interface Capacity Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Discard Rate Trend In
- Discard Rate Trend Out
- Errors Trend In
- Errors Trend Out
- Utilization Calendar In
- Utilization Calendar Out
- Interface Availability Trend
- Top Hosts
- Top Conversations

13.1.1 Interface Utilization Trends

The Interface Utilization Trend/Baseline Capacity Report shows Inbound and Outbound Trending compared to Baseline for the selected interface. This maps the Max, Average, and 95th percentile inbound and outbound utilization compared to the Average Projected Utilization. The graphs will also provide detail on interface speed over the course of the time period selected.
13.1.2 Stacked Protocol Trends

The Stacked Protocol Trend Report shows Inbound and Outbound Trending for the selected interface. The Report shows which Protocols are utilizing bandwidth over the course of selected intervals based on the Timeframe options chosen. This allows for the identification of which protocols are utilizing bandwidth to help identify the cause of congestion.

13.1.3 Discard Rate Trends

The Discard Rate Trend Report shows Inbound and Outbound Trending for the selected interface.

13.1.4 Error Trends

The Error Trend Report shows Inbound and Outbound Trending for the selected interface.

13.1.5 Utilization Calendar

The Discard Rate Trend Report shows Inbound and Outbound Utilization Trending for the selected interface. The report provides a view of the percentage Utilization on the selected interface on an hourly basis.
13.1.6 Interface Availability

The Interface Availability Report shows availability for the selected interface over the time period selected.

![Interface Availability Trend](image)

13.1.7 Top Hosts

The Top Hosts Report shows the total bits in/out of the top hosts for the selected interface over the time period selected.

![Top Hosts - Total](image)

13.1.8 Top Conversations

The Top Conversations Report shows the total bits in/out of the top conversations for the selected interface over the time period selected.

![Top Conversations - Total](image)

13.2 Interface QoS Report

13.2.1 Opening Interface QoS Reports

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization graph. This will produce the Interface Capacity report. Then select the Interface QoS button.
The Interface Report will provide the following detail about the interface:

- Interface Utilization In Trend/Baseline Detail
- Interface Utilization Out Trend/Baseline Detail
- Stacked QoS Trend In
- Stacked QoS Trend Out
- Stacked Protocol Trend In
- Stacked Protocol Trend Out
- QoS Input Class Map Dropped
- QoS Output Class Map Dropped
- QoS Input Class Map Volume
- QoS Output Class Map Volume
- QoS Input Class Map Policy
- QoS Output Class Map Policy
- Errors/Discard Rate Trend In
- Errors/Discard Rate Trend Out
- QoS Output Class Policy Maps
- QoS Input Class Policy Maps
- ToS Summary Rate
- Top Hosts
- Top Protocols
- Top Conversations
13.2.2 Interface Utilization Trends

The Interface Utilization Trend/Baseline Capacity Report shows Inbound and Outbound Trending compared to Baseline for the selected interface. This maps the Max, Average, and 95th percentile inbound and outbound utilization compared to the Average Projected Utilization. The graphs will also provide detail on interface speed over the course of the time period selected.

13.2.3 Stacked QoS Trending

The Stacked QoS Trending Report shows Inbound and Outbound QoS Trending for the selected interface. This maps the inbound and outbound QoS Class utilization for the interface over the Timeframe selected.

13.2.4 Stacked Protocol Trends

The Stacked Protocol Trend Report shows Inbound and Outbound Trending for the selected interface. The Report shows which Protocols are utilizing bandwidth over the course of selected intervals based on the Timeframe options chosen. This allows for the identification of which protocols are utilizing bandwidth to help identify the cause of congestion.
13.2.5 Error/Discard Trend Details

The Error/Discard Trend Detail Report shows Inbound and Outbound Trending for the selected interface.

13.2.6 QoS Class Output Class Map Drops

The QoS Class Map Drops Report shows the quantity of Output Class Map Dropped Packets for the selected interface over the time period selected.

13.2.7 QoS Class Input Class Map Drops

The QoS Class Map Drops Report shows the quantity of Input Class Map Dropped Packets for the selected interface over the time period selected.

13.2.8 QoS Class Output Class Map Volume

The QoS Class Map Volume Report shows Outbound Class Map Trending for the selected interface.

13.2.9 QoS Class Input Class Map Volume

The QoS Class Map Volume Report shows Input Class Map Trending for the selected interface.

13.2.10 QoS Output Policy Class Maps

The QoS Output Policy Class Map shows Class Map Details for the selected interface.
13.2.11 QoS Summary

The QoS Summary shows Class Map Summary for the selected interface.

13.2.12 Top Protocols

The Top Protocol report shows overall bits in/out as well as percent utilization for the top protocols on the selected interface.

13.2.13 Top Hosts

The Top Hosts report shows overall bits in/out as well as percent utilization for the top hosts on the selected interface.

13.2.14 Top Conversations

The Top Conversations report shows overall bits in/out for the top conversations on the selected interface.
13.3 Interface Errors and Exceptions
13.3.1 Opening Errors and Exceptions Reports

To drill down to more detailed, Interface Errors and Exceptions-specific data for the selected interface, click on the Interface Utilization graph. This will produce the Interface Capacity report. Then select the Interface Errors and Exceptions button.

The Interface Errors and Exceptions Report will provide the following detail about the interface:

- Service Exceptions - Interfaces

13.4 Interface Details Report
13.4.1 Opening the Interface Details Report

To drill down to more detailed, Interface QoS Reporting-specific data for the selected interface, click on the Interface Utilization Report. This will produce the Interface Capacity report. Then select the Interface Details button.

The Interface Details Report will provide the following details about the interface:

13.5 QoS Class Map Details Report
13.15.1 Opening a QoS Class Map Report

To drill down to more detailed, QoS-specific data for the selected interface, click one of the QoS names in the QoS Class Map Post Utilization view. This opens an overview report for the QoS on that interface.

This will produce the Class Map Detail report.
The Class Map Detail Report will provide the following detail about the Class Mapping:

- Class Map Pre/Post Policy Volume Trend
- Class Map Pre/Post Policy Packets Trend
- Class Map Pre/Post Policy Rate Trend
- QoS Class Map Dropped Volume Trend
- QoS Class Map Dropped Packets Trend
- QoS Class Map Dropped Rate Trend
- QoS Map No SRAM Buffer Dropped Packets Trend
- Poll Instance Details

### 13.6 QoS Class Map Capabilities Report

#### 13.6.1 Opening a Class Map Capabilities Report

To drill down to more detailed, Class Map Capabilities Report-specific data for the selected Class Map, click one of the QoS names in the any of the top QoS views. This opens a Class Map Detail report for the Class Map. Then select the Class Map Capabilities button.

The Class Map Capabilities Report will provide the following detail about the Class Mapping:

- Top QoS Nested Class Maps
- Top QoS Map Statements Pre
- Top QoS Queuing Statistics
- Top QoS Police Mapping
- Top QoS Traffic Shaping
- Top QoS RED Volume
13.7 Router Performance Report

13.7.1 Opening a Router Performance Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will provide the following detail about the interface:

- Router Gauge
- CPU Utilization Trending
- Memory Utilization Trending
- Top Errors
- Availability Trend
- Ping Latency Calendar Chart
13.8 Router Interfaces Report

13.8.1 Opening a Router Interfaces Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Interfaces Report view.

The Router Performance Report will show as the default. The Router Interfaces Reports can be accessed by clicking on the Router Interface tab. Router Interface Reports will provide the following detail about the selected Enterprise Router:

- Interface Availability Distribution
- Top Interfaces
- Top Least Available Interfaces
- Top QoS Class Map Pre vs. Post
- Top QoS Class Map Post/Drop
- Top QoS Queuing Statistics
- Top QoS Match Statistics
- Top QoS Police Statistics
- Top QoS Traffic Shaping Statistics
- Top QoS RED Volume
- Top QoS RED Packets
- Top Interface Volume
- Top Discards
- Top Errors
- Performance Index
13.9 Router Circuits Report
13.9.1 Opening a Router Circuits Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Circuits Report will show as the default. The Router Circuits Reports can be accessed by clicking on the Router Circuits tab. Router Circuits Reports will provide the following detail about the selected Enterprise Router:

- Top Frame Relay Circuits
- Top T1 Circuits
- Top T3 Circuits

13.10 Router Errors and Exception Report
13.10.1 Opening a Router Errors and Exceptions Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Performance Report view.

The Router Performance Report will show as the default. The Router Errors and Exceptions Reports can be accessed by clicking on the Router Errors and Exceptions tab. Router Errors and Exceptions Reports will provide the following detailed Event List for the selected Enterprise Router.
13.11 Router Detail Report

13.11.1 Opening a Router Detail Report

To drill down to more detailed, Router-specific data for the selected interface, click one of the Router names in the Router CPU or Memory view. This opens an overview report for that interface.

This will produce the Router Details Report view.

The Router Performance Report will show as the default. The Router Details Report can be accessed by clicking on the Router Details tab. Router Detail Report will provide details about the selected Enterprise Router:

13.12 Router Utilization Report

The Utilization report provides information about the inbound or outbound utilization for the selected interface by mapping the utilization percentage on a calendar chart. Some utilization reports include the utilization data as a calendar chart.

Excessive utilization of an interface is shown as a block of red extending across the column for the day and rows indicating the time of day. Low utilization is shown in green, with varying shades of each color used to show the degree of severity. The color assigned to each severity range corresponds to a range of utilization values (calculated as percentages of total capacity). The legend illustrates how the colors are used in the utilization calendar chart.

14.0 Working with Interface Report

Each Interface report includes specific view types that display the data for the selected interface or group of interfaces. When you open an Interface report, the data is displayed in the report views using the default Presentation options and settings.

- "Changing the Interface for a Report" on page 69
- "Setting the Time Period for a Report" on page 69
- "Analyzing Interface Report Data" on page 72
14.1 Changing the Interface for a Report

If you are already viewing an Interface report and want to display the report using another interface, click the [change] option next to the interface name at the top of the report to select a different interface.

This opens the Interface Index, where you can locate and select another interface. The interfaces are organized by router. For more information about using the Interface Index, see “Using the Interface Index” on page 16.

14.2 Setting the Time Period for a Report

The Enterprise Overview displays data for the previous 24-hour period. Interface reports also display data for the previous 24 hours by default; however, you can change the reporting period for the report using the timeframe controls at the top of the report page.

When you are viewing Interfaces report pages, you can change the time period for the displayed data. For example, if you are viewing data for the last day in a report and you notice an issue, you might want to change the timeframe to the last seven days to determine if the issue is occurring on a daily basis.

The top of the Interfaces report page displays the current time period. These reports support one-minute resolution data. For a 24-hour time period, this results in a time period of the last full one-minute data point and back 24 hours of data points.

Note: Each user account has a time zone assigned, which determines how reports label data with time for that user. For example, if a user has a time zone of Central Standard Time (CST) instead of the default of Universal Coordinated Time (UTC) and the user views a report with data for 8:00 a.m. to 9:00 a.m., the reporting tool displays data for 8:00 a.m. to 9:00 a.m. CST. The Advanced Application Reporting administrator can modify this setting for the user account.
The displayed timeframe at the top of the report page provides the links and tools to modify the reporting timeframe.

- “Scrolling the Time Period Interval” shown below
- “Specifying a Built-In Time Period” shown below
- “Specifying a Reporting Start and End Time” on page 71

14.2.1 Scrolling the Time Period Interval

If you want to keep the existing time range (24 hours, one week, one month, custom, etc.) but shift the reported data backward or forward, use the arrow icons on either side of the displayed timeframe to scroll up or down.

To shift the timeframe back by one increment:
X Click the ◼ icon.

To shift the timeframe forward by one increment:
X Click the ▶ icon.

14.2.2 Specifying a Built-In Time Period

You can specify another time period for the Interface report using one of the built-in time period definitions. These built-in time periods provide a quick and easy way to expand or restrict the reporting time period relative to the current date and time. For example, if you have daily data displayed, you can quickly change the time period to weekly to determine if it is a repeated pattern over the last seven days.

To specify a built-in time period:

01 Click the time period displayed at the top of the report page.

The timeframe element expands to display the Timeframe options.

02 Use the Time Period drop-down menu to select a time period for the report.

Each time period is relative to the current date and time. For example, a Daily time period includes the current date and time and backward one full day (24 hours). And a Weekly time period includes the current date and time and backward one full week (7 days).

03 Use the Time Filter drop-down menu to select a time filter.

The available time filters are set up by your Advanced Application Reporting Administrator so that the Advanced Application Reporting product aggregates data according to hours of operation or other useful day/time selections.
04 Click **Set**.

The active timeframe displayed in the Timeframe window changes to reflect the selected span of time so that you can get a quick view of the data that will be included. This is useful for ensuring that you capture any specific trends that are of interest in the time period.

05 Click **Close** at the top-right of the window to collapse the Timeframe options on the report page.

**Specifying a Reporting Start and End Time**

You can change the default time period for the current report to a custom time period. Using a custom time drop down period enables you to select a specific start and end date and time for the report data, such as the following:

- A specific hour
- A specific day
- A unique week time period by specifying a day within the Saturday to Sunday 7-day time period that you want
- A unique one-month time period by selecting the month start and end dates
- A unique quarter-year time period by selecting the quarter start and end dates
- A unique one-year time period by selecting the year start and end dates

01 Use the **Time Period** drop-down menu to select the time period for the report. The end date and time are set to the current time by default.

02 Select the starting date for the custom time period using the **Start Date** options.

03 Use the day, month, and year drop-down menus to select a date, or click the calendar ( ) icon to locate and select a starting date. Use the << and >> controls to scroll the displayed calendar month.
04 Select a starting time for the custom time period using the **Hour** and **Minute** options next to the start date. These options default to the current time (hour: minutes). The **Hour** option uses the international/military numbering so that an a.m. or p.m. designation is not required.

05 Select the ending date for the custom time period using the **End Date** options. Use the day, month, and year drop-down menus to select a date, or click the calendar icon to locate and select a starting date. Use the << and >> controls to scroll the displayed calendar month.

06 Select an ending time for the custom time period using the **Hour** and **Minute** options next to the end date.

These options default to the current time (hour: minutes). The **Hour** option uses the international/military numbering so that an a.m. or p.m. designation is not required.

07 Click **Set**.

The active timeframe displayed in the Timeframe window changes to reflect the selected span of time so that you can get a quick view of the current data that will be included. This is useful for ensuring that you capture any current trends that are of interest in the custom time period.

08 Click **Close** at the top-right of the window to collapse the Timeframe options on the report page.

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**15.0 Analyzing Interface Report Data**

The Interface reports included in Advanced Application Reporting include numerous view types designed to help you identify and analyze your network traffic. By default, these real-time report views provide the last hours worth of performance data in a one-minute granularity view. By using this data, operations center personnel can figure out possible causes for new issues and troubleshoot them quickly.

- Protocol Trend Views
- QoS Trend Views
- Protocol Summary Views
- Utilization Calendar Charts

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**16.0 Protocol Trend Views**

The data displayed in the Stacked Protocol Trend views is designed to help you determine what type of traffic is consuming bandwidth on the interface and how bandwidth consumption changed over the selected time period. Use this information to troubleshoot issues and determine if there is a saturation issue or an area of poor performance.
Click the name of a protocol in the legend to display a protocol report with interface data specific to that protocol.

The Stacked Protocol Trend views display data for the top 10 protocols on the interface.

### 16.1 QoS Trend Views

The data displayed in the Stacked QoS Trend views is designed to help you determine the amount of traffic on the interface by QoS designation and its change over the selected time period. Use this information to troubleshoot issues and determine if there is a saturation issue or an area of poor performance.

Click the name of a QoS in the legend to display the QoS report with interface data specific to that QoS.

### 16.2 Utilization Calendar Charts

The calendar chart enables you to detect utilization issues on an interface, determine when the problem started, and pinpoint the time of day that the problem occurs. In the following example chart, you can see that the utilization level for this interface is often at or above 70%, which means that the performance of the applications sending data over this link is likely degraded at those times. Calendar charts can also reveal patterns from day to day and week to week so that you can determine whether a problem occurs at the same time each day or week.
**16.3 Stacked Trend Charts**

The stacked trend plots available for the Protocol and ToS summary data are excellent tools for quickly establishing the types of applications that are using the most bandwidth for a particular interface and how they compare to one another.

The following is an example of a stacked trend chart. The legend on the right lists the protocols represented in the graph so that you can see the amount of data being transferred for each protocol category. Notice the surge of inbound Web (http) traffic that occurs from about 10:30 a.m. to 4:00 p.m.

The duration for this report is daily, but you might want to extend the duration to monthly to determine whether this is a one-time occurrence or whether this surge occurs at the same time each day and week. To change time period or apply a time filter, use the Timeframe options. For more information about changing the time period and applying time filters for an interface report, see “Setting the Time Period for a Report” on page 69.

**16.4 Trend Charts**

The trend chart presentation format is available for interface data. When you choose the trend chart presentation for a **Protocol Summary**, the Advanced Application Reporting console initially displays a trend plot for each of the top protocols.

Use trend charts to see traffic spikes and dips and to determine whether those patterns are consistent with your expectations for the interface.
By default, the Advanced Application Reporting console displays the last 24 hours of interface data. To change time period or apply a time filter, use the **Timeframe** options. For more information about changing the time period and applying time filters for an interface report, see “Setting the Time Period for a Report” on page 69.

### 16.5 Pie Charts

Pie charts provide a visual comparison of QoS on the interface, making it easy to see which ones are using the most or least amount of bandwidth. Pie charts also include a listing of numeric data.

**Utilization In Calendar Chart**

By default, the Advanced Application Reporting console displays the last 24 hours of interface data. To change time period or apply a time filter, use the **Timeframe** options. For more information about changing the time period and applying time filters for an interface report, see “Setting the Time Period for a Report” on page 69.

### 16.6 Calendar Charts

When you choose to view Utilization summary data for an interface, it is displayed as a **Calendar Chart**. You can choose whether to show inbound, outbound, or total traffic in the chart and which month to display, and also apply any available time filters.

Excessive utilization of an interface is shown as a block of red extending across the column for the day and rows indicating the time of day. Low utilization is shown in green, with varying shades of each color used to show the degree of severity. The color assigned to each severity range corresponds to a range of utilization values (calculated as percentages of total capacity). The legend provided explains how the colors are being used in the calendar chart:

![Calendar Chart](image)

The calendar chart enables you to detect utilization problems with the selected interface, determine when the problem started, and pinpoint the time of day that the problem occurs. In the example chart above, you can see that the utilization level for this interface is often at or above 70%, which means that the performance of the applications sending data over this link is likely degraded at those times. Calendar charts can also reveal patterns from day to day and week to week so that you can determine whether a problem occurs at the same time each day or week.