# Network Demographics Server, Release 6.65 User Guide

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# Contents

# 1

# Getting Started

# 1.1 Network Demographic Server Overview

Sandvine Network Demographics reports provide actionable data in meaningful terms - number of actual emails, Voice over Internet Protocol (VoIP) minutes, Peer-to-Peer (P2P) file-sharing by protocol/user and an array of other networking topics. Use these reports to identify subscriber usage patterns to gain a better understanding of subscriber reality.

Network Demographics facilitates the generation of reports for all elements that log to the same database. Reports are viewed in a browser and can be saved, printed, bookmarked for future reference, and distributed via email. Sandvine provides a number of standardized reports for specific features such as Peer-to-Peer connections, Attack Traffic and Top Talkers. Advanced features are available to custom-build reports based on standardized reports and automatically schedule the generation and distribution of these reports via email.

## 1.1.1 Client System Requirements

The minimun system requirements needed to support this NDS release include:

- Hardware Requirements—A minimum of 1 GB of Random Access Memory (RAM) is required, although Sandvine recommends 2 GB.
- Supported Browsers—Supported browsers include:
  - Microsoft Internet Explorer: 8.0 and above
  - Mozilla: Mozilla Firefox 3.0 and above

**Note:**
Whenever possible, use the latest version of the selected browser.

## 1.1.2 Report Explorer Categories

These report categories are the default folders that appear in the Report Explorer navigation pane, under the All Reports tab:

| Category | Description |
|---|---|
| Resource Monitoring | Provides information on system resources (CPU usage, memory usage, current CPU processes) for the selected element. |
| Network Characterization | Provides information that assists in the characterization of network traffic, including:<br>• Traffic Demographics<br>• Attack Traffic<br>• Peer-to-Peer<br>• VoIP |
| Subscriber Analysis | Lets you identify the top N subscribers and to examine detailed activities. |
| Generated Report Templates (optional) | This category is present only when custom report templates are created. |
| Custom Reports (optional) | This category is present only when custom reports are created and saved. |
| My Reports (optional) | This category is present only when personal custom reports are created and saved. |
| Configuration | Provides configuration options to perform such activities as changing screen colors and selecting a Domain Name Server (DNS). |

| Category | Description |
|---|---|
| Help | Contains online help and administrative information such as copyright notices. |

# 1.2 Connecting to a Reports Server

**Requirements:**

- Supported browser (See *Client System Requirements* on page 10).
- IP address of element functioning as the Network Demographics server.
- Username and password to log in to the element that is serving the reports.

## 1.2.1 Logging in to the Reports Server

A login screen appears, when you connect to the server, to let you enter your username and a password. The username is a default Sandvine user (one of sv_operator, sv_service, sv_admin or spbadmin). This is dependent on which users are enabled on the system that functions as the reports server. This is the element that has the Apache web server installed and contains the Sandvine reports packages. To log in:

1. Launch your preferred browser.
2. Enter the reports server IP address using this format.

   http://x.x.x.x:y/reports

   Where:

   - x.x.x.x—Is the IP address of the reports server
   - y—Identifies the port number that Network Demographics listens on. The default port number is 8080.
3. Enter your username and password on the Network Demographics Server login screen.
4. Click **Login**.

   **Note:**
   The Network Demographics navigation pane and splash screen appears when your login is successful. However, if the login fails, the **Login Failed: Please try again.** message appears.

## 1.2.2 Logging Out

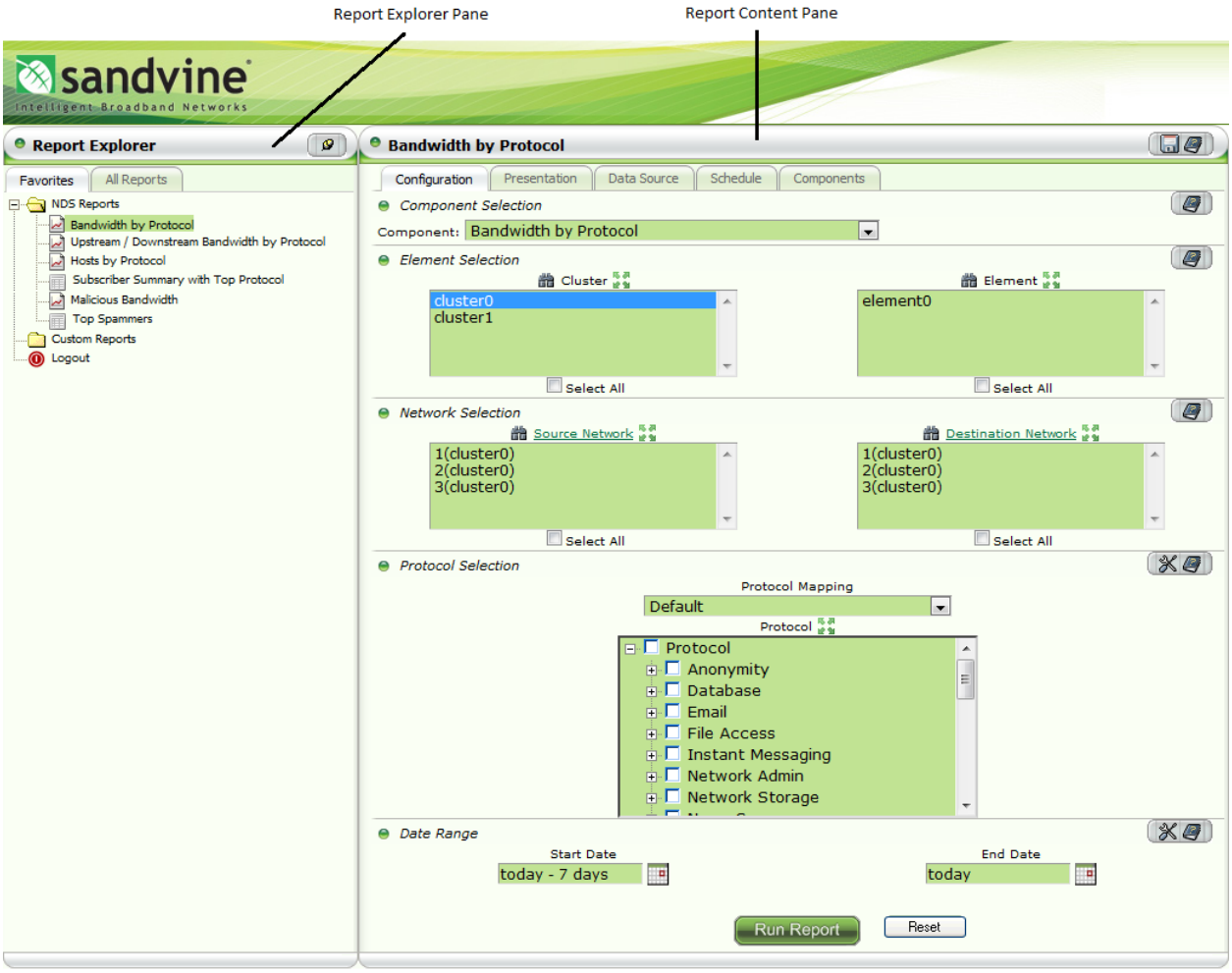
Logging out terminates your current NDS session; it is not terminated if you simply close your browser, or navigate to another web site. If you do not log out, and subsequently return to the reports window within the session timeout period, your session parameters remain in effect.

Click **Logout** to properly exit the application.

# 1.3 Navigating the User Interface

The work area is divided into two fixed panes:

- The Report Explorer pane
- The Report Content pane




## 1.3.1 Report Explorer Pane

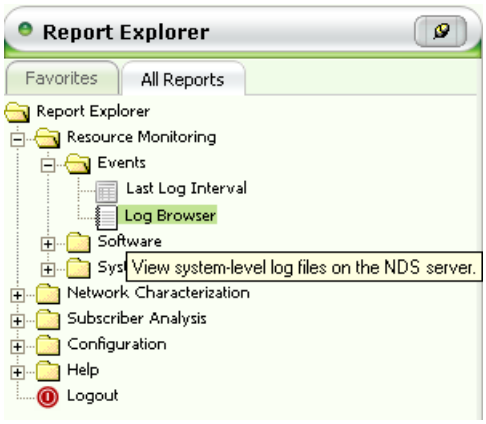
The Report Explorer pane contains navigation folders and is located at the screen's left side.

- Contains these views:

  - Favorites—Provides a subset of the available reports that are commonly used. There is a direct link to each report. See *Customizing the Favorite Reports Navigation Tree* on page 96 for information on customizing the reports that appear in this view.
  - All Reports—Provides access to all available reports and configuration.
  - Scheduled—Provides access to cached scheduled reports.
- Click the **Report** tab to switch between report views.
- Click either the plus sign (+) adjacent to the folder icon, the folder, or the folder name to expand the folder.
- Click either the minus sign (-) adjacent to the folder icon or the folder name to collapse a folder.
- After selecting a node in the tree—when the node is highlighted—use the keyboard arrow keys to navigate up, down, left, and right.
- You can also use **Tab** and **Shift-Tab** to navigate around the screen.
- Icons adjacent to each report indicate the type of report:

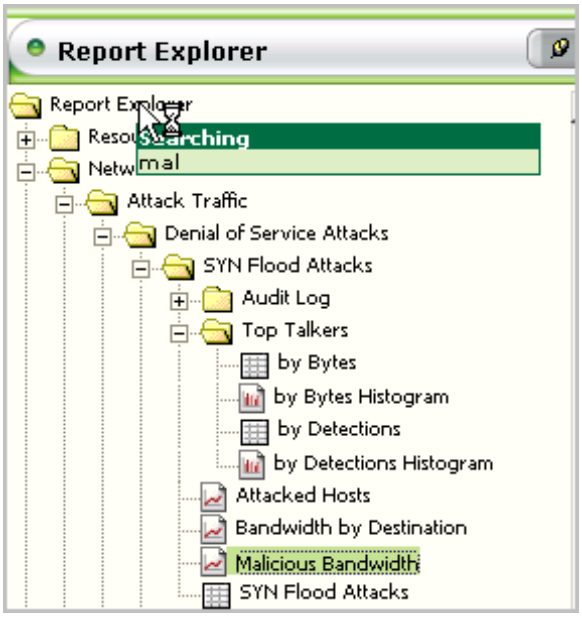
| This Icon... | Indicates.... |
|---|---|
|  | A tabular data report or pivot table. |
|  | That the report is an audit log. |
|  | The report is a date/time based chart. |
|  | A text report which provides static information. |
|  | A frequency distribution report, such as a histogram. |
|  | That the report is for download only. |

- Hover over a report name to display a Tooltip which describes the report (if available).



## 1.3.2 Searching for Reports

Use the context sensitive search feature to quickly locate needed reports.




To search for a report:

1. Select the Report Explorer folder in the Report Explorer pane.
2. Start entering the report name, or a word within a report name. The report tree automatically expands and the first report that matches text, as you enter it, is highlighted.
3. Press **Enter** to navigate down the tree for additional matches.

## 1.3.3 Collapsing the Report Explorer Pane

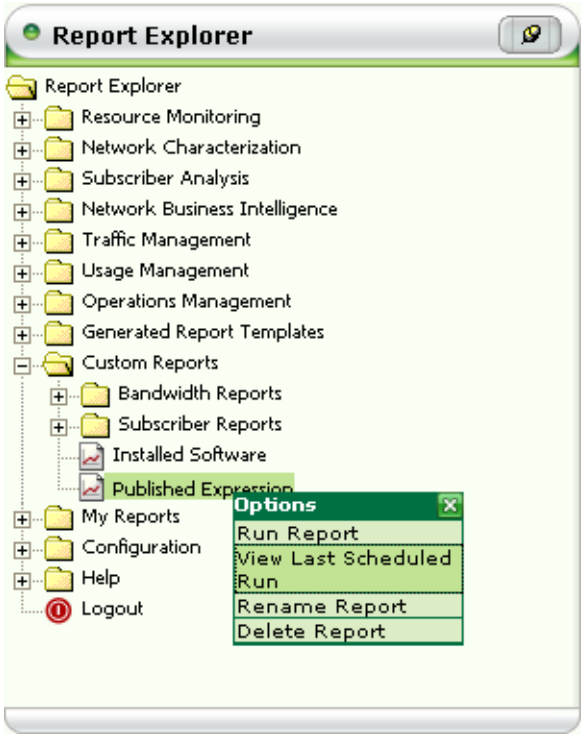
You can collapse the Report Explorer pane when it is not required. This pane is normally located on the screens left of the screen.

Click the Report Explorer toggle button (  ) at the top of the Report Explorer to lock/unlock the navigation pane.

| Icon | Description |
|---|---|
|  | Indicates that the Report Explorer pane is locked. |
|  | Indicates that the Report Explorer pane is unlocked.<br>When the pane is unlocked, the pane collapses when the mouse is over the Report Content pane and the Report Explorer bar is displayed. To display the Report Explorer pane, position the mouse over the Report Explorer bar. |

## 1.3.4 Navigation Tree Context Menu

This is the navigation tree context menu:




## 1.3.5 Custom Reports

These custom report options are available:

- Run Report—When configured as a scheduled report, this automatically runs the report as configured, without loading the configuration screen.
- View Last Scheduled Run—When configured as a scheduled report, this option loads the cached view of the most recently scheduled run.
- Rename Report
- Delete Report

Folder options:

- Rename Folder
- Delete Folder

## 1.3.6 My Report

These 'My Report' options are available:

- Run Report—When configured as a scheduled report, this option automatically runs the report as configured, without loading the configuration screen.
- Rename Report
- Delete Report

Folder options:

- Rename Folder
- Delete Folder

## 1.3.7 Generated Report Templates

These Report options are available:

- Rename Report
- Delete Report

Folder options:

- Rename Folder
- Delete Folder

## 1.3.8 Scheduled Navigation Tab

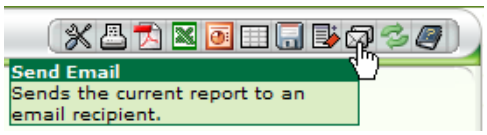
The Scheduled navigation tree offers quick access to pre-generated static (non-interactive) reports. A cached version is stored in the system whenever a scheduled report is generated. The Scheduled navigation tree only shows reports that have pre-generated content. The most recently generated cached version automatically loads whenever you select a report title. Older static reports are listed under the scheduled report in order of the latest at the top and oldest at the bottom.

## 1.3.9 Report Content Pane

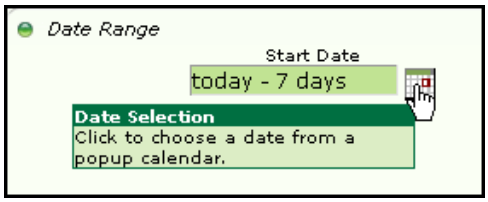
The report Content pane is used to configure and display reports. It includes a toolbar, located at the top of the pane, that gives you access to Save, Bookmark, Print, email reports, and other functions.

## 1.3.10 Tooltips

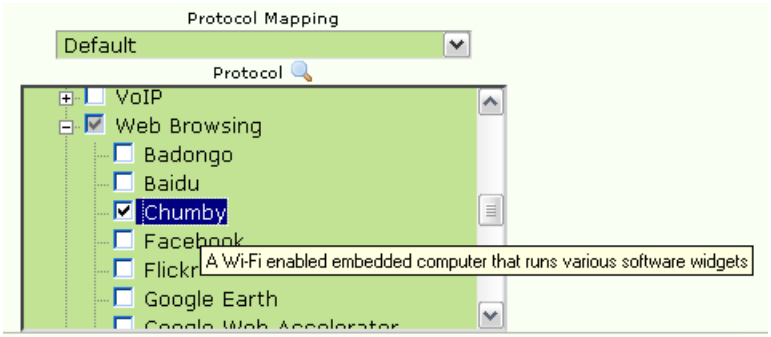
A short description appears when you hover over each function appearing in the toolbar. For example:




Hovering over a configuration item displays a Tooltip. For example:

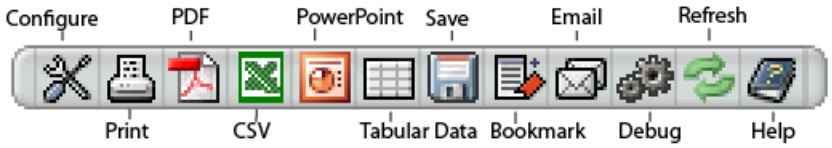



You can also hover over protocols in the protocol tree. This displays a Tooltip that provides a brief description of the protocol.




## 1.3.11 The Report Toolbar

The Report Toolbar gives you controls to access basic NDS functions. The functions appearing in this toolbar vary depending upon the screen that is displayed. See *Generating a Report* on page 21"Generating Reports" on page 21 for a description of each function on this toolbar.




## 1.3.12 Obtaining Help

The Help icon appears on the right end of the toolbar and in each area you select when configuring report parameters.

Click **Help** for the area, or the title for the area, for context sensitive help on the configuration area. Help is a toggle function; click once to display the help text and again to hide it.

To access help:

- Click **Help** on the toolbar to display help on the current page.
- Click **Help**, or click the configuration area title, to display context sensitive help in a report configuration area. Repeat this to hide the context-sensitive help.

# 2

# Creating Reports

# 2.1 Overview of Standard Reports

These steps describe how to generate a standardized Sandvine report. Reports can be viewed on-screen, saved as custom reports, printed, and distributed via email.

1. In the Report Explorer pane, expand the report category and select a report to generate.

2. On the Configuration page, select report options such as the cluster, the element(s) on which to report and so forth. An option in each of the selection areas must be selected to generate a report. Several reports in the Resources category do not require configuration options. When one of these reports is selected, the report is generated for the element to which you are connected.

3. If desired, on the Presentation page, select options to indicate how to group and display each data set.

4. Run the report.

**Post-requisite:** The Network Demographics Server also has advanced reporting features such as the ability to automatically schedule reports and create customized amalgamations of reports. For more information on advanced report features, see *"Creating Custom Reports"*.

## 2.1.1 Selecting Options

Most reports offer a number of options that allow you to select the specific data you want in the report.

- To select a single item in a list, click the item.
- To select all of the items in a list, click the first item and then drag to select the desired items. or If available, select the *Select All* check box.
- To select several non-contiguous items, hold down CTRL and select the desired items.
- To select or clear a check box, click the check box.

## 2.1.2 The Run Report Button

The Run Report button appears on the Configuration and Presentation pages.

When all of the desired report options have been selected, click *Run Report* to generate the report. If report options are not correctly configured, the report will not generate and the configuration screen will be displayed.

## 2.1.3 The Submit Button

The Submit button appears on the Data Source, Schedule, and Components pages.

This button updates the report configuration, but does not run the report. For example, on the Data Source page, if you choose a different DSN for a report, this information must be submitted to the reports server and the options on the Configuration page must be updated to reflect this selection before you can continue to select options to create the actual report.

## 2.1.4 The Reset Button

The Reset button clears the form values that are saved to the session. All values on the page are reset.

**To reset to default session values:**

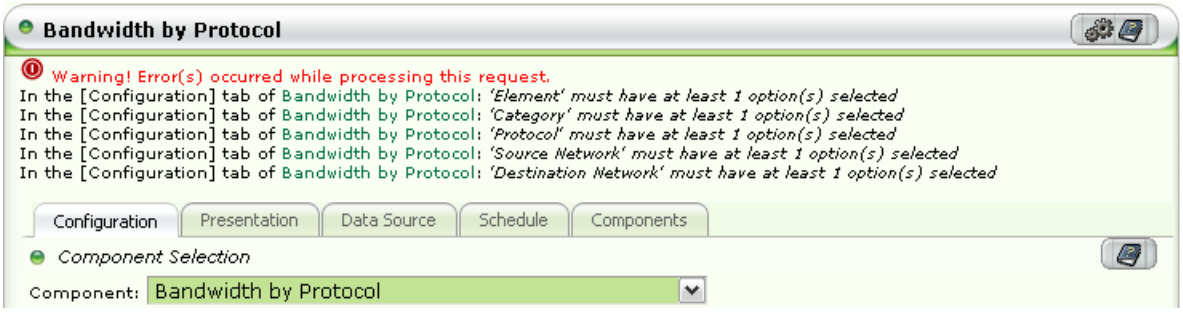
1. On the Configuration page, click the *Reset* button.
2. In the dialog box that asks "Are you sure you want to reset the report configuration?" click *OK*.

## 2.1.5 Generating a Report

To generate a report on either the Configuration or Presentation page, click *Run Report*. If all of the required report configuration options are present, a message appears on the screen indicating "Generating Requested Report, Please Wait". The progress bar displays a counter indicating the time to generate the report. Note that some reports may take a lengthy period to generate depending upon the number of parameters selected while configuring the report.

### 2.1.5.1 Report Configuration Error Messages

If the report configuration is incomplete or incorrect, the report can't be generated. When this occurs, an error message automatically appears at the top of the configuration page. Click the Warning message to hide the details of the error message.




### 2.1.5.2 No Data Found Message

If there is no data for the selected date range, networks or other selected options, a message is displayed indicating *No data was found for the parameters you specified to generate this component of the report.* There may be several reasons for this message as discussed below.

**Option 1:** The report needs to be reconfigured.

Some of the options selected for the report may not be valid.

For example:

- Verify that the element and network components are correct.
- Display the advanced date range configuration parameters and verify that the time zone is correct.

On the report toolbar, click Configure Report to return to the Configuration screen. Edit the configuration and run the report again.

**Option 2:** A feature is not installed

The feature for the selected report is not installed or configured. Contact Sandvine Customer Support.

**Option 3:** Insufficient data

Not enough data has been collected by the Sandvine elements(s) that you are reporting on. Typically, a Sandvine element requires a minimum of thirty minutes to collect data before the data can be generated into a report.

### 2.1.6 Cancelling a Report

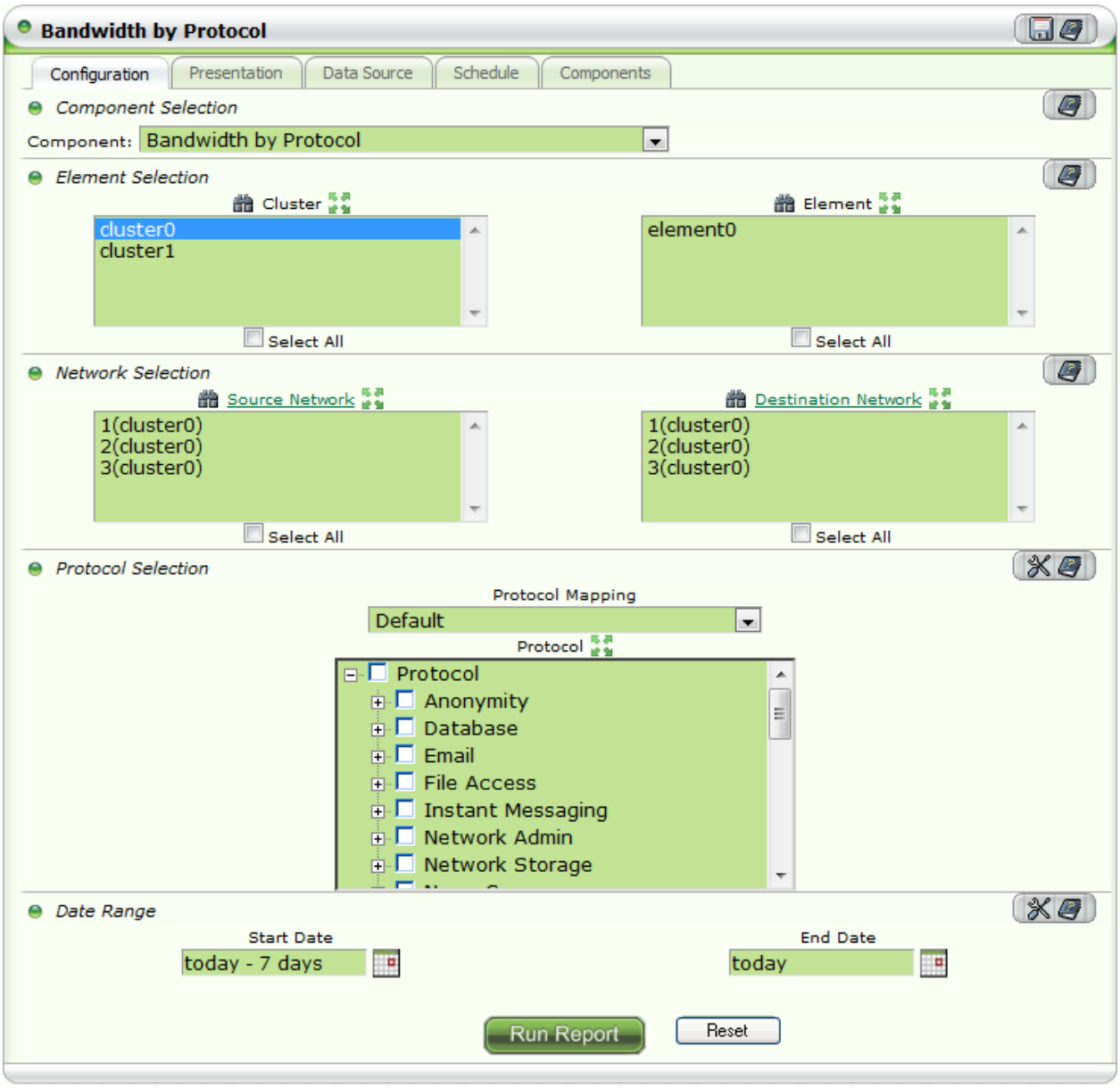
While a report is being generated, it can be cancelled.

**To cancel a report:**

1. On the screen reading "Generating the Requested Report Please Wait", click *Cancel*.
2. On the screen reading "Report Generation Cancelled by User Intervention", click *OK*.

# 2.2 Report Configuration Screen

When a report is selected, the Configuration screen appears in the Report Content pane. This pane displays a number of tabs, each representing a page of configuration options. Select the desired tab to examine available. Options appearing on each tab are dependant on the report that is selected. Click the magnifying glass, in any selected area, to expand/collapse the drop-down to view the entire list.




The configuration pages are:

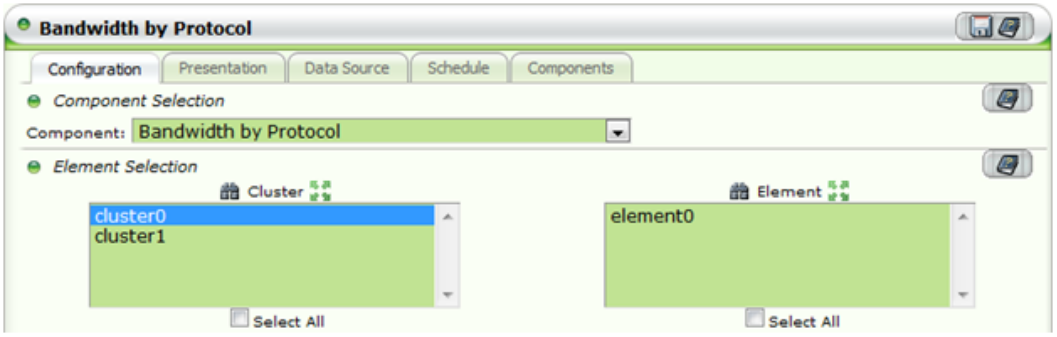
- Configuration—Lets you choose the data set to display on the report. Select an option in each of the configuration area to generate a report. For details on creating custom protocol maps, see *"Protocol Configuration Manager"*.
- Presentation—Lets you choose how to group the data and the display format (for example, decimal precision, units, sort order and so on).
- Data Source—Lets you select a DSN for the current report.
- Schedule—Scheduling is only available for custom-built reports.This lets you select the frequency (hourly, daily, weekly or monthly) and time of day to generate a report. You can also send email notifications to specific individuals when a custom report is generated.
- Components—Lets you select the type of chart (area chart, bar chart, pivot table, etc.) to use for a report. This also lets you remove components from a custom report.

# 2.2.1 Advanced Configuration Options

If an Advanced Configuration icon appears in a configuration area, additional optional options are available. Click  (Advanced Configuration) to display or hide these options.

# 2.2.2 The Configuration Tab

Display the Configuration page to select the data to chart. The displayed configuration options are a function of the selected report type. You must select an item for each configuration optionto ensure successful report generation. Select **Help** is the configuration area for detailed information.




## 2.2.2.1 Advanced Filtering

The Advanced Filtering button allows searching and filtering of the values in the cluster, element, networks and VoIP provider parameters.

- **Search:** Enter text to filter the list of parameter values to only show items that match the search string
- **Wildcard Filters:** Add wildcard text to use in the report query. For example, “external” will query all networks with “external” in their name. The filter text is case sensitive.

## 2.2.2.2 Additional Settings

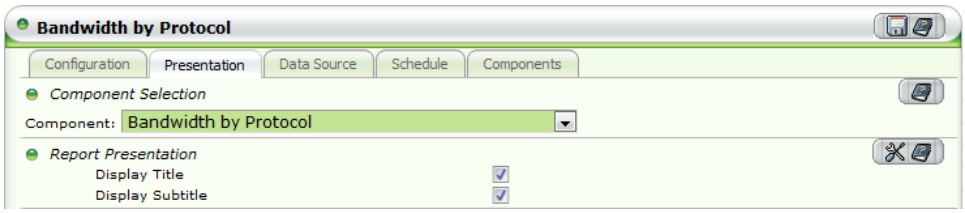
The Expand or Collapse button expands the size of the parameter container so that all values are viewed at once.

Clicking on the title of the “Source Network” and “Destination Network” displays these context menu and options:

| Context Menu | Options |
|---|---|
| Swap | Swaps the selections between Source and Destination. Any options previously selected on the Destination are selected on the Source and vice versa. |
| Replace | Replaces the destination selection by selecting all options that are selected on the Source. |
| Add | Adds the Destination selection by selecting all options that are selected on the Source. |
| Remove | Unselects all destination options that are selected on the Source. |
| Inverted | Replaces the destination selection by selecting all options that are not selected on the Source. |

# 2.2.3 The Presentation Tab

Select options on the Presentation page to group data and specify how to display data on the chart. A good understanding of the data set, and the purpose of the chart you want to create, is critical to applying presentation options that enhance report interpretation and highlight areas of interest. The options available on this page are a function of the report selected.



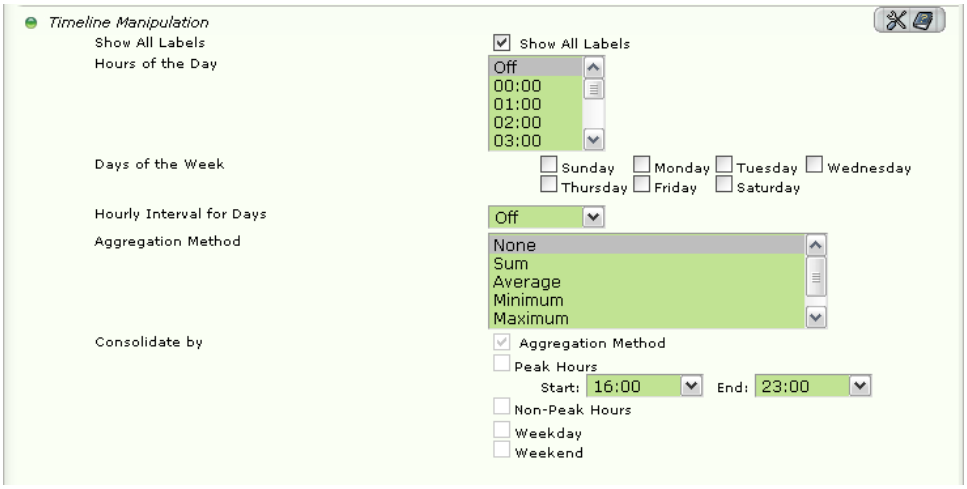

The areas on the presentation page are:

- Component selection—Lets you select the chart component and the dataset for which to configure presentation options. For example, if a report consists of three individual charts, you can configure the presentation options individually for each chart.
- Report presentation—Lets you choose to display the report title and any subtitles.
- Result consolidation—Provides options that let you group “like” records together.
- Chart enhancements or Table enhancements—Provides options that let you customize presentation options such as the width of plot and whether a legend is displayed.
- Data manipulation—Provides operations to manipulate the underlying raw data to improve data analysis capabilities.
- Timeline manipulation—Provides the ability to do aggregate timeline reporting, such as showing the average bandwidth on weekdays for the last month

## 2.2.3.1 Timeline Manipulation and Aggregate Timeline Reporting

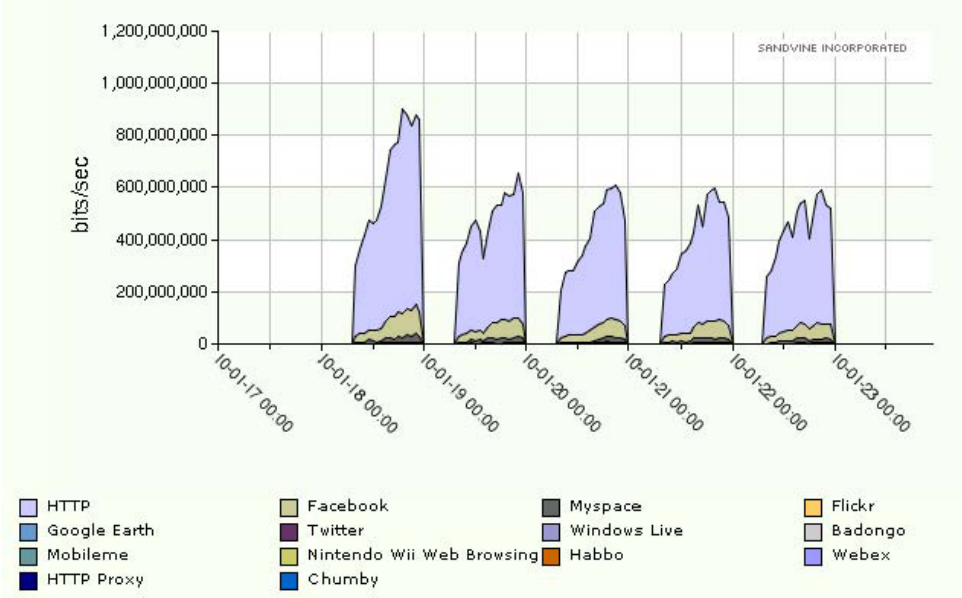
The Timeline Manipulation configuration parameters allow time-based manipulation and aggregation of data. It allows the aggregation of data, over a large reporting range, over the hours in the day, days of the week, or a combination of both. It also supports reporting on a subset of the dates in the reporting range, such as showing data just for weekdays or weekends. The supported aggregation methods include:

- Sum
- Average
- Minimum
- Maximum
- Standard Diviation




**Example Reports**

**Example:**To generate a report for the past week, Monday to Friday, between the hours of 8 AM and 11 PM.




Use this configuration:

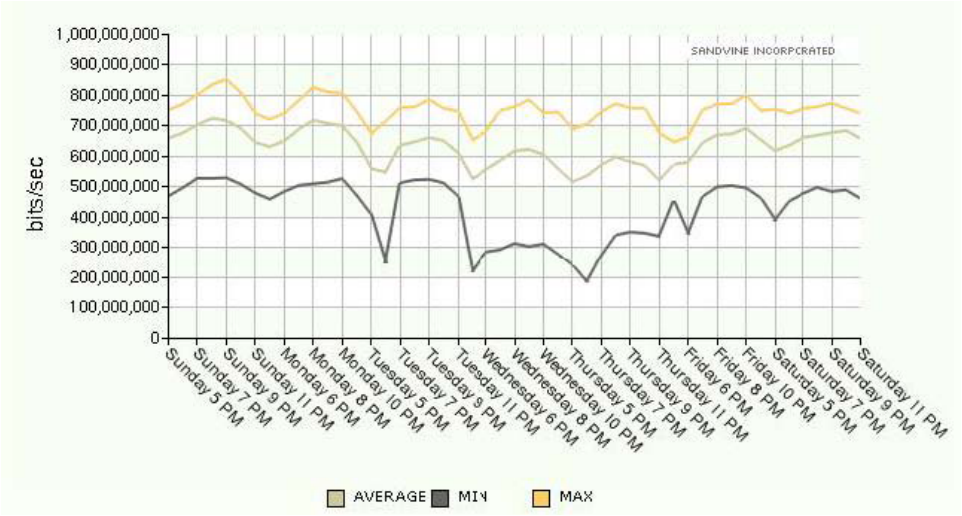
- Date range = today - 7 days to today
- Show All Labels = N/A
- Hours of the Day = 08:00, 09:00, ... , 23:00
- Days of the Week = Monday, Tuesday, Wednesday, Thursday, Friday
- Aggregation Method = None
- Consolidate by Aggregation Method = N/A

**Example:** To generate a report showing the total bandwidth for the past month between the hours of 4 PM and 11 PM.


Use this configuration:

- Date range = today - 1 month to today
- Show All Labels = False
- Hours of the Day = 16:00, 17:00, ..., 23:00
- Days of the Week = None selected
- Aggregation Method = Sum
- Consolidate by Aggregation Method = True

**Example:** To generate a report showing the average, minimum, and maximum bandwidth over a month, for 5 PM to 11 PM, every day of the week.

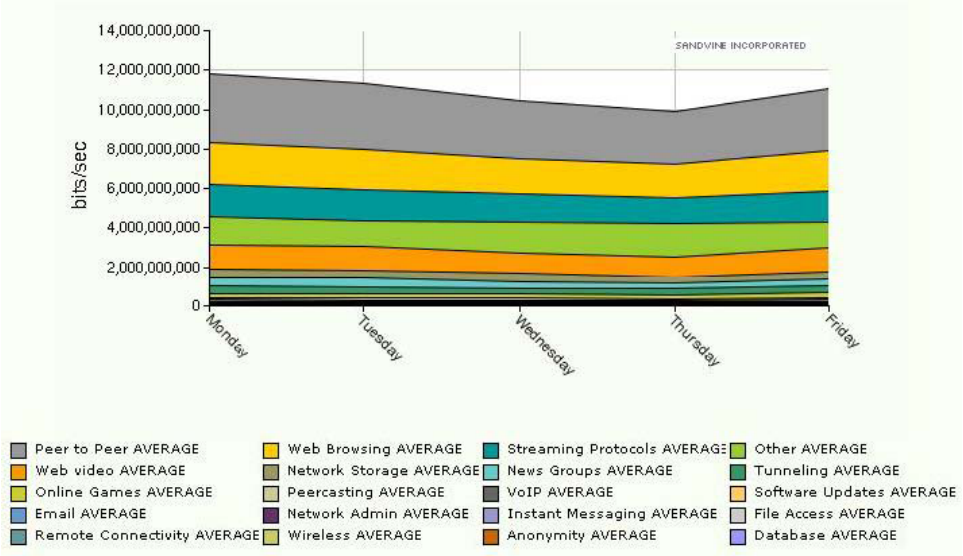



Use this configuration:

- Display Mechanism = Chart (Line)
- Date range = today - 1 month to today

- Chart Layering Method = Overlay
- Show All Labels = False
- Hours of the Day = 17:00, 18:00, ..., 23:00
- Days of the Week = All selected
- Aggregation Method = Average, Minimum, Maximum
- Consolidate by Aggregation Method = True

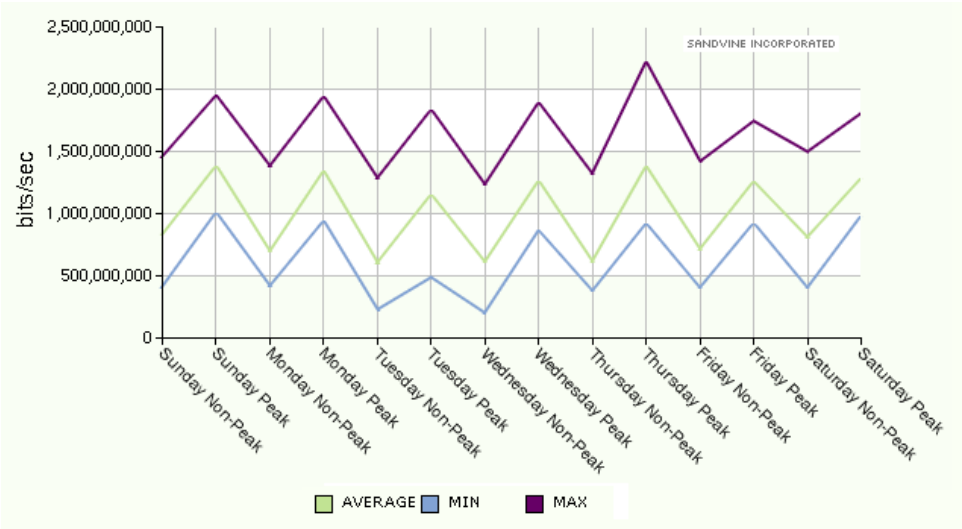
**Example:** To generate a report showing the average bandwidth for the past month, for Monday to Friday, for each protocol category.




Use this configuration:

- Date range = today - 1 month to today
- Protocol Selection = Select All
- Consolidate Data By = Protocol Category
- Show All Labels = False
- Hours of the Day = Off
- Days of the Week = Monday, Tuesday, Wednesday, Thursday, Friday
- Aggregation Method = Average
- Consolidate by Aggregation Method = False

**Example:** To generate a report showing the average, minimum, and maximum bandwidth for the past month, for all days of the week, between peak and non-peak hours.

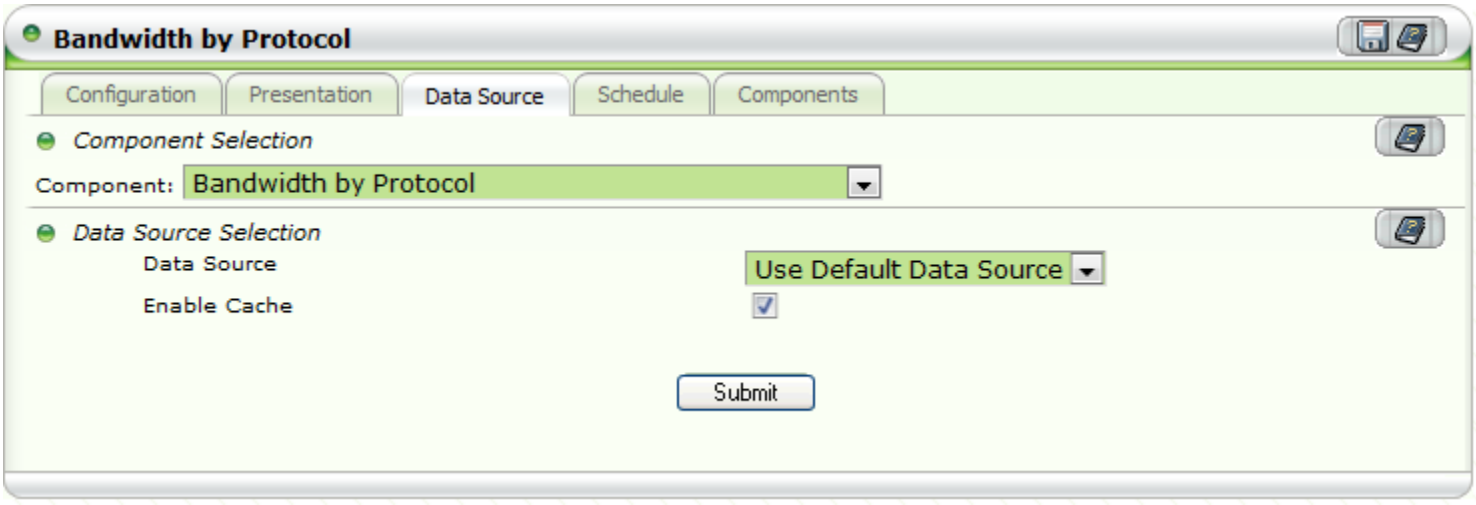



Use this configuration:

- Display Mechanism = Chart (Line)
- Date range = today - 1 month to today
- Chart Layering Method = Overlay
- Show All Labels = True
- Days of the Week = None selected
- Days of the Week = All selected
- Hourly Interval for Days = Off
- Aggregation Method = Average, Minimum, Maximum
- Consolidate by Aggregation Method = True
- Consolidate by Peak Hours = True
- Consolidate by Non-Peak Hours = True

## 2.2.4 The Data Source Tab

The data source name or DSN provides connectivity to a database. The system administrator sets the variables that define the default DSN for the Network Demographics Server. Each time you log on to the server this data source is automatically selected.




### 2.2.4.1 Selecting a Data Source for a Report

The data source can change dynamically for either the session or component in a report. You can also link the source to a specific data source. When the session is terminated (session timeout or logging out) the default data source is automatically restored.

**Note:**
If you are generating a Sandvine report and want to select a different DSN, first select the DSN and Submit the change. Then select report configuration and presentation options.

When you choose a different DSN, the Element Selection options are reloaded to reflect the selected DSN. When a log browser report is selected, a Data Source selection area is displayed which lists a number of message logs you can view. For example, the message log is rotated and previous message logs selected and examined.

### 2.2.4.2 Changing the Session Data Source (DSN)

The DSN Management screen displays a list of DSNs the report server can access. A database icon is displayed adjacent to the default DSN. To change the data source for the session:

1. Access the Data Source page.
2. Select the DSN, in the Data Source Selection list, that you want to set as the session default.
3. Click **Submit**.

### 2.2.4.3 Selecting a Report Component Data Source (DSN)

The data source that is selected on the Data Source page only applies to the current report and selected report component and dataset.

To select a data source for a report component:

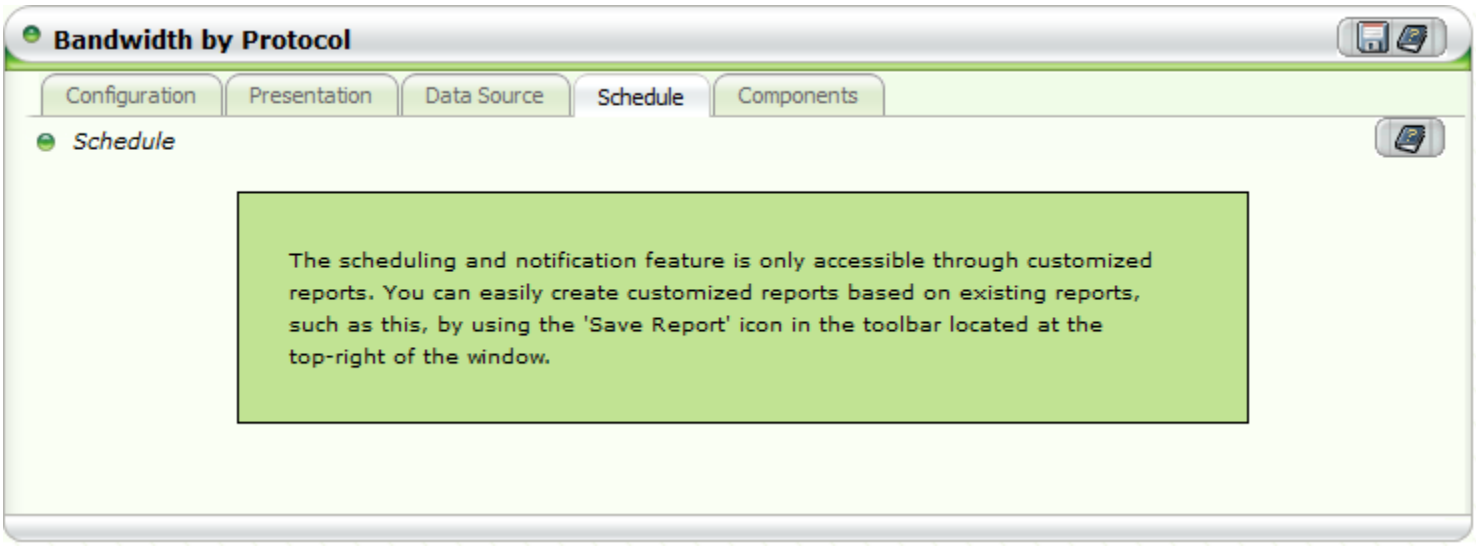
1. Select the desired component and dataset, in the Component Selection area of the Data Source page.
2. Select the DSN from the Data Source drop-down in the Data Source Selection area.
3. Click **Submit**.

### 2.2.4.4 Cache Configuration

The Enable Cache option lets you manually over-ride the default caching behavior of reports. It is generally not recommended to over-ride this behavior, as it may have a significant impact on the time required to generate reports with common data. This feature is helpful when viewing report data where frequent updates are required for the same reporting period.

## 2.2.5 The Schedule Tab

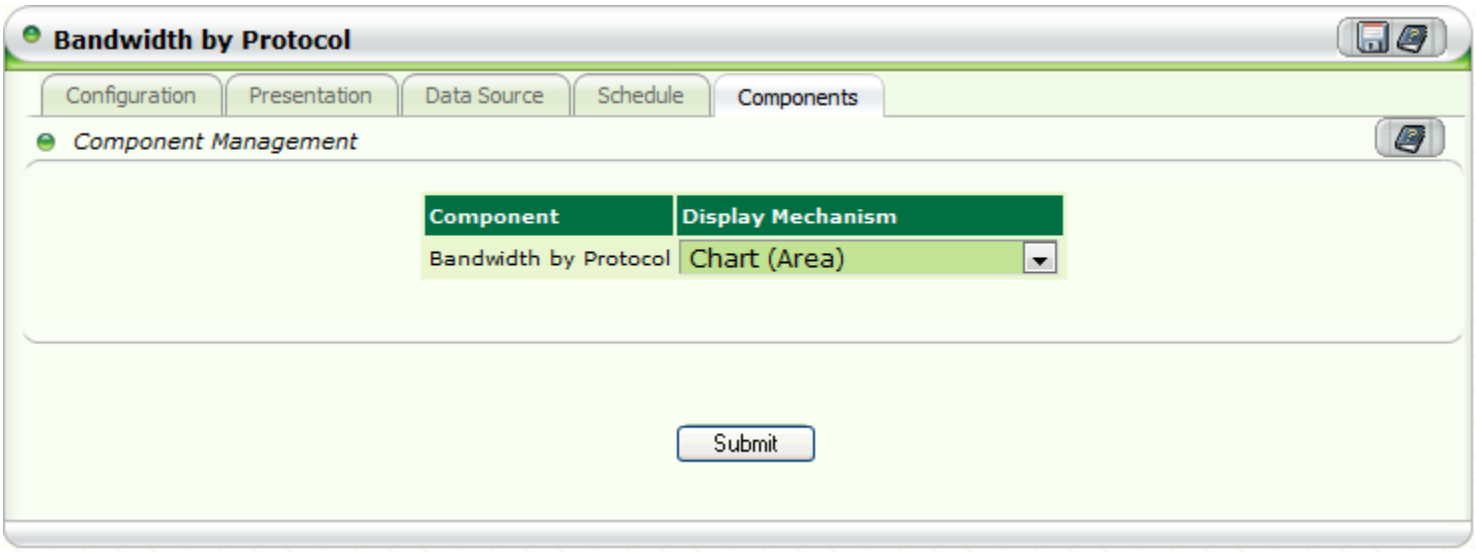
This tab is only used in scheduled reports. See *Creating Custom Reports* on page 49 for additional information.




## 2.2.6 The Components Tab

Use the parameters in the "Component Management" section to change the display mechanism of each report component.

Although each report is associated with a default display mechanism or type of chart, you can select to display the data on a different type of chart. This can clarify certain types of information. For example, rather than displaying data as a bar chart, selecting a histogram may assist in quickly identifying which protocol, cost class, or top talker is contributing to 80% of a specific type of traffic. If a chart has multiple components, you can select a specific filter for each component.



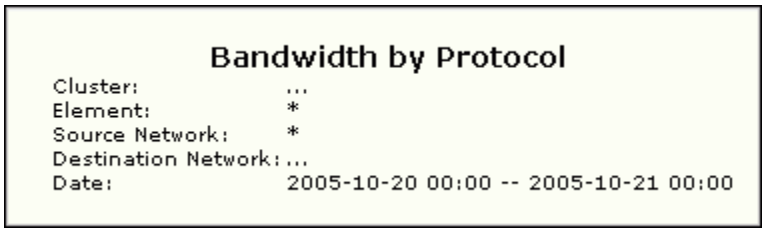

The Display Mechanism drop-down only displays the filters that are generated based on the data available for that component type. For example, a number of attack traffic reports are tables; the only display options available.

# 2.3 Working with Reports

When a report is generated it appears in the Report Content pane. The toolbar displays a number of buttons that allow you to print, save, bookmark and email the report. Date range links at the bottom of the report allow you to change the data range displayed on the report. If more extensive changes are required to the options, such as the elements in the cluster on which to report, reconfigure the report.

## 2.3.1 Collapsing Title Details

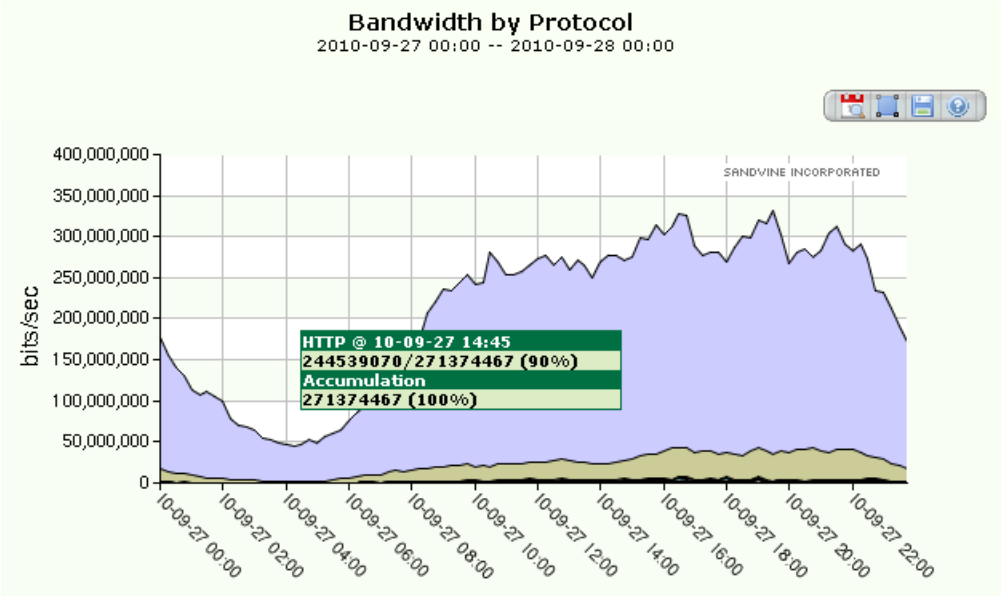
When you create a report, detailed information about the networks and cost classes displayed on the report appear beneath the report title. This information can be quite lengthy. To collapse or expand these details, click on a heading. A collapsed heading is indicated by an ellipse (…) after the heading, as shown here. If all items are selected, for example all Source Networks or all Destination Networks, this is indicated by an asterisk (*).



# 2.3.2 Working with Graphical Charts

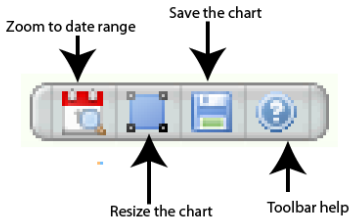
## 2.3.2.1 Chart Tooltips

When a report is displayed, hover the mouse over the plots in the chart to display Tooltips with information about the plot name, values, dates and other information. This is an example of the type of information that appears when you hover over a chart plot:




## 2.3.2.2 The Chart Toolbar

The chart toolbar appears whenever you hover over a chart.

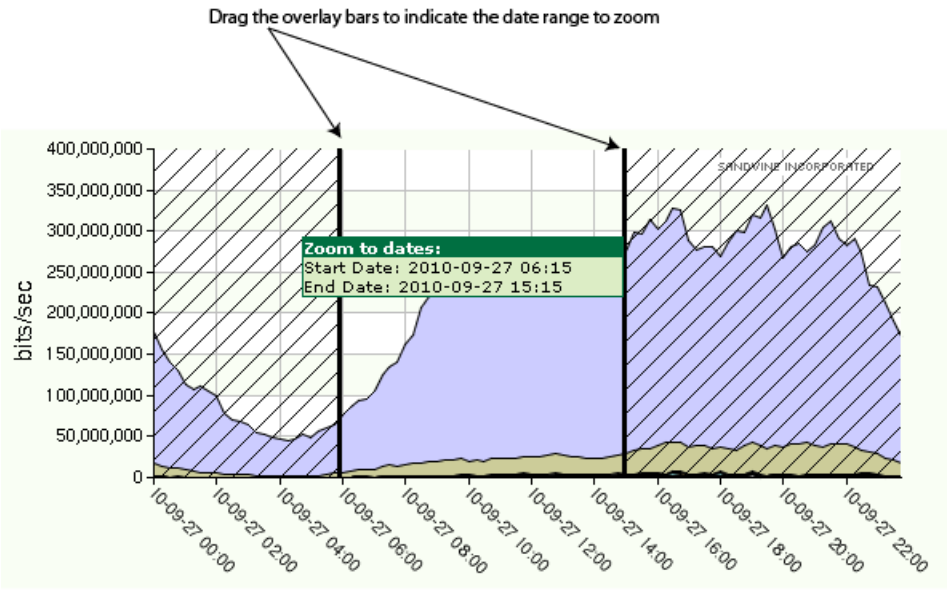



Depending upon how you access the chart toolbar, it contains either a Cancel and Confirm function or just Cancel.

| Click... | To... |
|---|---|
| **Confirm** | Indicate that the selection is ready for submission. |
| **Cancel** | Terminate the function. |

## 2.3.2.3 Zooming to a Date Range

Use the zoom to date range feature to zoom in on a specific date range. When the zoom function is selected, an overlay appears on the report. Drag the overlay bars to indicate the desired date range to zoom.

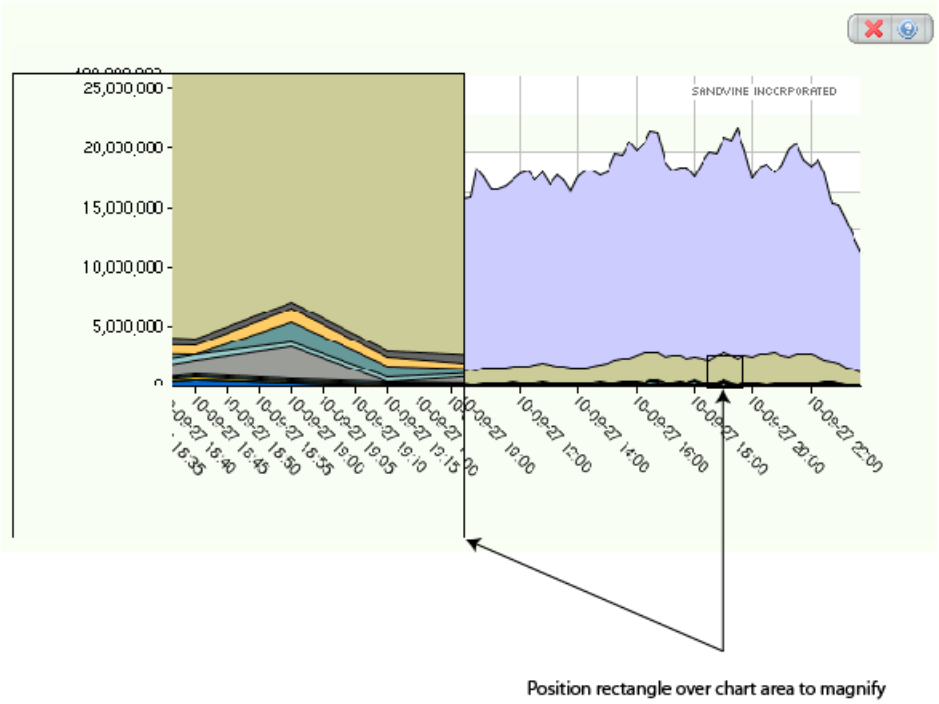



**To zoom to a date range:**

1. Access the chart toolbar.
2. Click **Zoom to date range** on the chart toolbar.
3. Drag the left and right overlay bars, on the chart, to indicate the desired date range.
4. Click **Confirm**, on the chart toolbar, to generate the chart with the zoomed dates.
5. Click **OK** in the confirmation dialog.

## 2.3.2.4 Magnifying a Chart

The magnify feature lets you pan across a chart with a 10x magnifying glass. Click **Magnify** on the chart toolbar. A magnification window appears to the left of the chart. A small rectangular box appears on the chart. Drag the box over the area of the chart to display in the magnification window. When you are finished examining the chart with the magnification tool, on the chart toolbar, click **Cancel**.



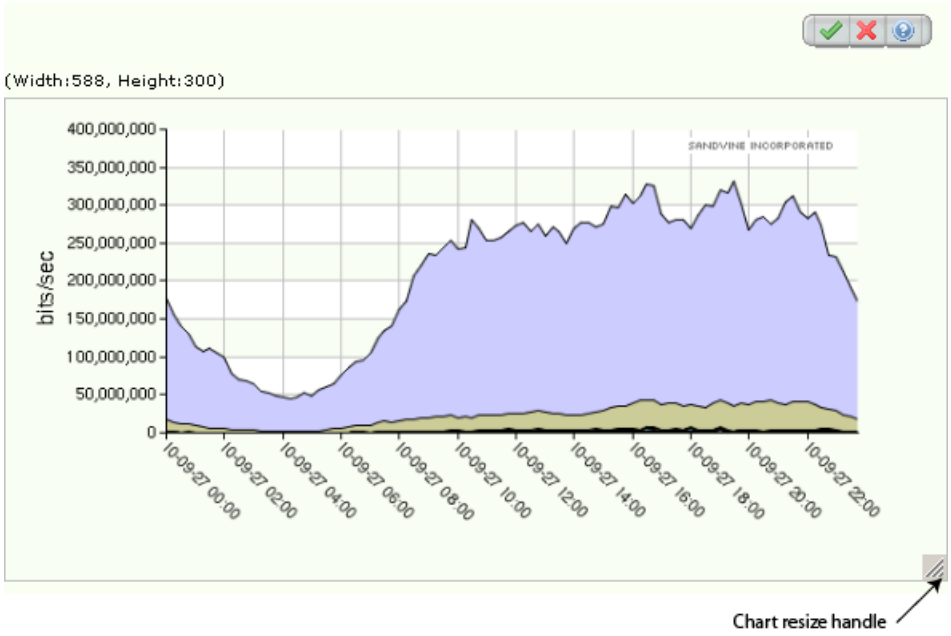

**Note:**
The magnify feature is disabled by default. To enable this feature, issue this CLI command: set config nds presentation charting magnify-enabled true (refer to the *SPB Administration Guide* for information about running CLI commands).

**To magnify a chart:**

1. Display the chart toolbar.
2. On the chart toolbar, click *Magnify chart*. A magnification window appears and the pointer changes to a pointer with a rectangle.
3. On the chart, drag the rectangle over the area to magnify.
4. When you have finished analyzing the magnified areas on the chart, on the chart toolbar, click *Cancel*.

## 2.3.2.5 Resizing Reports

You can change the size of a chart image; stretching or compressing the image as required. When the resize function is selected, a handle appears on the chart. Drag the handle to size the chart.




**To resize a chart:**

1. Display the chart toolbar.
2. On the chart toolbar, click *Resize the chart*.
3. Drag the Resize handle to indicate the chart size. To maintain the original aspect ratio of the chart image, while dragging, hold down the Shift key.
4. When the desired size is achieved, on the chart toolbar, click Confirm.

## 2.3.2.6 Save Chart as Image

Saves the entire chart as an image, including title, subtitle, chart image, and legend.

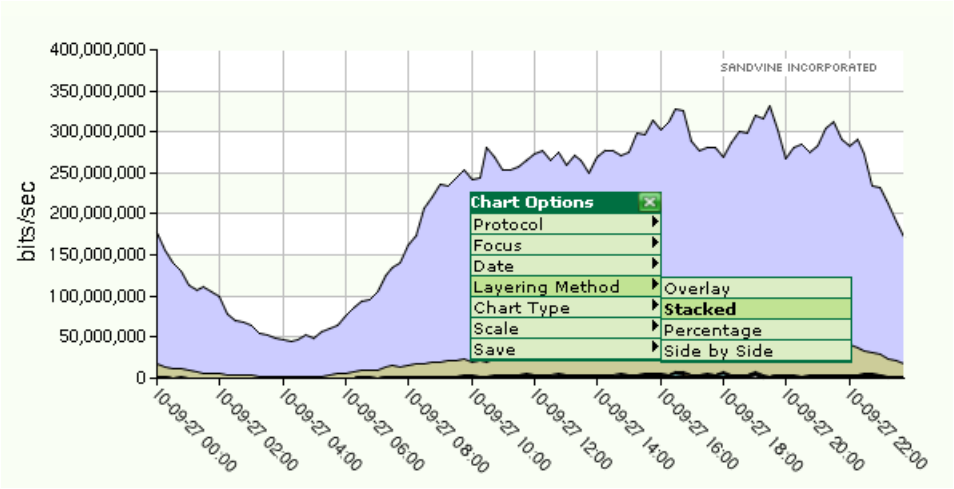
## 2.3.2.7 Chart Context Menu

You can access two context sensitive menus from a graphical report: a plot context menu, and a legend context menu. These menus provide access to commands that let you configure what appears on the chart without having to return to the chart Configuration page.

## 2.3.2.8 Plot Context Menu

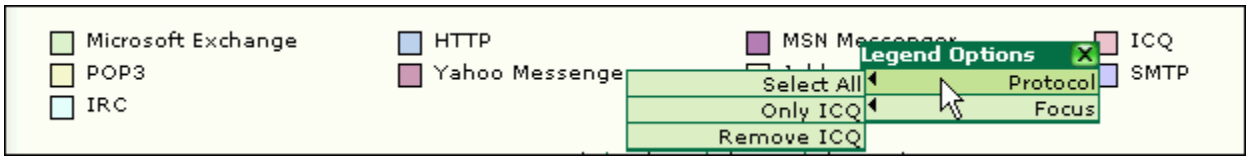
The plot context menu displays information about selected chart configuration options and let you change options. For example, you can change the type of chart and save the entire chart image to a local file.

Click the plot to display the chart context menu. When you hover over a menu command, a popup indicating the current settings appears. Click a menu command to display a submenu. The commands appearing inthat menu are a function of the report that is displayed.



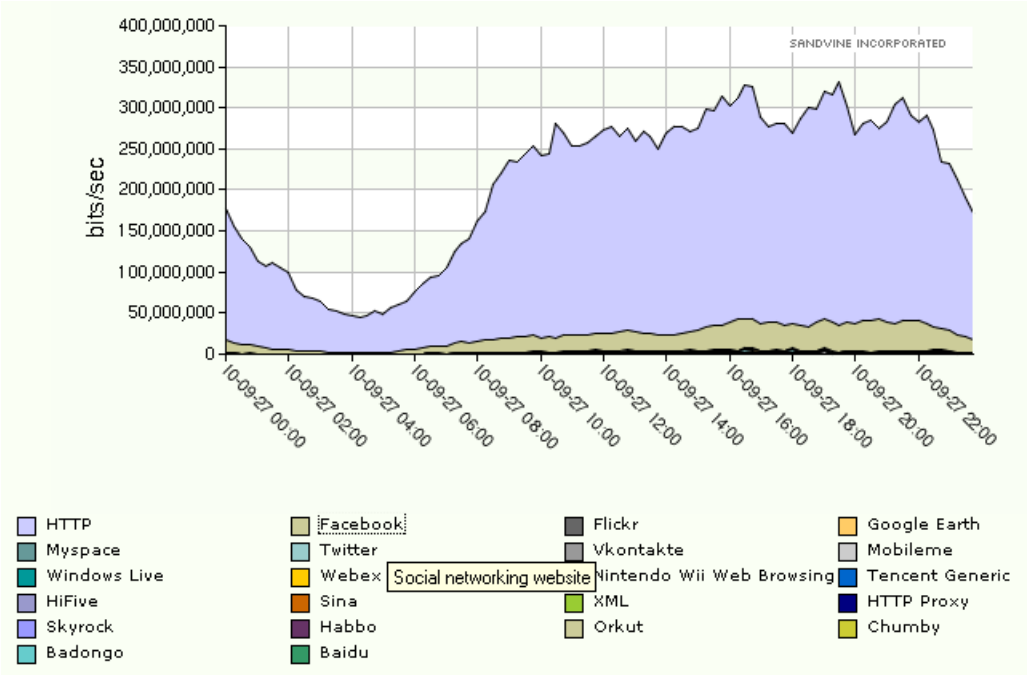

## 2.3.2.9 Legend Context Menu

Click legend color swatch or legend text to display the legend context menu. The legend menu provides options to remove a protocol or to focus on a protocol.




## 2.3.2.10 Legend Protocol Tooltips

When a chart is displayed, hovering over a protocol in the legend displays a tooltip describing the selected protocol.

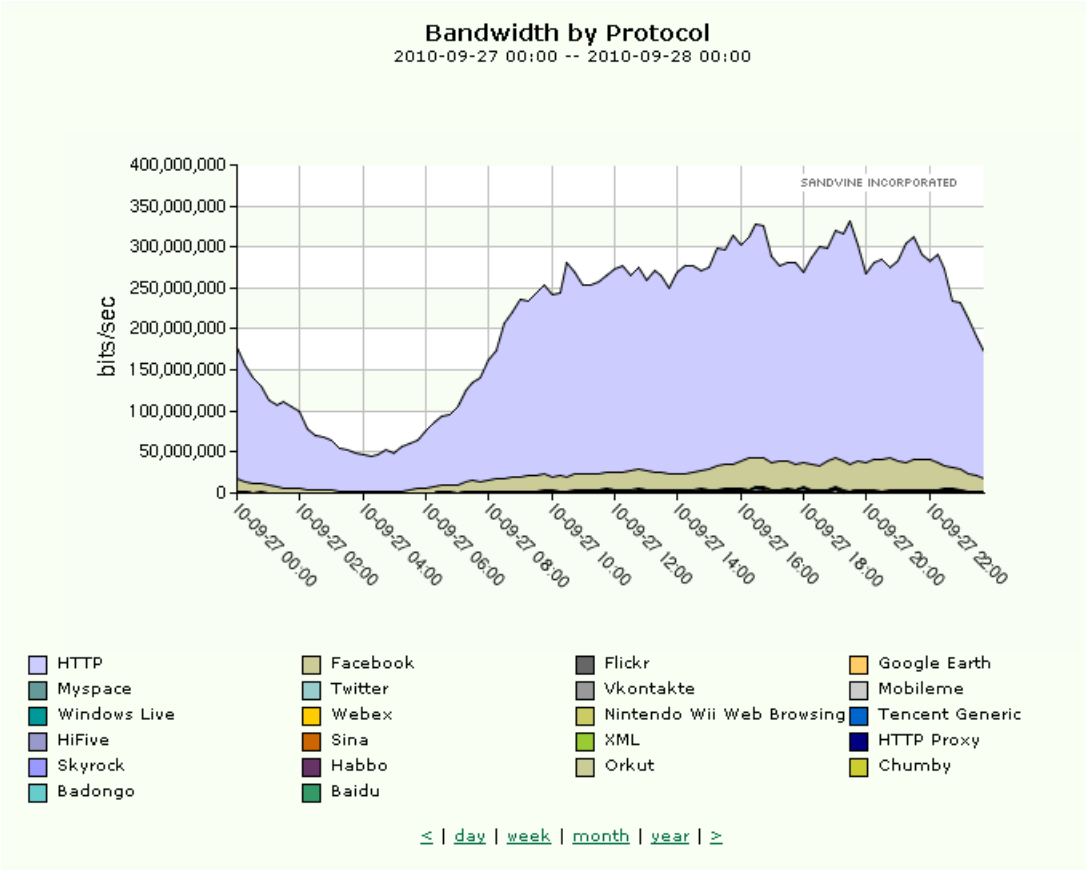



## 2.3.2.11 Changing the Date Range

Day, week, month, and year links appear at the bottom of each report. Use these links to quickly change the date range for a report. The reports date range is the selected range terminating on the End Date that was chosen when the report was initially configured.

| Option | Description |
|---|---|
| Day | 24 hours |
| Week: | 7 days |
| Month | 28 days |
| Year | 365 days |
| < | Move back 1 interval |
| > | Move forward 1 interval |

If more extensive changes to the date range are necessary, reconfigure the report by clicking the Configuration icon on the toolbar.




**To change the report date range for the same ending date:**

At the bottom of the chart, click a date range link. If day, week, month, or year is selected the date range for the report will be the selected range terminating on the End Date that was chosen when the report was initially configured. If < or > is selected, the entire date range will slide one interval (the interval being the date range selected on the Configuration page) in the selected direction.

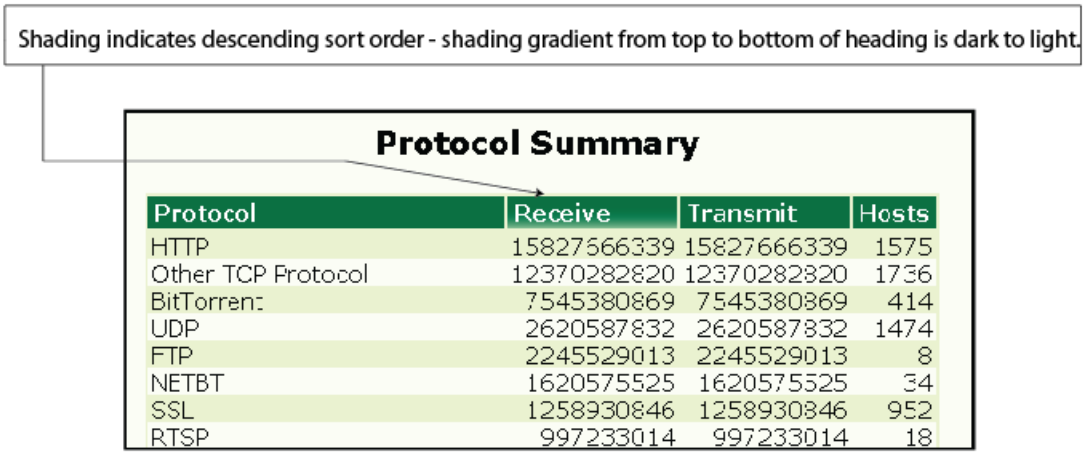
# 2.3.3 Working with Tables

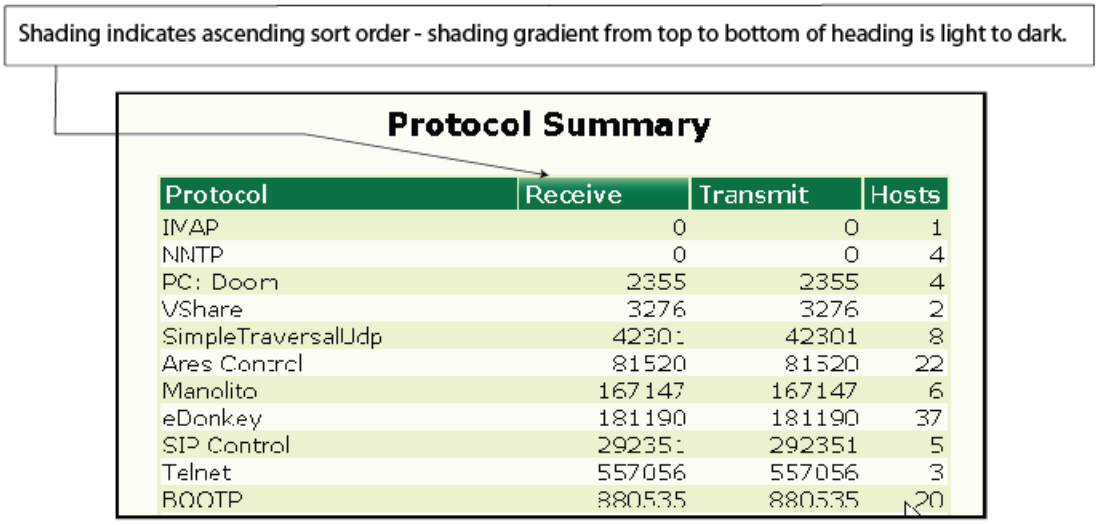
A number of reports display data tables. These tables can be sorted. If a table contains drilldowns, a drilldown menu can be displayed.

**Note:**
When configuring a tabular data report, you may want to freeze the column headings. This ensures that the column headings remain visible as you scroll down a lengthy report. On the Presentation page, in the Table Enhancements area, from the Display in scrollable window drop-down list, select *Yes and freeze header*.

## 2.3.3.1 Sorting Tables

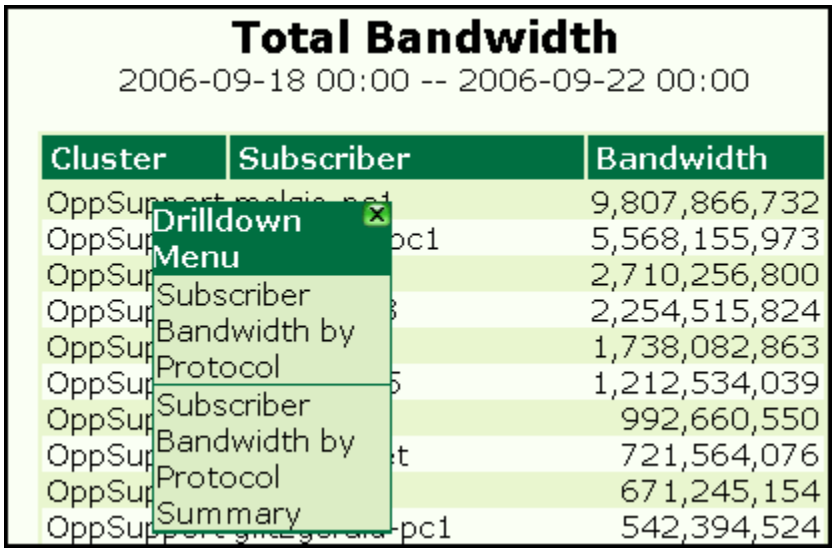
To sort a table, click the heading for the column on which to sort. The background of the column heading changes to indicate the sort order. If a column has two levels of headings, click the bottom row to activate a data sort.




## 2.3.3.2 Displaying the Dynamic Table Drilldown Menu

When you hover over a row in a table that has a drilldown, the pointer changes to a hand and the row is highlighted. Click the row to display the drilldown menu. Click a menu item to generate the selected drilldown report.




## 2.3.4 Printing Reports

To print a report, first display a printer-friendly version of the report. Note that using this method to print does not allow control over page breaks. To paginate and print a report, download the report as a PDF.

To print a report:

1. Click *Print Report* on the toolbar.

2. In the window displaying the printer friendly version of the report, select **Print** from the File menu. Select print options and click **Print**. Or, in the printer-friendly window, right-click the report. From the short-cut menu, select **Print**. Select print options and then click **Print**.

## 2.3.5 Download-Only

NDS will only render 5000 rows in a report due to performance and usability considerations. However, NDS can be configured to send all data (more than 5000 rows) from a report into a raw CSV file that can be consumed by third-party systems.

**Note:**
As the download-only option outputs raw data, usage is always presented in bytes.

1. Load the report in NDS.

2. Click on the **Save Report** icon on the upper right of the report configuration screen.

3. At the bottom, under **Save as type:**, click on the dropdown and change the selection to **Download-Only**.

4. Save the report.

5. In the Presentation tab, change **Top N** to **0**.

6. Click on the **Download** button to run the report.

## 2.3.6 Downloading a Report as a PDF

You can display reports using Adobe Reader, or you can choose to save the report directly to a PDF file. To download a report as a PDF file:

1. Click Download PDF on the toolbar.

2. Click **Save**, in the File Download dialog, to save the report. In the Save dialog box, navigate to the desired folder and then click *Save*. Click **Open** to display the report in Adobe Reader.

## 2.3.7 Downloading a Report as a PowerPoint

You can export reports as a Microsoft PowerPoint slide deck. To do thi:

1. Click **Download PowerPoint** on the toolbar.

2. Click **Save**, in the File Download dialog, to save the report data in a .ppt file. Click **Open** to display the report in Microsoft PowerPoint.

## 2.3.8 Downloading Data in CSV Format

You can use CSV (Comma Separated Value) file format to exchange data between dissimilar applications. You have the option of opening the data file directly in a spreadsheet application such as Microsoft Excel or saving the data to a .csv file.

**To download a CSV file:**

1. Click **Download CSV**.

2. Click **Save**, in the File Download dialog, to save the report data in a .csv file. Navigate to the desired folder, in the Save dialog, and click **Save**. Click **Open** to display report data in Microsoft Excel.

## 2.3.9 Displaying Tabular Data

Each report is generated using a number of data points. You can examine these data points in tabular format. You can select and copy the information contained in the data table to a Microsoft Excel spreadsheet, or similar application, for further analysis. However, it is recommended that you use the **Save as CSV** function to accomplish this. When you select tabular data for a report, the data is displayed in the Report Content pane. Click **Standard View**, on the toolvar, to display the chart.

**Note:**
If the original report is a tabular report, you cannot switch it to a chart view.

To examine tabular data:

1. Click Tabular Data, on the toolbar.

2. Click **Standard View**, on the toolbar, to re-display the chart.

# 2.3.10 Bookmarking Reports

To return to the same report in the future, bookmark the report. The bookmark appears in your browser's list of bookmarks. For example, if you are using Microsoft Internet Explorer, the bookmark is added to your Favorites list.

**Note:**
If a report is bookmarked, when you click the link you must log in to the reports server before seeing the report.

Bookmarks do not preserve the configuration of a report. Saving a custom report, and embedding the data, is the only way to accomplish this.

To bookmark a report:

1. Click **Bookmark Report** on the toolbar.
2. In the browser dialog, indicate where to store the bookmark.

# 2.3.11 Emailing a Report

To email a report, generate the report and then on the toolbar, click Send Email. A Send Email dialog box appears.

**To email a report:**

1. On the toolbar, click Send Email.
2. Address the message.
3. From the drop-down list, select a report option: HTML with embedded images, PDF attachment or CSV attachment.
4. If desired, use the Comment field to annotate the report
5. Click send.

## 2.3.11.1 About Emailing Reports

This is a stand-alone email application and is linked into any mail program on your system. Some things to note about emailing your reports:

- If the From field is left empty, it will be populated by a default user ID defined by the Network Demographics administrator.
- An email address for each recipient must be manually entered. Addresses can be space, comma, or semi-colon delimited.
- If the Subject field is left empty, it will be populated with a default subject.
- If you choose to send a report as a link, the recipient will need to log in to the Network Demographics server to examine the report.
- You can specify dynamic content for the email using the HTML comment tags indicated in the following table. This content can be added to the subject line or can be placed in the comments area. To have the dynamic content appear on the report, ensure that HTML with Embedded Images is selected as the Format.

**HTML Comment Tags**

| Tag | Description |
|---|---|
| <!-- title --> | Will be replaced with the title of the report. |

| Tag | Description |
|---|---|
| <!-- date --> | Will be replaced with the current date. |
| <!-- username --> | Will be replaced with the logged-in user's name. |
| <!-- company --> | Will be replaced with the name of your company. |
| <!-- host --> | Will be replaced with the hostname of the Network Demographics server. |
| <!-- version --> | Will be replaced with the installed svreports version number. |
| <!-- cluster --> | Will be replaced with the selected clusters in the report. |
| <!-- element --> | Will be replaced with the selected elements in the report. |
| <!-- protocol --> | Will be replaced with the selected protocols in the report. |
| <!-- dates --> | Will be replaced with the date range in the report. |
| <!-- ip --> | Will be replaced with the IP address of the current user. |

Select one of the following report formats to use when emailing a report:

- **HTML with Embedded Images:** Report is sent in the body of the email and is completely self-sufficient.
- **PDF Attachment:** report can be displayed in Adobe Reader.
- **PowerPoint Attachment:** report can be viewed in Microsoft PowerPoint
- **CSV Attachment:** file containing CSV data.

# 2.3.12 Copying and Pasting

When a report is displayed in the browser window, you can copy and paste the report into another application. You will need to determine which of the following methods works best, depending upon the target application.

- A straight copy and paste works well when the target is a Microsoft Word document. However, this method provides poor results if the target is a Microsoft Office PowerPoint slide.
- For PowerPoint, capture the report screen, paste the screen shot into PowerPoint and then crop the graphic as desired using the crop tool provided in PowerPoint.
- You can also paste a screen shot into a graphic application such as Microsoft Paint. Use the tools provided to crop the screen shot and then save the results in a file.

## 2.3.12.1 To Copy and Paste a Report

1. Generate the report.
2. On the toolbar, click Print Report to display a printer friendly version of the report.
3. Using the mouse, drag to select all of the report components to copy.
4. Switch to the target application and then paste the report.
5. Depending upon the application, the report will most likely be pasted in HTML format.

### 2.3.12.2 Capturing a Screenshot of a Report

1. Generate the report.
2. Press Alt+PrintScreen to capture the screen containing the report to the clipboard.
3. Switch to the target application.
4. Paste the clipboard contents.
5. Crop the screen capture as desired to display only the report.

### 2.3.12.3 Saving a Printable Chart Report

1. Generate the report.
2. Click the chart context menu.
3. Select *Save*.
4. From the Save submenu choose *Chart as Image*.
5. In the dialog box, choose an option.

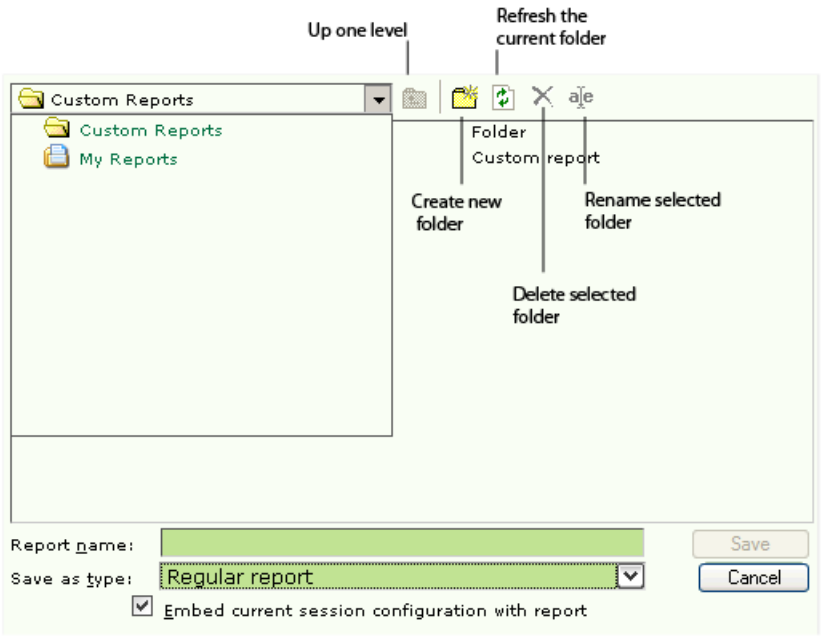
## 2.3.13 Saving a Report

Click on the Save icon to create your own version of a report with your configuration settings selected. Reports are saved on the reports server. Two default folders are provided by default: Custom Reports and My Reports. To make a report visible to all users, save it in the Custom Reports folder. If you want to keep a report private, save it in the My Reports folder. Note that the My Reports folder only appears in the navigation pane when a report has been saved in the folder. The content of the My Reports folder is only visible when an individual logs on to the report server with the User ID that was active when the report was initially saved.

You can create sub-folders as desired in each of the default folders to assist with report organization. These sub-folders will appear in the navigation pane upon creation.

When you save a report, the configuration is embedded with the report by default. To save a report without the current configuration parameters, clear the Embed configuration session configuration with report check box. This creates a custom report shell that you can use with advanced reporting functions such as combining reports. If this option is selected, the current settings used to generate the report are saved and will persist in the saved report.

You can also save a report by dragging the report to a Custom Reports folder. To use this method, the folder in which you want to store the report must already exist.




### 2.3.13.1 Saving the Report Image

1. Generate the report.
2. On the toolbar, click *Save Report*.
3. In the Save As dialog box, from the drop-down list, select the folder to save the report in.
4. In the Report name text box, enter the report name.
5. Click *Save*.

### 2.3.13.2 To Save a Custom Report Using Drag and Drop

1. If necessary, expand the Custom Reports folder.
2. In the Report Explorer pane, select the report icon and then drag the report icon to the desired Custom Reports folder.

### 2.3.13.3 To Create a Folder

1. If required, in the *Save As* dialog box, open the folder in which to create the new folder.
2. Click the *Create a new folder* button.
3. Enter the new folder name.

4. Click *OK*.

# 2.3.14 Managing Files and Folders

Files and folders can be renamed and deleted by clicking links in the Save As dialog box. When a folder is deleted, the delete operation is recursive: all of the files and sub-folders in the folder are also deleted. There is no undo function.

## 2.3.14.1 To Delete a File or Folder

1. On the toolbar, click the *Save Report* icon.
2. In the *Save As* dialog box, select the file or folder to be deleted.
3. Click *Delete*.
4. Click *OK*.

## 2.3.14.2 To Rename a File or Folder

1. On the toolbar, click the *Save Report* icon.
2. Select the file or folder to rename.
3. Click *Rename*.
4. Enter the name.
5. Click *OK*.
6. To confirm the change, click *Refresh*.

# 3

# Creating Custom Reports

# 3.1 Overview of Custom Reports

Any report that has been configured and then saved is considered to be a custom report. Once a report has been saved, you can edit components, schedule reports to be generated, and create a list of email recipients to notify of report availability.

These configuration pages are used primarily to customize the standard reports provided by Sandvine:

- **Data Source:** Lets you select a chart component and a database to associate with the component.
- **Scheduling:** Use to automate report generation and distribution.
- **Components**: Lets you edit report components and select a chart type (bar chart, area chart, line chart, pivot table and so on).

If you are looking for templates generated with the Report Template Wizard, refer to *Creating Generated Report Templates* on page 69.

# 3.2 Saving Custom Reports

For custom reports, the save function offers an additional feature: the ability to append to an existing report. When you choose to save a previously saved report, you can overwrite or append to the existing chart.

Choose *Overwrite* to replace the report with the current configuration.

Use the Append option to create a complex report based on an existing report. Append adds the displayed report to an existing report. The result is a single report that contains multiple report components. For example, first create and save a CPU Utilization report as a custom report called Performance Metrics. Then create a Memory Utilization report for the same configuration and append this report to the Performance Metrics report. When the Performance Metrics report is run, a single report is generated which displays both the Memory Utilization and CPU Utilization reports for the element.

Any time you edit a configuration option for a custom report, a *Run Report* and a *Save* button both appear at the bottom of the page. This allows you to run the report without saving the configuration changes.

**Note:**
- You can also save a custom report by generating the desired report and then in the Report Explorer pane, dragging the report icon to the desired Custom Reports folder. Follow the onscreen prompts to name the report file.
- You can also append to an existing custom report by dragging a predefined report onto the saved report in the navigation tree.

A custom report can be deleted in the same manner as reports in the Favorite Reports navigation tree.

# 3.3 Scheduling Reports

If you routinely generate the same report, you might want to automate the report generation process. Scheduled reports run on a perpetual basis determined by selecting the report frequency.

The Schedule page allows you to:

- Determine how frequently a report is generated
- Suppress email notifications if a report is empty
- Send email notifications with the completed report, which can be in HTML, PDF, PowerPoint, or CSV formats
- Suppress warning messages in the report output

# 3.3.1 Viewing Scheduled Reports

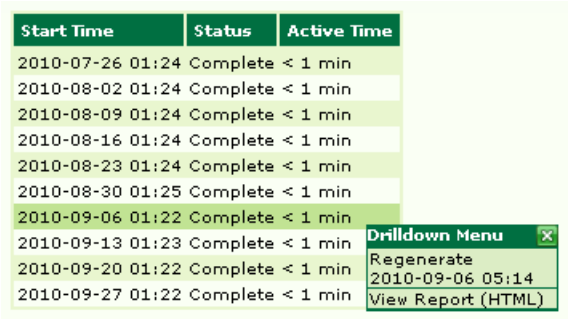
Use the reports which appear in the History list to examine previously generated reports. The History list retains the ten most recent reports. As new reports are generated, the oldest reports are dropped.

This information is displayed for each report retained in the History list:

- **Start Time:** indicates when report generation started.
- **Status:** a status of complete indicates that the report ran as prescribed. A status of failed indicates that the report did not run. A report that is currently being generated will has a status of running.
- **Active Time:** how long it took to generate the completed report.

## 3.3.1.1 Displaying Reports

There are two options available to display a report that was previously created. These menu options are only available if the corresponding cached report is available. From the drilldown menu, choose Regenerate or View Report. View report displays a static HTML snapshot of the result of that specific scheduled run from cache so there are no dynamic features (for example, can't display drilldown menu, or sort). If you choose Regenerate, the report is generated again using the exact configuration from the specific scheduled report.




# 3.3.2 Scheduling Reports

Custom reports can be scheduled to run at predetermined intervals such as every 6 hours, daily, weekly and so forth. The selections that are available depend upon the Recurrence option that is selected. When selecting a recurrence option, keep in mind the Date Range that has been selected for the report. For example, if the Date Range is set to now-7days and the recurrence is set to every Sunday, a weekly report is generated.

When scheduling an hourly interval, keep in mind how long it usually takes to generate the report. In the History area, examine the Duration field for reports that report a status of Completed. This is how long it took the report to run. If a complex report takes 4 hours to run, you don't want to schedule the report to run every 3 hours.

Reports that are scheduled at the same time run in parallel. Consider staggering the time at which larger reports are run to limit the impact on resources.

Note that a scheduled report can be disabled without affecting the existing report settings. To resume generating the report, select a Recurrence option other than disabled. The report will remember the schedule frequency when you decide to re-enable the schedule.

**To schedule a report:**

1. On the Schedule page, in the Recurrence area, select an option.
2. Select additional frequency options as required.
3. Click *Save*.

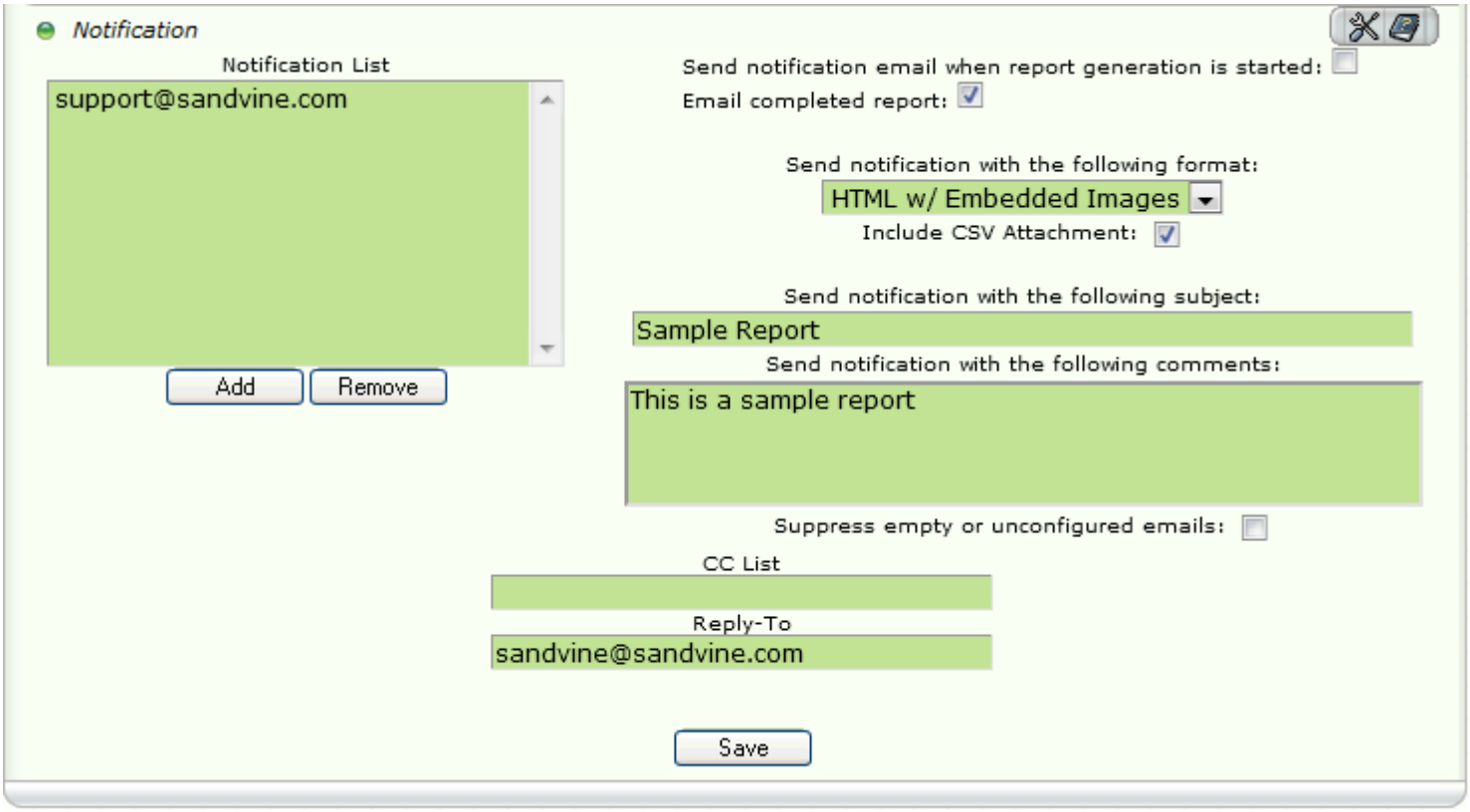
### 3.3.3 Custom Report Context Menu

When you right-click a custom report, a context menu appears that provides the options to quickly run the report without going through the report configuration page, or to view the cached HTML version of the last scheduled run.

The context menu also includes an option to rename reports in the Customer Reports and Generated Report Template folders in the Advanced navigation tree.

## 3.4 Sending Notifications

Use Notification options to automate the distribution of reports. Notifications can advise the recipient that a report has been generated, and can include the actual report in a variety of formats.



# 3.4.1 Populating the Notification List

The Notification List is a roster of individual email addresses that are notified whenever the specific report is either started or completed, depending upon the option that is selected.

### 3.4.1.1 To populate the notification list

1. On the Schedule page, in the Notifications area, click the *Add* button.
2. In the dialog box, enter the email address of the recipient and click *OK.*
3. Click *Save.*

### 3.4.1.2 To remove a recipient from the notification list

1. On the Schedule page, in the Notifications area, in the list, select the recipient.
2. Click the *Remove* button
3. Click *Save*.

# 3.4.2 Selecting Notification Options

Notifications can be sent when a report is started and/or when the report is completed. The notification that is sent when a report is started provides the name of the report and the start time. If the completed check box is selected, a link to the report in the selected format is sent with the notification.

The following report formats are provided:

- **HTML with Embedded Images:** report is sent in the body of the email and is completely self sufficient.
- **PDF Attachment:** report can be viewed in Adobe Reader.
- **CSV Attachment:** file containing CSV data.
- **PowerPoint Attachment:** report can be viewed in Microsoft PowerPoint.
- **Include CSV Attachments:** Include the CSV data file when sending notification in HTML, PDF or PowerPoint format.

Any comments that you would like to accompany the report notification can be entered in the text box that indicates Send notification with the following comments. The report is sent with a default entry in the From and Subject field determined by variables set by the database administrator.

The HTML comment tags which are supported for emailing a report are also supported here (see *"Emailing a Report"* ).

**To send a notification:**

1. On the Schedule page, in the Notifications area, select a *Send notification when report generation is* option.
2. Select an option from the *Send notification with the following format* drop-down list.
3. Enter any desired comments in the *Send notification with the following comments* text box.
4. Click *Save.*

# 3.5 Managing Report Components

The options on the Components page provide functionality for changing the component level configuration of a custom report. From this page components can be reordered, removed and renamed.

Note that the Display Mechanism and Inherit Configuration From options should be used with extreme caution. They are used to edit the data sets that appear on a custom report. If either of these options is incorrectly applied to a data set, the result chart is open to misinterpretation.

For standard reports, only the Component and Display Mechanism column appear on the page. The Inherit Configuration From column only appears for custom reports.

## 3.5.1 Renaming Report Components

Report components can be renamed to better describe the data they are presenting.

**To rename a chart component:**

1. On the Components page, in the row of the component to be renamed, click the *Component* column.
2. From the option menu, choose *Rename* Component.
3. In the dialog box that prompts *Enter new name of component*, type a new name.
4. Click *OK*.

## 3.5.2 Removing Chart Components

Components can be removed from custom reports if they are no longer required.

**To remove a chart component:**

1. On the *Components* page, in the row of the component to be removed, click the *Component* column.
2. From the option menu, choose *Remove Component*.
3. In the dialog box that asks Are you sure you want to remove component “component name”?, click *OK*.

## 3.5.3 Changing the Display Mechanism

Changing the Display Mechanism Although each report is associated with a default display mechanism or type of chart, you can select to display the data on a different type of chart. This may make certain types of information clearer. For example, rather than displaying data as a bar chart, selecting a histogram may assist in quickly identifying which protocol, cost class, or top talker is contributing to 80% of a specific type of traffic. If a chart has multiple components, you can select a specific filter for each component.

The Display Mechanism drop-down list only displays the filters that can be generated based on the data available for that component type. For example, a number of attack traffic reports are tables; as the data can not be displayed in any other format, no other display options are offered.

If a display mechanism is selected, always check to ensure that the options that are selected on the Presentation page (both default and advanced options) are appropriate for the type of chart that has been selected.

**To change the display mechanism:**

1. On the Components page, for the desired chart component, from the Display Mechanism drop-down list, select an option.
2. Click *Save*.

## 3.5.4 Changing Component Configuration Inheritance

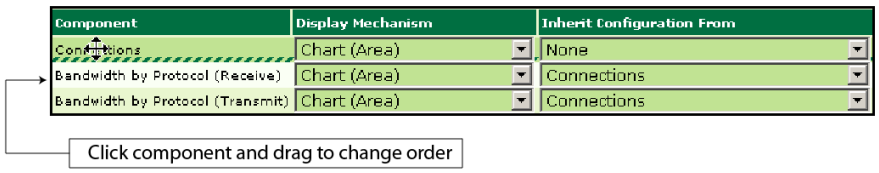
Configuration inheritance means that components inherit their configuration from a parent configuration so that less configuration is required to run a report. If fundamentally different items appear on the same report, you will want to ensure that configuration is not inherited (for example, bandwidth by protocol and WDTM report).

**To change component configuration inheritance:**

1. On the Components page, for the desired component, from the Inherit Configuration From drop-down list, select an option.
2. Click *Save*.

## 3.5.5 Changing Component Order

In a custom report, components can be reordered to provide a better presentation layout.




**To change component order:**

1. On the Components page, in the Component column, drag a component up or down to change its order in the report.
2. Click *Save*.

# 3.6 Managing Scheduled Reports

Use the schedule manager (Configuration > Schedule Manager) to:

- List all of the scheduled reports on the report server.
- Disable and enable scheduled reports.
- Delete the last run.

- Auto-forward to this report
- Identify misconfigured scheduled reports and fix them.

The following columns are available:

- **Report Name:** Name assigned to the report.
- **Scope:** Indicates if the report is private (my reports) or public (custom reports).
- **Last Start Date:** When the report was last run.
- **Next Start Date:** When the report is scheduled to run again.
- **Status:** Indicates the status of the report run: running, error, or complete.
- **Active Time:** Time to run the report.
- **Recurrence:** If the report is enabled, indicates how frequently the report is scheduled to run.
- **Created By:** User who created the report.

**To display the schedule manager:**

1. In the Report Explorer pane, expand the Configuration folder.
2. Select *Schedule Manager*.

## 3.6.1 Reconfiguring a scheduled report

Scheduled reports can be reconfigured as required. Check the status column to ensure that there are no configuration errors. If a scheduled report's status indicates "Configuration Error", this indicates that there is something missing from the saved configuration for the report.

**To reconfigure a scheduled report:**

1. In the Report Explorer pane, expand configuration.
2. Select *Schedule Manager*.
3. On the Schedule Manager page, click the row for the report to reconfigure.
4. From the options menu choose *Configure Report*.
5. Edit report configuration options as required and then save the report.

## 3.6.2 Disabling a Scheduled Report

Scheduled reports can be disabled.

**To disable a scheduled report:**

1. In the Report Explorer pane, expand configuration.
2. Select *Schedule Manager*.
3. On the Schedule Manager page, click the row containing the report to be disabled.

4. From the options menu choose *Disable Schedule*.

## 3.6.3 Deleting the Last Run for a Scheduled Report

Deleting the last run forces a report to be run again the next time the scheduler runs (scheduler runs every 30 minutes). If a report is set to run once, deleting the last run will force the report to be run again.

**To delete the last run for a scheduled report:**

1. In the Report Explorer pane, expand configuration.
2. Select *Schedule Manager*. The Schedule Manager page appears.
3. Click the row containing the report for which to delete the last run.
4. From the options menu choose *Delete last run*.

## 3.6.4 Auto-forwarding a Scheduled Report

The auto-forward feature allows you to select a custom report to display automatically when Network Demographics is loaded. By default, the Bandwidth by Protocol report configuration screen is loaded automatically. If you select a custom report, the most recent occurrence of the report is loaded from cache. If Network Demographics can't find a cached report, the Bandwidth by Protocol configuration screen is loaded.

Only custom reports can be selected for auto-forwarding from within Network Demographics. To select a Sandvine report other than Bandwidth by Protocol, set the svreport_load_auto_forward_report configuration variable (refer to the SPB Administration Guide for details).

The Auto-Forward to this report option on the context menu is a toggle. Select it to auto-forward the report and then select it again to disable auto-forwarding of the selected report. You can replace which custom report is auto-forwarded by selecting a different report to auto-forward.

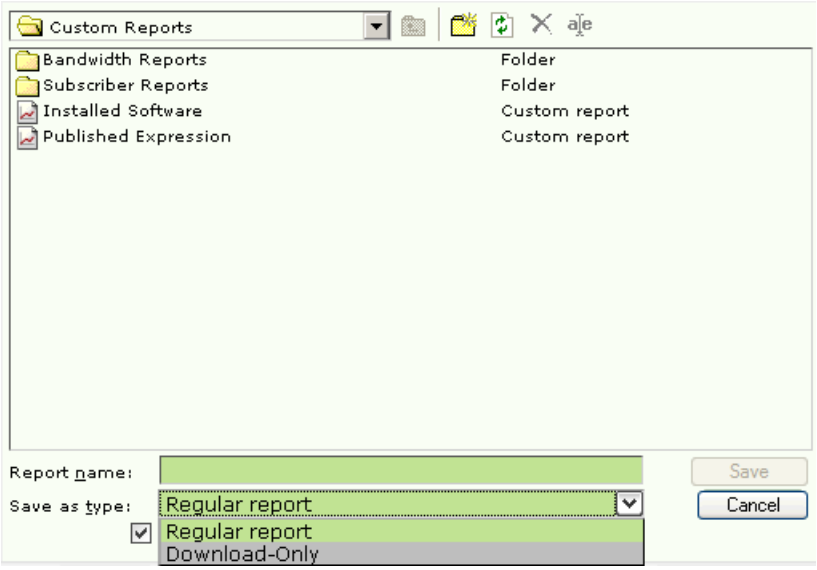
**To auto forward a scheduled report:**

1. Expand the Configuration folder.
2. Select *Schedule Manager*.
3. In the list of reports, click the report to auto-forward.
4. From the context menu, choose *Auto-Forward to this report.*

# 3.7 Downloading reports

Data can be downloaded directly from the SPB to the user without any post-processing for charting purposes. This mode can be used to download all data from all subscribers, for example, with no row or date interval limitations.

To create a download-only report, first save the report. In the Save As dialog, there is a dropdown list of option called "Save as type", with options for Regular report and Download-Only.



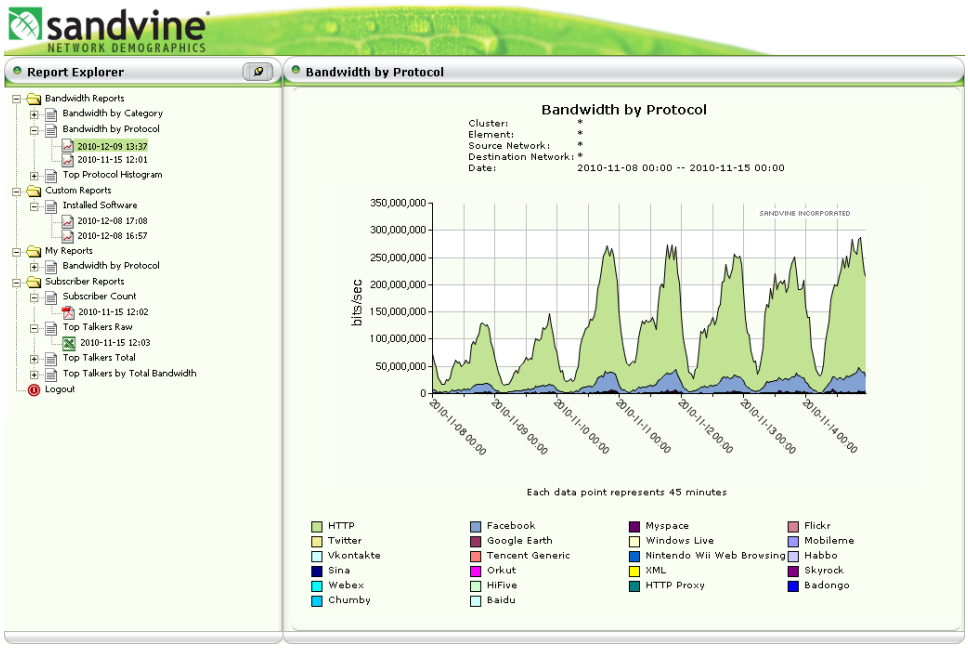

Setting the type as "Download-Only" will create a custom report with an empty file as an icon. When the report is loaded, instead of a "Run Report" button, there will be a "Download" button. When the report is ready, it will load a report page. The download will also start automatically.


When scheduling download-only reports to run regularly, the notification format is restricted to “CSV Attachment with Raw Data”.

**Note:**
The download file can be compressed to decrease transfer time if a large dataset is returned. To change the compression on the download file to GZip, issue this CLI command:

```
set config nds presentation csv compression <gzip|none>
```

# 3.8 Scheduled Cache View




The Scheduled Cache View is a restricted access interface that allows users to only view cached versions of scheduled reports. The restricted view will only show scheduled reports; it cannot be used to access any canned reports or to configure any report.

## 3.8.1 Navigation Tree

The navigation tree shows a list of scheduled reports organized by folders; only saved reports with at least one cached report in the system will be shown. Clicking on a report will immediately load the last scheduled run of the report. The report node will also expand to show a list of all previous scheduled runs that exist in the system, in descending order based on execution date.

The icon for the date node shows the file type of the cached report. A chart image is used for HTML cache and appropriate icons for CSV, PDF, and PowerPoint files.

## 3.8.2 Configuration

To set a user to this restricted view, add the login name with this CLI command:

```
set config nds navigation scheduled-reports restricted-users <bob@sandvine.com,
john@sandvine.com>
```

This view can also be directly accessed by any NDS user at: http(s)://<server>:<port> /reports/scheduledView.wsh

**Note:**
You must enter your server and port in the brackets to complete the link.

# 4

# Interpreting Reports

# 4.1 Interpretation tools

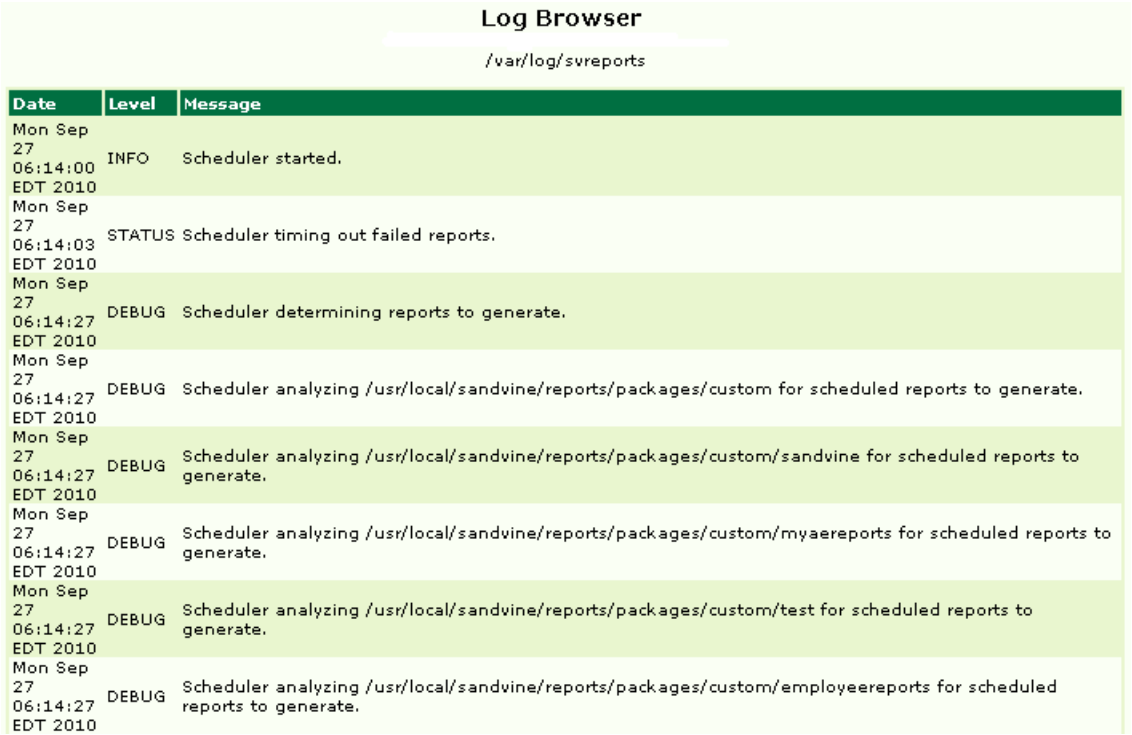
The tools that are available to assist with report interpretation depend upon the type of report that is generated. The following section provides examples of different types of reports and provides a short discussion of how the data on the report can be manipulated to obtain different information from the same data set.

# 4.2 Examples

## 4.2.1 Example 1: log browser report

**Resource monitoring > Events > Log Browser**

The Log Browser report is an audit log. The purpose of an audit log is to create a record each time a significant activity occurs indicating what happened and when it happened. This report displays the content of the error log file on the Network Demographics server (/var/messages/svreports). Each entry is an event.



Log Browser

/var/log/svreports

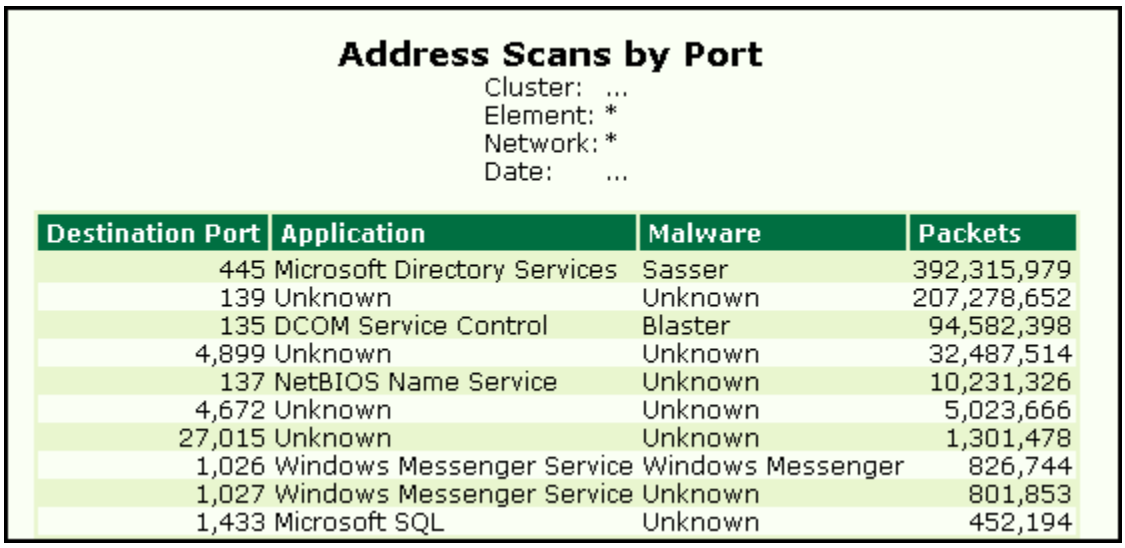
| Date | Level | Message |
|---|---|---|
| Mon Sep 27 06:14:00 EDT 2010 | INFO | Scheduler started. |
| Mon Sep 27 06:14:03 EDT 2010 | STATUS | Scheduler timing out failed reports. |
| Mon Sep 27 06:14:27 EDT 2010 | DEBUG | Scheduler determining reports to generate. |
| Mon Sep 27 06:14:27 EDT 2010 | DEBUG | Scheduler analyzing /usr/local/sandvine/reports/packages/custom for scheduled reports to generate. |
| Mon Sep 27 06:14:27 EDT 2010 | DEBUG | Scheduler analyzing /usr/local/sandvine/reports/packages/custom/sandvine for scheduled reports to generate. |
| Mon Sep 27 06:14:27 EDT 2010 | DEBUG | Scheduler analyzing /usr/local/sandvine/reports/packages/custom/myaereports for scheduled reports to generate. |
| Mon Sep 27 06:14:27 EDT 2010 | DEBUG | Scheduler analyzing /usr/local/sandvine/reports/packages/custom/test for scheduled reports to generate. |
| Mon Sep 27 06:14:27 EDT 2010 | DEBUG | Scheduler analyzing /usr/local/sandvine/reports/packages/custom/employeereports for scheduled reports to generate. |

- This report is sorted chronologically by Date. Sort on the Date column in ascending order to view the most recent error messages.
- Sorting the Message column will result in all occurrences of the same message being grouped together. This will provide insight into whether an error message is occurring on a regular interval.
- Sorting on the module column will group all of the svreports messages together. This will group the information pertaining to who has logged into the reports server or who has tried unsuccessfully to log in to the reports server. This can be used for security purposes.

## 4.2.2 Example 2: address scans by port report

**Malicious Bandwidth > Malware > Address Scans > Address Scans by Port**

The Address Scans by Port report is an example of a data table. Data tables present information in rows and columns. Each row is a record of an event. This report identifies on which ports address scans are occurring.



**Address Scans by Port**

Cluster: ...
Element: *
Network: *
Date: ...

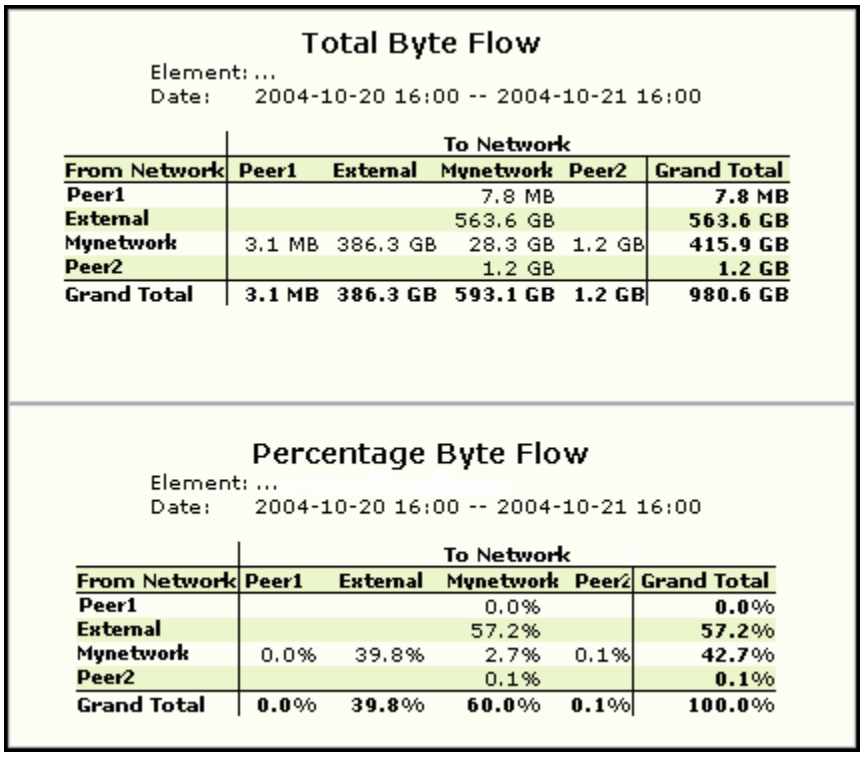
| Destination Port | Application | Malware | Packets |
|---|---|---|---|
| 445 | Microsoft Directory Services | Sasser | 392,315,979 |
| 139 | Unknown | Unknown | 207,278,652 |
| 135 | DCOM Service Control | Blaster | 94,582,398 |
| 4,899 | Unknown | Unknown | 32,487,514 |
| 137 | NetBIOS Name Service | Unknown | 10,231,326 |
| 4,672 | Unknown | Unknown | 5,023,666 |
| 27,015 | Unknown | Unknown | 1,301,478 |
| 1,026 | Windows Messenger Service | Windows Messenger | 826,744 |
| 1,027 | Windows Messenger Service | Unknown | 801,853 |
| 1,433 | Microsoft SQL | Unknown | 452,194 |

- By default, this report is sorted on the Packets column.
- Sort by Destination Port to group data by port.
- Sort by Application to examine all of the events for a specific application.

## 4.2.3 Example 3: network flow matrix report

**Network Characterization > Demographics > by Network > Network Flow Matrix**

The Network Flow Matrix report is a pivot table. Pivot tables are used to group data to present summary information. A pivot table is used to examine the total traffic between network combinations for specific protocols and categories. This shows the actual total value. Use this summary information to gauge the effectiveness of rules that have been implemented to manage traffic: information is totaled by row and column.



Total Byte Flow

Element: ...
Date: 2004-10-20 16:00 -- 2004-10-21 16:00

| | To Network | | | | |
|---|---|---|---|---|---|
| From Network | Peer1 | External | Mynetwork | Peer2 | Grand Total |
| Peer1 | | | 7.8 MB | | 7.8 MB |
| External | | | 563.6 GB | | 563.6 GB |
| Mynetwork | 3.1 MB | 386.3 GB | 28.3 GB | 1.2 GB | 415.9 GB |
| Peer2 | | | 1.2 GB | | 1.2 GB |
| Grand Total | 3.1 MB | 386.3 GB | 593.1 GB | 1.2 GB | 980.6 GB |

Percentage Byte Flow

Element: ...
Date: 2004-10-20 16:00 -- 2004-10-21 16:00

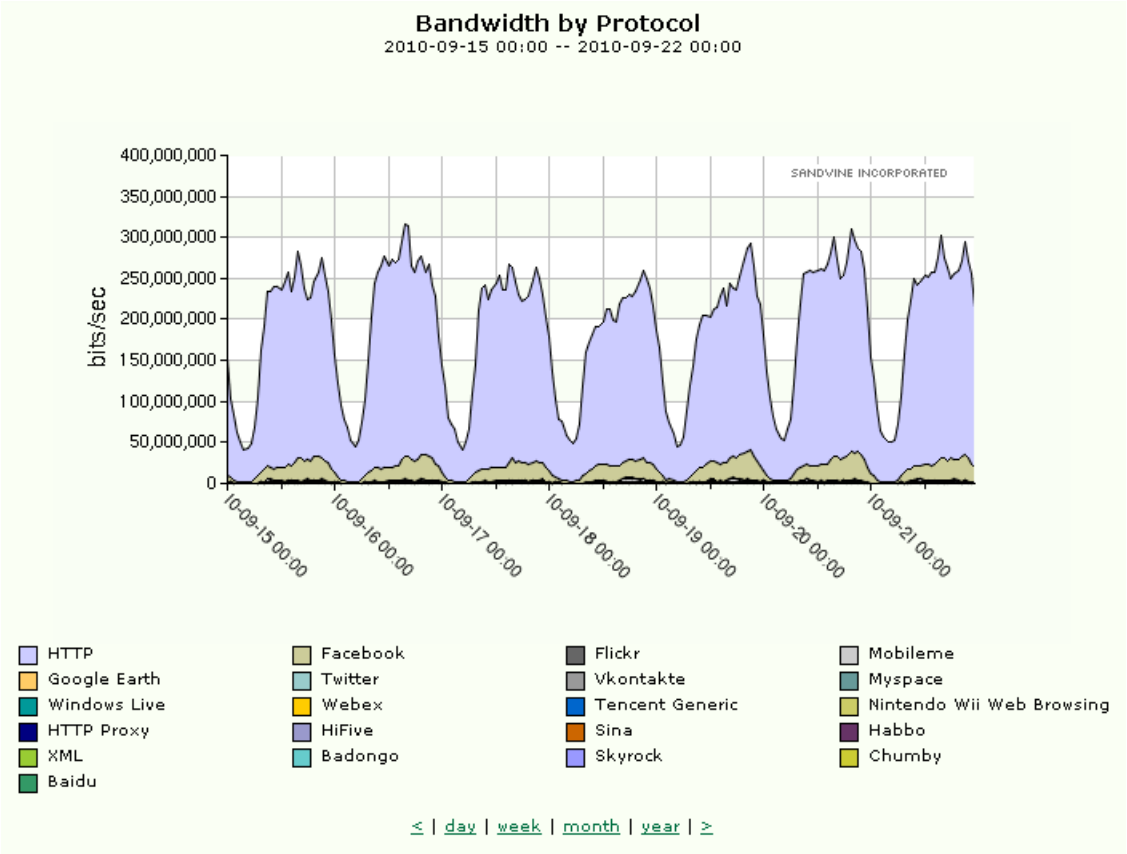
| | To Network | | | | |
|---|---|---|---|---|---|
| From Network | Peer1 | External | Mynetwork | Peer2 | Grand Total |
| Peer1 | | | 0.0% | | 0.0% |
| External | | | 57.2% | | 57.2% |
| Mynetwork | 0.0% | 39.8% | 2.7% | 0.1% | 42.7% |
| Peer2 | | | 0.1% | | 0.1% |
| Grand Total | 0.0% | 39.8% | 60.0% | 0.1% | 100.0% |

## 4.2.4 Example 4: bandwidth by protocol report

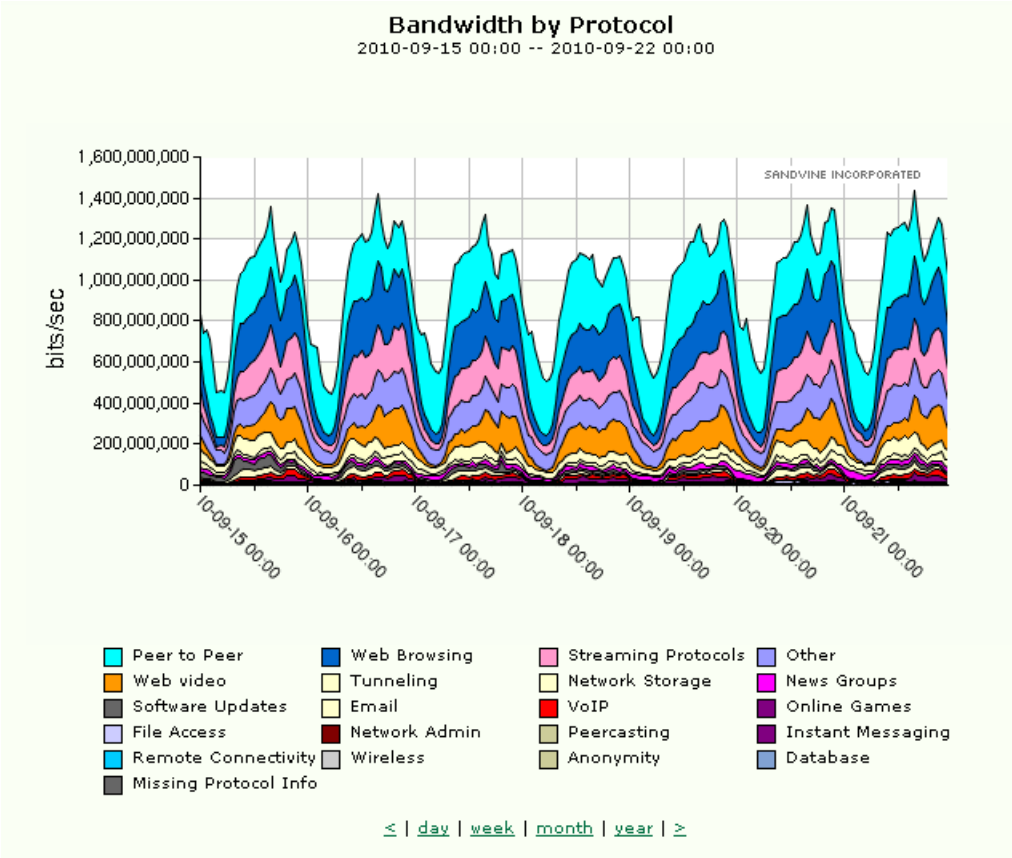
**Network Characterization > Demographics > by Protocol > Bandwidth by Protocol**

A chart is a graphical representation of a data set that illustrates data points over time. Charts are useful for comparisons and to identify patterns and trends. Data is displayed in a default chart type which is appropriate for the type of data being analyzed, making the information easily available.

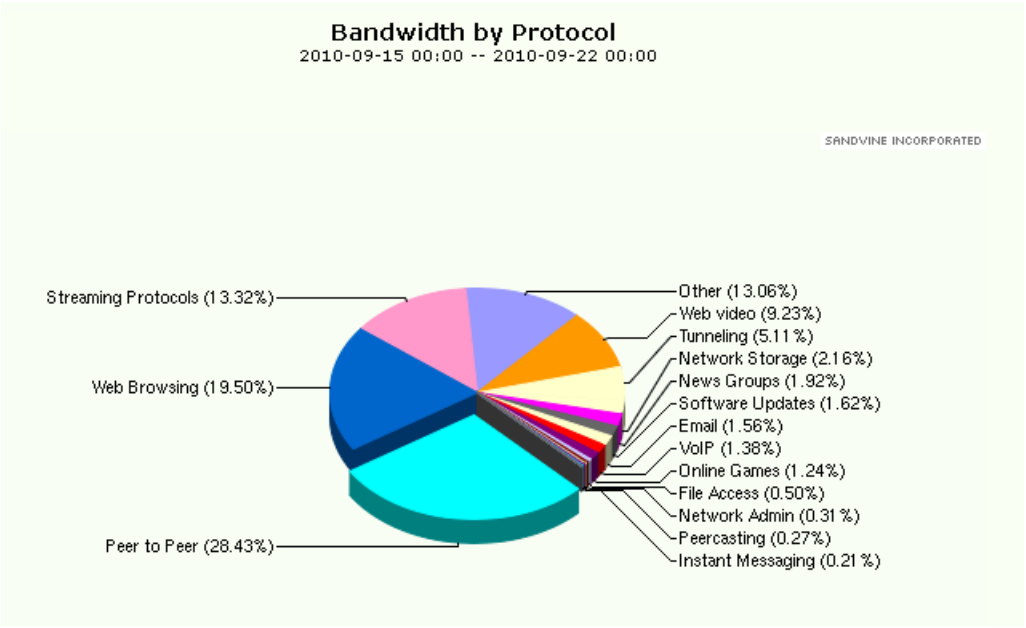
This is an example of a Bandwidth by Protocol report, generated using the default report settings. It clearly indicates which protocols are active on the network and makes it easy to identify which protocols are contributing the most traffic. The reports use exactly the same data set, with different presentation and component options selected.




If you want to identify which categories of protocols are active on the network, you might want to use the Presentation page option to group the data by category. The result is a stacked area chart that makes it easy to compare categories of protocols, as shown in the following chart example.



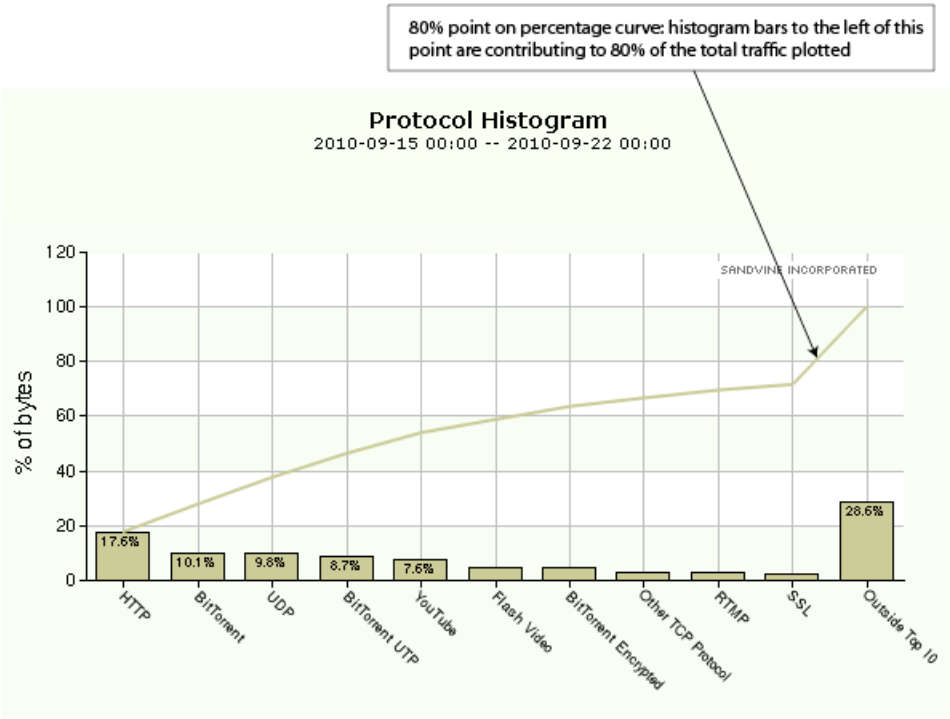

Another option which can aid in the interpretation of the information is to change the chart type. In the following illustration, the Protocol Distribution Chart grouped by Category is displayed as a Pie chart (same data set as the above chart).



# 4.2.5 Example 5: top ten protocol histogram

**Network Characteristics > Demographics > by Protocol > Top Protocol Histogram**

The Top Ten Protocol Histogram report is a pareto chart. A pareto chart is a graphical representation used to identify the most frequent causes of a problem. In this case, it is being used to show the protocols that are contributing to the P2P category of traffic. While the histogram plots the data in descending order, the line shows the cumulative percentage that tracks to 100%. Use the cumulative percentage line to quickly identify what protocols are contributing to 80% of the traffic.



# 5

# Creating Generated Report Templates

# 5.1 Overview of Report Templates

Reports located in the Generated Report Templates folder are report templates generated with the Report Template Wizard. The Report Template Wizard is located in the Configuration folder of the navigation. Administrative privileges are required to create report templates with the Report Template Wizard.

# 5.2 Using the Report Template Wizard

The report template wizard lets you create report templates based on SandScript measurements. SandScript measurements enable the collection of statistics and published and reported on per user-defined categories. The report template wizard allows report generation for these custom expressions and save them in NDS for use as any regular report.

The general types of SandScript measurements are:

- Published expressions
- Network classifiers
- Subscriber classifiers
- Policy histograms

Refer to the *PTS SandScript Configuration Guide* for more information on these measurement types. The report template wizard is a three step process that guides you through the process of creating a report template for policy measurements. Once a report template is created, it appears in the All Reports pane in the Generated Report Templates folder.

**Note:**
To use the report template wizard to create a report template and then generate a report, ensure that:

- Classifier(s) are created in SandScript.
- Published expressions are defined in SandScript.
- Policy histograms are created in SandScript.
- Statistics logging is enabled.

Reports that are created using the wizard are managed and scheduled in the same manner as custom reports. You can right-click the report, in the navigation tree, to delete or rename them from the options menu that appears. You cannot edit generated report templates after they are created. If the report does not contain the desired components, or contains configuration errors, delete the report and recreate it.

## 5.2.1 Step 1: Report Data

The wizard prompts you to choose which SandScript expressions to report on. Each SandScript expression selected becomes its own separate component in the final report. Depending on the measurement type, the configuration options in the remaining wizard steps can change. For a measurement to show up in the dropdown list, SandScript must already define the user defined expression, and statistics for it must exist in the database.

### 5.2.1.1 Published expressions

When a published expression is selected in the policy expressions dropdown, a section to select the aggregation method for the report will appear. The aggregation method may be changed later in the finished report.

### 5.2.1.2 Network and subscriber classifiers

There are no additional configuration options for network and subscriber classifier measurements in Step 1.

### 5.2.1.3 Policy histograms

The Report Template Wizard can create reports using the Policy Histogram measurements. When using policy expressions and classifier measurements the wizard will display all available policy histogram measurements in the drop down box provided when the wizard is loaded.

### 5.2.1.4 Classification selection

This option allows users to specify which classification/dimension they wish to use when reporting. This is necessary as measurement names are not unique. Therefore, when a user selects a measurement from the above dropdown menu the classifications menu will be populated and displayed if there is more than one classification. If there is only one classification available then the wizard will automatically use the only classification and the selection will not be shown.

### 5.2.1.5 Histogram definition

When the user selects a policy histogram measurement from the dropdown menu they will be shown the definitions available. The dropdown provided allows users to specify which definition they would like to use for the given report. Unlike the classifications selection, this selection will always be shown as it contains information pertinent to the report. For example, the unit of measure and the histogram bin definition that will be utilized. The definition is specified in the same manner as in policy, and can be read in the following manner.

Therefore, the first few bins would be interpreted:

1st Bin: $0 \leq x < 1$

2nd Bin: $1 \leq x < 2$

3rd Bin: $2 \leq x < 3$

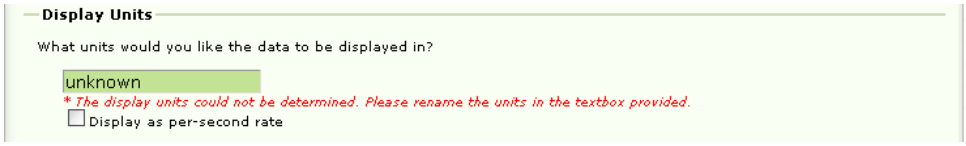
… and so on …

Last Bin: $x \leq 2600$

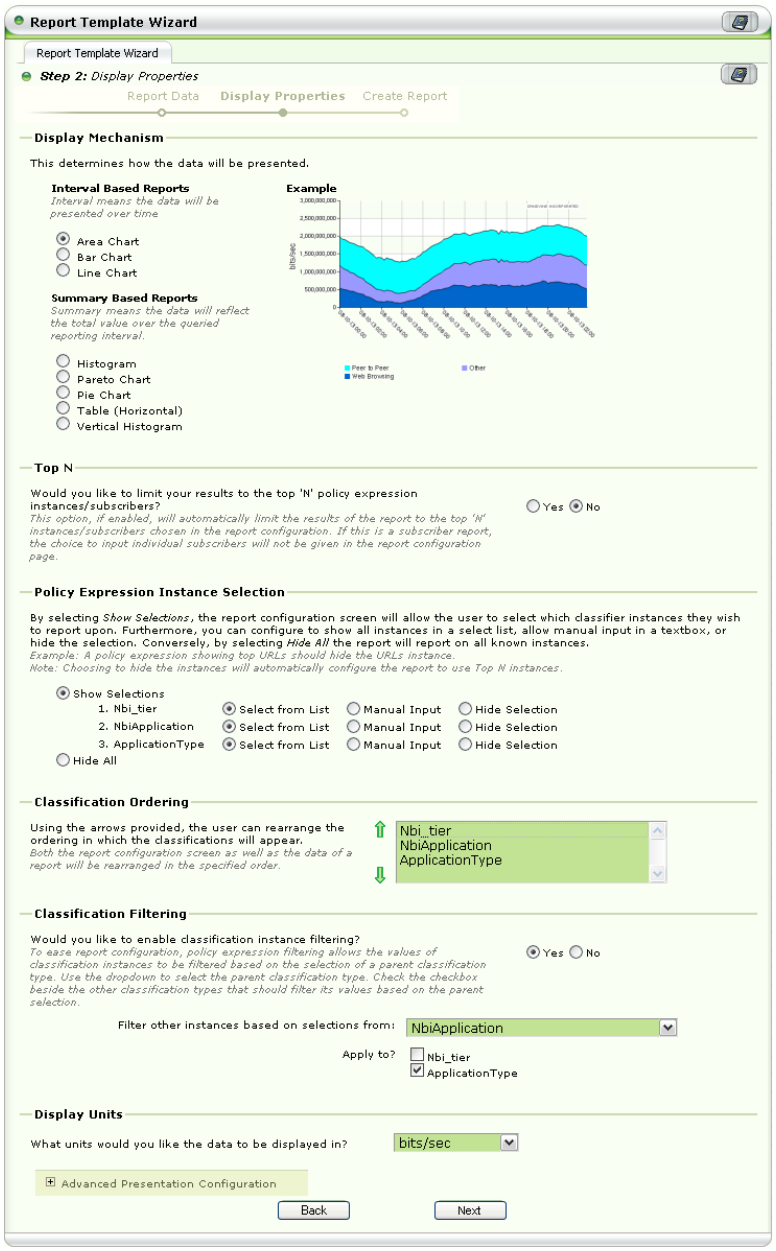
## 5.2.2 Step 2: Display Properties

Display properties determines the information appearing on the report generated for the SandScript expression.

If the PTS is cannot resolve the display units, the units are displayed as “unknown”. You can enter the desired units when prompted.



### 5.2.2.1 Network classifiers

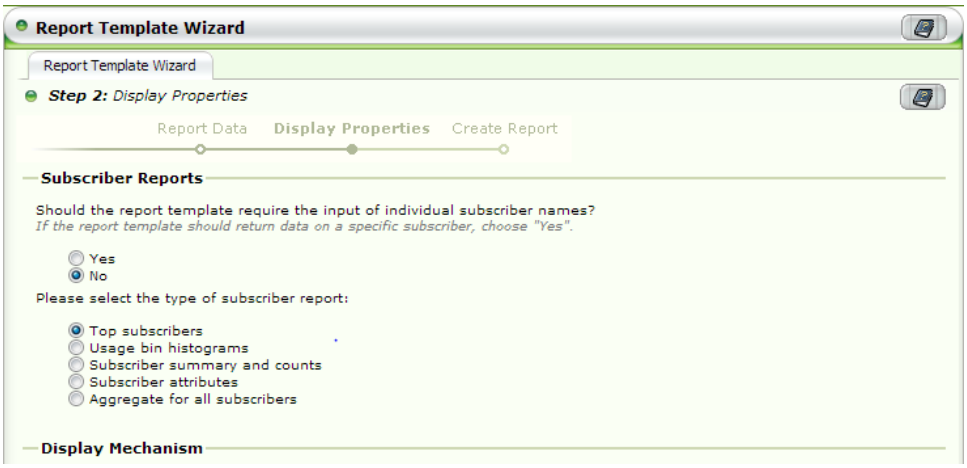



These options are available for network classifiers:

- **Display Mechanism:** indicates how to present the data.
- **Top N:** limits the results to the top n instances or subscribers.
- **Policy Expression Instance Selection:** configures how each classifier category is configured in the report configuration screen. It is recommended that if the number of instances in the classifier exceeds 1000, it should be hidden or manually inputted. A common example is URLs.
- **Classification Ordering:** changes the ordering in which the classifier categories appear in the report configuration page and the actual report

- **Classification Filtering:** configures the relationship between classifier categories to allow the values of one classification instances to be filtered based on the selection of a parent classification type.
- **Display Units:** the units of measure the data is displayed in.

## 5.2.2.2 Subscriber classifiers




These options are available for subscriber classifiers:

**Should the report template require the input of individual subscriber names?**

- Yes – The subscriber parameter will appear on the report configuration page, and the user must input individual subscriber names to run the report
- No – The resulting template will not require the input of subscriber names, and will instead filter all subscriber based on the type of subscriber reports described below

**Please select the type of subscriber report:**

- Top subscriber – Limits the result to the top n subscribers
- Usage bin histograms – Configures the report to format the data into usage bins
- Subscriber summary and counts – Configures the report to show unique subscriber counts, or average by subscriber count
- Subscriber attributes – Configures the report to filter by subscriber attributes
- Aggregate for all subscribers – Configures the report to aggregate values across all subscribers and will not show individual subscriber names.

## 5.2.2.3 Policy histogram

### 5.2.2.3.1 Summary statistics

Once the user has selected their desired policy histogram measurement, they are presented with step 2 and a 'new' selection box.

**Note:**
This option is only available for the 'new' policy histogram measurements.

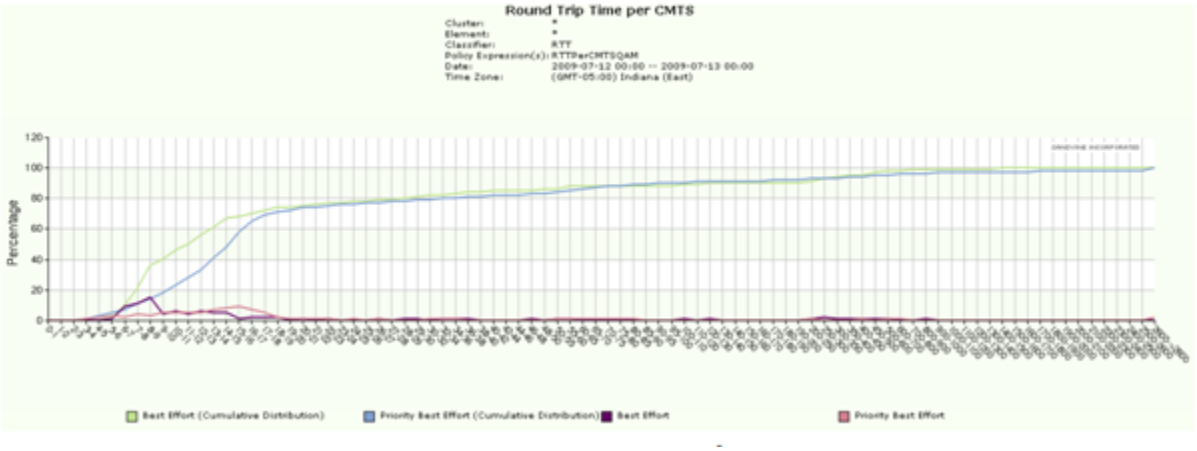
This selection controls what type of data will be shown when the report is executed. The available options are the default value, 'no', which uses the predefined definition shown in step 1, the maximum observed value for a given interval, or the calculated nth percentile value for a given interval. The percentile option is configurable to any value for total flexibility and defaults to a value of 80.

#### 5.2.2.3.2 Cumulative distribution function

When the user selects a policy histogram measurement and then selects a line graph, they will be shown a checkbox that allows them to enable or disable the cumulative distribution function.

**Note:**
This option is only available for the policy histogram measurements and when the user selects a line graph.

This feature displays addition lines that show the running total of the bins for each instance. The following is a sample report with CDF enabled.




When executing a report, the CDF feature may be enabled/disabled on a per report basis. To disable the feature before running the report, go to the presentation tab, navigate to the data manipulation section and open the advanced configuration options. The 'cumulative distribution function' checkbox will appear, simply uncheck the checkbox and the feature will no longer show the CDF line.

The options are:

- **Display Mechanism:** Determines how data will be presented. This is essentially the type of chart - area chart, bar chart, histogram, pie chart, or horizontal table.
- **Top N:** Enables and disables the display of Top N.
- **Policy Expression Instance Visibility:** Lets you select the instances to report on.
- **Classification Ordering:** Lets you rearrange the order in which classifications will appear.
- **Display Units:** Lets you select the units to display for the report. This is a function of the type of data that is being reported.

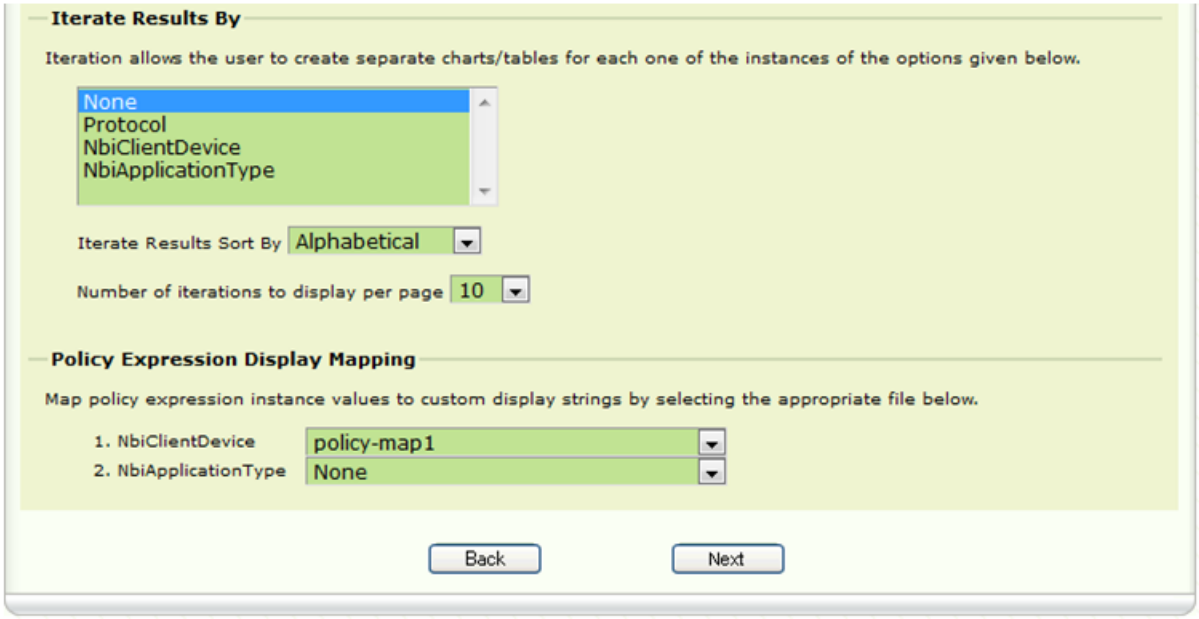
### 5.2.2.4 Advanced presentation configuration options

The Display Properties page offers a number of advanced presentation configuration options which allow you to select the chart layering method, how to consolidate data and how to iterate the results. The options are:

- **Chart Layering Method:** Determines if data is overlaid, stacked or displayed as a percentage.
- **Consolidate Data By:** Lets you choose how to group data together.
- **Iterate Results by:** Lets you create separate charts/tables for each one of the instances of the available option.
- **Policy Expression Display Mapping:** Selects a custom mapping file for changing the display string of policy expression values.

#### 5.2.2.4.1 Custom policy expression display mapping

The policy expression display mapping feature adds the ability to supply a custom mapping file to map classifier values to custom display strings. This is useful in the case where PTS policy logs code values which should be translated to more descriptive strings in reports.




Mapping files are basic text files in this format:

```
ClassifierValue DisplayString
```

(The policy expression value followed by a single space, followed by the custom display string. The display string may contain spaces. The "|" character should not be used in the display string)

An example:

```
5081 Gnutella
5456 eDonkey
6613 BitTorrent
6303 HTTP
13313 Facebook
```

Mapping files should have the file extension .map. The file name is the name of the map and will be displayed in the Report Template Wizard. Map files are located in /preferences/classifier in the NDS var repository directory (rc.conf: svreports_var_repository or cli: show config nds repositories var).

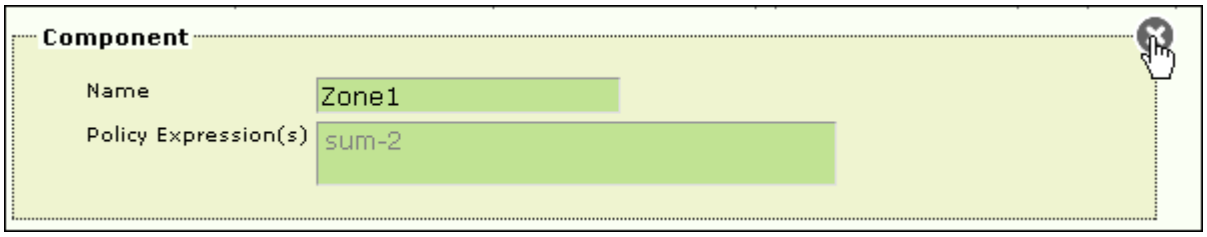
The default location is typically:

```
/usr/local/sandvine/reports/var/preferences/classifier
```

## 5.2.3 Step 3: Create the Report

The Create Report page lets you finish creating the report template. It also lets you select more SandScript expressions to append or add to the report. You can also select an existing SandScript expression and delete it from the Policy Expression(s) list.

1. Select **Append** to display multiple policy expressions on the same chart. Note that you must base SandScript expressions on the same classifier and have the same units of measurement.
2. Select **Add** to add a new component to the report. A new component creates an additional table or chart on the report.
3. Click **Delete Component** to remove components from the report.

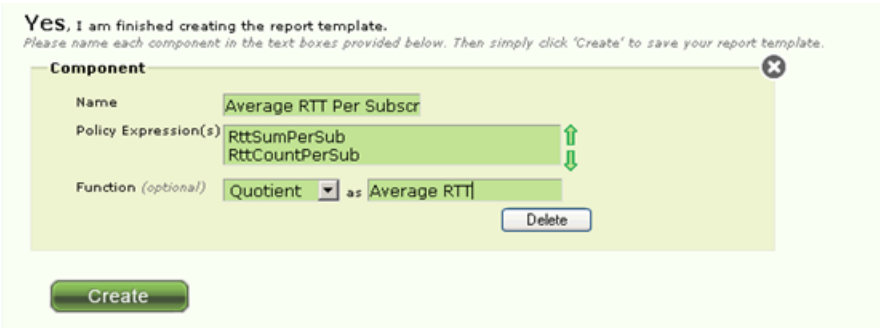



4. Click **Create** when finished creating the report template, and enter a name for each component. When you create the report, you are prompted to name and save the report. When creating policy histogram reports, you can only have one SandScript expression per component. To prevent unwanted appending behavior, **Append** is disabled when you create components with a SandScript histogram expression.

### 5.2.3.1 Component > Function

This feature allows user to add, subtract, multiply, and divide classifier measurements. It is hidden by default and only activated when the users has appended at least two policy expressions to a component.

**Note:**
This option is not available for policy histograms.




When creating policy histogram reports, only similar policy expressions are allowed to be appended together. To prevent unwanted appending behavior, the append function will filter out all measurements do not have matching classifiers, includes protocol, and histogram definitions.

The users select the function they wish to perform on the list of measurements and then specifies a display name in the textbox provided. In the above screenshot this is being done:

RttSumPerSub / RttCountPerSub = Average RTT

There are green arrows to the right hand side of the policy expression selection to allow the user to reorder the policy expression in order to achieve the correct output. For example, selecting 'RttCountPerSub' and clicking the up button would result in:

RttCountPerSub / RttSumPerSub = ???

Only simple operations can be performed using this method where the chosen operator is applied to all operands.

A + B = C Yes

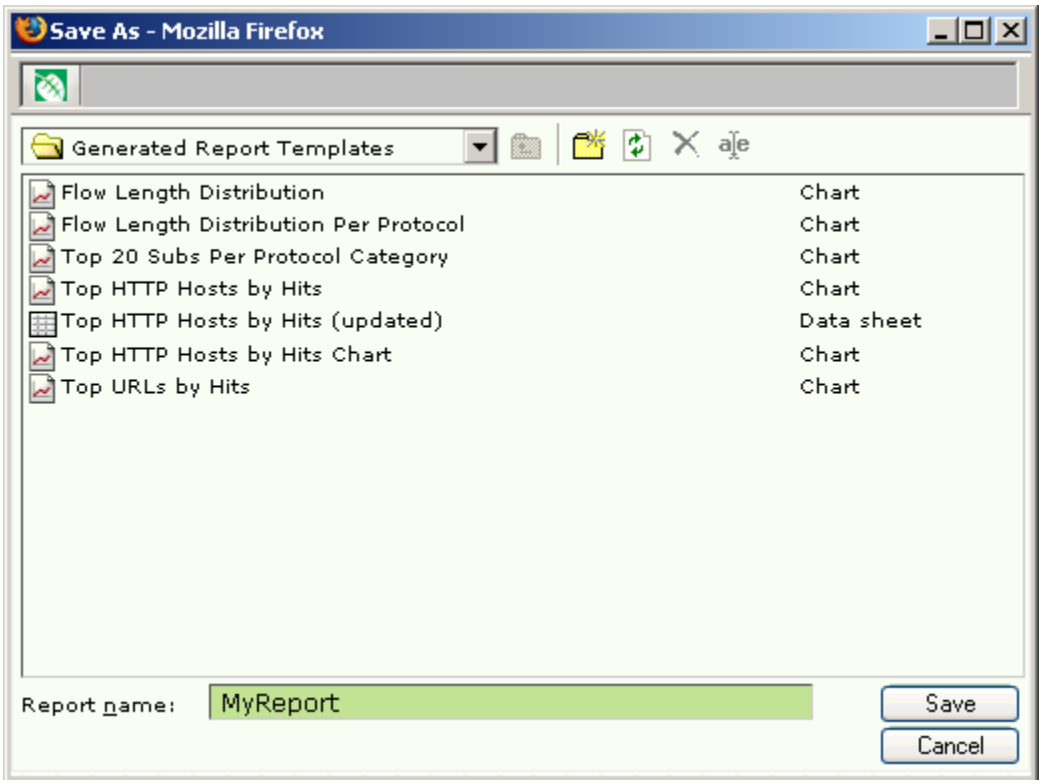
A - B - C = D Yes

A / B / C / D = E Yes

A + B - C = D No

### 5.2.3.2 Saving a report

When all of the report components have been defined, click Create. The Save As dialog box appears, prompting you to enter a report name. Reports are saved automatically in the Generated Report Templates folder.




Once the report has been saved, the new report is automatically displayed.

**To create a report using the report template wizard:**

1. In the Report Explorer pane, expand Configuration. In the Save dialog box, enter a report name and then click Save. The report is automatically displayed.

2. Select *report template wizard*.

3. On the Report Template page, Step 1: Report Data, select a policy expression on which to report and whether to show or hide individual instances. Click *Next.*

4. On the Report Template page, Step 2: Display Properties:

   a. Select the desired options and then click *Next.* The options that are available will depend upon the type of report and policy expression selected in Step 1.

   b. If desired, display the Advanced Presentation Configuration Page and select additional options.

5. On the Report Template page, Step 3: Create Report, if the report is completed, name each component and then click *Create*. Select the desired options.

**6.** In the Save dialog box, enter a report name and then click *Save*. The report is automatically displayed.

# 6

# Customizing the Environment

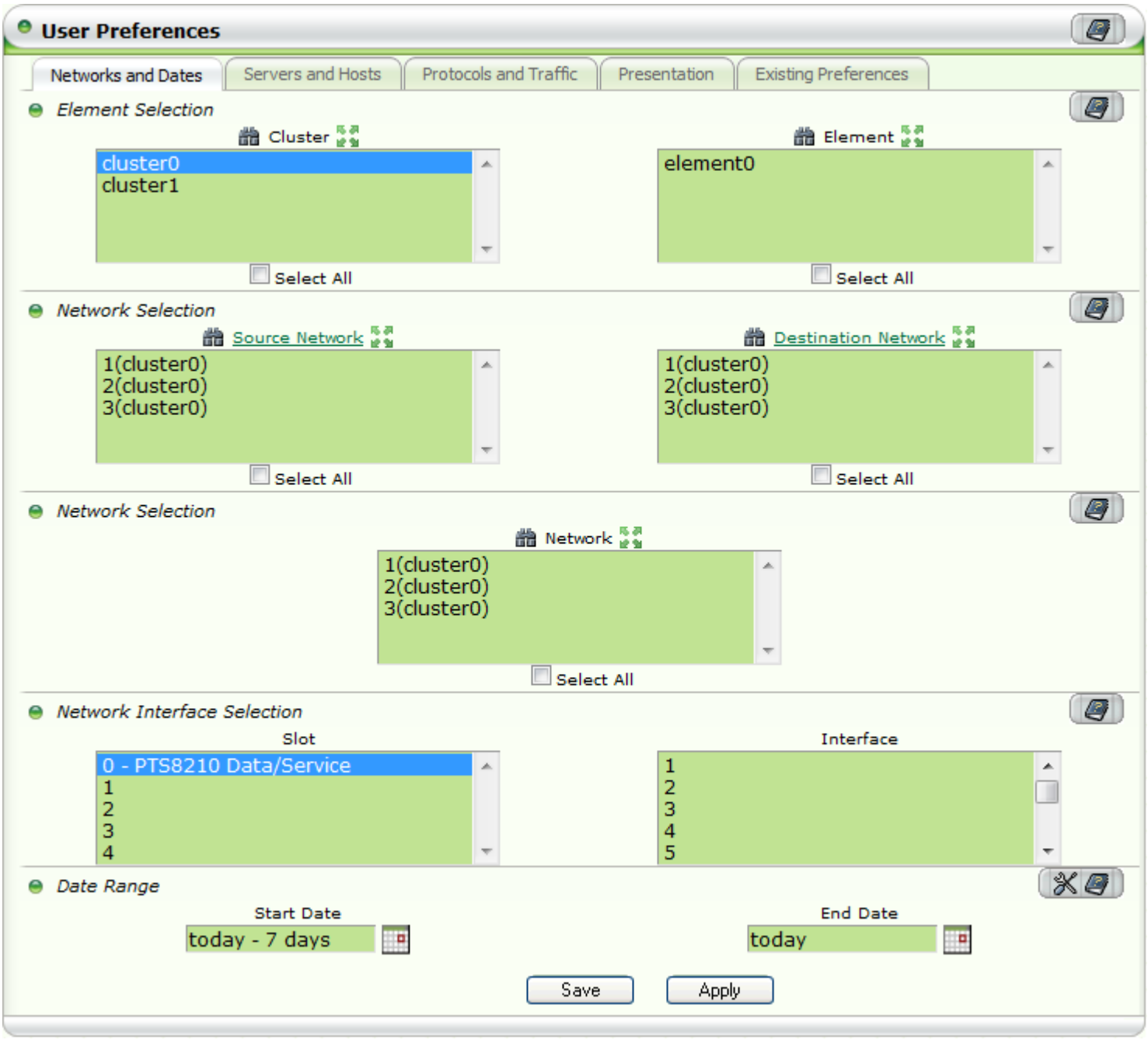
# 6.1 Configuration Folder Overview

The Configuration folder contains several pages used to customize the environment. Most of the options are global in nature; any changes will affect all users. The available configuration options are:

- Cache Manager—Displays the files that are currently in the Network Demographics cache repository.
- Cluster/Element/Network Visibility—Hides clusters, elements, and networks.
- Color Preferences—Use to create color schemes for reports.
- DSN Manager—Lets you change the default session data source.
- Protocol Configuration Manager—Lets you create a custom mapping of protocols. This page is only displayed if you have permission to customize protocols.
- Policy Expression Manager—Lets you change the name, description, and display units for a published expression. This page is only displayed if you have permissions to edit published expressions.
- Report Template Wizard—Lets you create a report template.
- Schedule Manager—Lets you enable and disable scheduled reports.
- System Configuration—Provides an interface to modify configuration variables.
- Time Zone Configuration—Lets you select the default time zone parameter in report configuration.
- User Preferences—Provides default selections for report configuration and presentation.

# 6.2 Setting User Preferences

The User Preferences screen lets you choose default selections for generating reports. On each tabbed page, choose the default options you want to select for report configuration. For example, you might want to select default source and destination networks and indicate that the default date range for all reports is 30 days, rather than 7 days. Once your selections are saved, when you start a Network Demographics session, you can load your selections. Overiding default selections on a report is as simple as deselecting one option (or a set of options) and selecting other options.




The User Preferences tabs are:

- Network and Dates—Use to select default network, element, interface, and date range options.
- Servers and Hosts—Use to identify a list of default subscribers and IP addresses to examine.
- Protocols and Traffic—Use to select the default protocols, packet signatures, and VoIP providers on which to report.
- Presentation—Use to select default presentation options.
- Existing Preferences—Use to select the set of user preferences to load. The Load Preferences list displays all available preferences.

# 6.2.1 Applying User Preferences

All users can select preferences and apply them to the current session.

To set session preferences:

1. Expand Configuration in the Report Explorer pane.
2. Select **User Preferences**.
3. Select the desired preference on the User Preference pages.
4. Click **Apply**.

## 6.2.1.1 Saving User Preferences

Provided that you have the necessary security permissions, select a group of preferences and save them. When preferences are saved, anyone with access to Network Demographics can load them.

**Tip:**
Consider creating a library of preferences that you can use with specific report types.

.

To save preferences:

1. Expand Configuration in the Report Explorer pane.
2. Select **User Preferences**.
3. Select the desired preference on the User Preferences pages.
4. Click **Save**.
5. Enter a name when prompted with *What name would you like to use for these exported settings?*.
6. Click **OK**.

# 6.2.2 Loading User Preferences

Default preferences are in effect whenever you initiate a Network Demographics session. You can load any preference that is saved on the system. When you select a preference, the parameters and values associated with the preference are displayed.

To load a preference:

1. In the Report Explorer pane, expand Configuration. From the Existing Preferences list, select the preference to load.
2. Select **User Preferences**.
3. Click the Existing Preferences tab.
4. Select the preference that you want to load from the Existing Preferences list.
5. Click **Load**.

6. Click **OK** when prompted with *Would you like to load these preferences as the default?*.

### 6.2.3 Deleting User Preferences

If you have the appropriate security permissions, you can delete preferences.

To delete a preference:

1. Expand Configuration in the Report Explorer pane.
2. Select **User Preferences**.
3. Click the **Existing Preferences** tab.
4. Select the preference to delete from the Existing Preferences list.
5. Click **Delete**.
6. Click **OK** when prompted with *Would you like to delete the selected preferences?*.

## 6.3 Color Preferences

Use the Color Preferences page to select the colors assigned to protocols on charts. You can select colors and apply them to the current session or load an existing color scheme. With the appropriate security permissions, you can create and save a color scheme, or delete existing color schemes.

## 6.3.1 Selecting Colors

You can select the colors applied to specific protocols and apply these colors to the current session.

There are several different methods to select a color for a protocol. First select the protocol and then select a color:

- Select a difference color swatch in the Color Selection area.
- Drag the arrows on the color selection bar to the desired color. The color swatch displays the color and indicates the colors hex code. Click **OK**, when the desired color is displayed at the intersection of the color slider and color swatch bar.
- To further fine-tune a color, in the large colored square, drag the indicator (the small square box) to the exact color that you want. Click **OK** when the desired color is displayed.
- Enter a hexadecimal RGB value into the text field in the Color Selection area.

## 6.3.2 Changing Colors for the Current Session

You can select the colors that are applied to specific protocols and apply these colors to the current session.

To change colors for the current session:

1. Expand Configuration, in the Report Explorer pane.
2. Select **Color Preferences**.
3. Change the colors associated with protocols as desired, in the Protocol Selection area.
4. Click **Apply**.
5. Click **OK** when prompted with *Would you like to set this color scheme as the default?*.

## 6.3.3 Selecting a Color Scheme for the Current Session

If color schemes arecreated and saved, you can choose an existing color scheme for the current session. The selected color scheme is applied to all reports generated during the session. You can choose to override the color scheme selection for an individual report by selecting a color scheme on the report Presentation page.

To select a color scheme for the current session:

1. Expand Configuration, in the Report Explorer pane.
2. Select **Color Preferences**.
3. Select a scheme, from the Existing Color Schemes list in the Color Schemes area.
4. Click **Apply**.

# 6.3.4 Managing Color Schemes

If you have the appropriate security permissions, you can create a color scheme that is available to all users. Click Save to save a color scheme. It the save function is not available, you cannot create, edit, or delete color schemes.

## 6.3.4.1 Creating a Color Scheme

To create a color scheme:

1. Expand Configuration, in the Report Explorer pane.
2. Select **Color Preferences**.
3. Change the colors, in the Protocol Selection area, associated with protocols as desired.
4. Click **Save**.
5. Enter a name for the scheme when propted with *Please provide a name for this color scheme*.
6. Click **OK**.

## 6.3.4.2 Editing an Existing Color Scheme

To edit an existing color scheme:

1. Expand Configuration, in the Report Explorer pane.
2. Select **Color Preferences**.
3. Select the desired color scheme, from the Existing Color Schemes list, for the Color Schemes area.
4. Change the colors in the Protocol Selection area, as desired, that are associated with protocols.
5. Save the color scheme.

## 6.3.4.3 Deleting a Color Scheme

To delete a color scheme:

1. Expand Configuration, in the Report Explorer pane.
2. Select **Color Preferences**.
3. In the Color Schemes area, from the Existing Color Schemes list, select the color scheme to delete.
4. Click **Delete** in the Color Schemes area.
5. Click **OK** when prompted with *Are you sure you want to delete the color scheme "Scheme_name"*.

## 6.3.4.4 Examining the Chart Alpha Transparency

You can enable Chart Alpha Transparency, and select a transparency value, to examin the color transparency in the scheme.

When you configure a chart, on the Presentation page, you can select a chart transparency value ranging from Off (no transparency) to 50% (lightest transparency). The transparency setting lets underlying plots on area charts show through.

# 6.4 Cluster, Element, and Network Visibility

Customizing cluster, elements, and networks is an advanced configuration feature. This lets you hide clusters and elements, and create virtual networks for reporting purposes.

You must have specific administrative privileges to access to this page. This message appears if you do not have the correct permission:

```
Insufficient permissions to manage networks
```

**Note:**
See the *SPB Administration Guide* for additional information on configuring these permissions.

## 6.4.1 Customizing Clusters

Use the Cluster page to select clusters to hide; clusters that will not appear in the Cluster list on the Configuration page. When a cluster name is changed, data remains in the database for the original cluster name. Hide the cluster's old name to prevent historical data from appearing in reports.

To hide or display a cluster:

1. Expand Configuration, in the Report Explorer pane.
2. Select **Cluster/Element/Network Visibility**.
3. Display the Cluster page.
4. Select **Hidden** to hide the selected cluster.
5. Click **Save**.
6. Deselect **Hidden** to display hidden clusters.
7. Click **Save**.

## 6.4.2 Element Management

Use the Element page to select elements to hide. Hidden elements do not appear in the Elements list on the Configuration page. Use this feature to hide elements deployed on the network, but not completely configured.

To hide or display an element:

1. Expand Configuration, in the Report Explorer pane.
2. Select **Cluster/Element/Network Visibility**.
3. Display the elements page.

4. Select **Hidden** to hide the selected element.
5. Click **Save**.
6. Deselect **Hidden** to display hidden elements.
7. Click **Save**.

## 6.4.3 Network Management

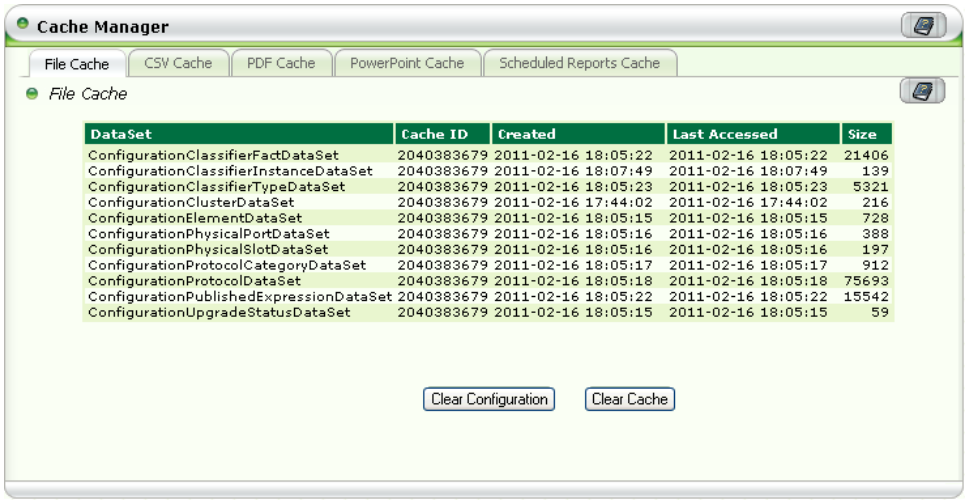
You can hide any network that you do not want to appear on the Report Configuration page.

To hide or display a network:

1. Expand Configuration. Display the Networks page in the Report Explorer pane.
2. Select **Cluster/Element/Network Visibility**.
3. Select **Hidden** for the network you want to hide.
4. Click **Save**.
5. Deselect **Hidden** for the network you want to display.
6. Click **Save**.

# 6.5 Using Cache Manager

Cache manager provides an interface to manage the Network Demographics cache repository. All users can see the cache. All files (CSV or PDF) that the Network Demographics Server generates appear in the cache. Only the administrative user can delete files or clear the cache.



The cache manager pages are:

- **File Cache:** The File Cache lists all of the files that exist in the Network Demographics cache repository. Click Clear Configuration to clear just the configuration files for use when a new cluster, elements and so forth are added that the user wants them to be displayed in the parameter select lists.
- **CSV Cache:** The CSV Cache lists all of the CSV files that exist in the Network Demographics cache repository. It will also include raw CSV from download-only reports. Option menu allows you to Download CSV.
- **PDF Cache:** The PDF Cache lists all of the PDF files that exist in the Network Demographics cache repository. Click on a file to bring up a menu that allows you to download the file, or delete it. Option menu allows you to Download PDF.
- **PowerPoint Cache:** The PowerPoint cache lists all the PowerPoint files that exist in the cache repository. Click on a file to bring up a menu that allows you to download the file or delete it.
- **Scheduled Reports Cache:** Lists static HTML reports generated by the schedule. Option menu allows you to View Report.

## 6.5.1 Managing Cache Files

To manage the files in a cache:

1. Expand Configuration in the Report Explorer pane.
2. Select **Cache Manager**.
3. Display the desired page.
4. Select the desired action, for a specific file, from the short-cut menu.

## 6.5.2 Removing Cache Files

To remove all files from a specific cache:

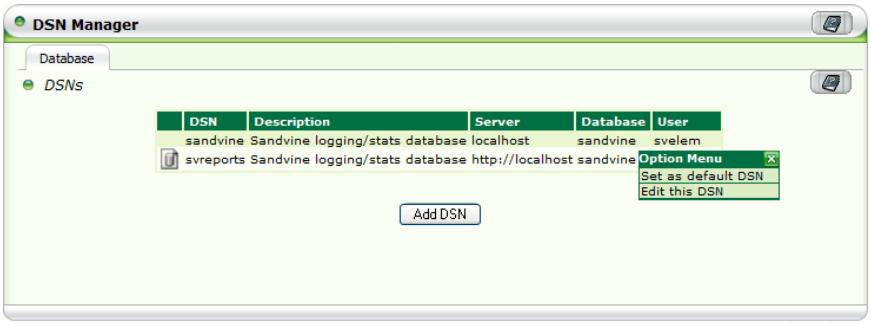
1. Expand Configuration in the Report Explorer pane.
2. Select **Cache Manager**.
3. Display the desired page.
4. Click **Clear Cache**.

# 6.6 Using DSN Manager

The DSN manager provides a list of DSNs that are available. Use this screen to:

- Select a DSN for the current session
- Delete an existing DSN
- Edit an existing DSN
- Add a new DSN

The Database page, lists all of the DSNs configured for the deployment. The database icon identifies the default DSN.




## 6.6.1 Selecting a Different DSN

To select a different DSN for the current session:

1. Expand Configuration in the Report Explorer pane.
2. Select **DSN Manager**.
3. Point to the DSN, on the Database page, that you want to set as the session default.
4. Display the options menu, and select **Set as Default DSN**.

## 6.6.2 Adding a DSN

Only those with administrative privileges can create new DSNs.

- Data Source Name—The unique name of the DSN.
- Description—Short Description of the DSN.
- Driver—The appropriate ODBC driver to match the database server.
- Server—DNS name or IP address of the database server.
- Database Name—The name of the database.
- User—User to connect as.
- Password—Password for the User account.
- Port—The TCP port the database server is listening on.
- Set as Default DSN—Sets this DSN as the default.
- Use with Network Demographics —Makes the DSN compatible with Network Demographics.
- Parent DSN is a multi-home architecture—This option only appears if multi-home is enabled (`set config nds data-source multihome enabled true`). This is to indicate that the DSN is the parent node in a multi-home set up. Select **Yes** streamlines the report configuration pages to make them more efficient. The disadvantage to doing this is that you are limited in what you can configure on a report. For example, you cannot select individual networks or elements.

To add a new DSN:

1. Expand Configuration in the Report Explorer pane.
2. Select **DSN Manager**.

3. Display the options menu, and select **Add DSN**.
4. Fill in the required information.
5. Click **Save**.

## 6.6.3 Editing a DSN

You can edit a DSN to change the information associated with it. Only those with administrative privileges can edit DSNs.

To edit a DSN:

1. Expand Configuration in the Report Explorer pane.
2. Select **DSN Manager**.
3. Point to the DSN, on the Database page, to delete.
4. Display the options menu, and select **Edit this DSN**.
5. Make the desired changes.
6. Click **Save**.

## 6.6.4 Deleting a DSN

Delete those DSN's that are no longer required. Only those with administrative privileges can delete DSNs.

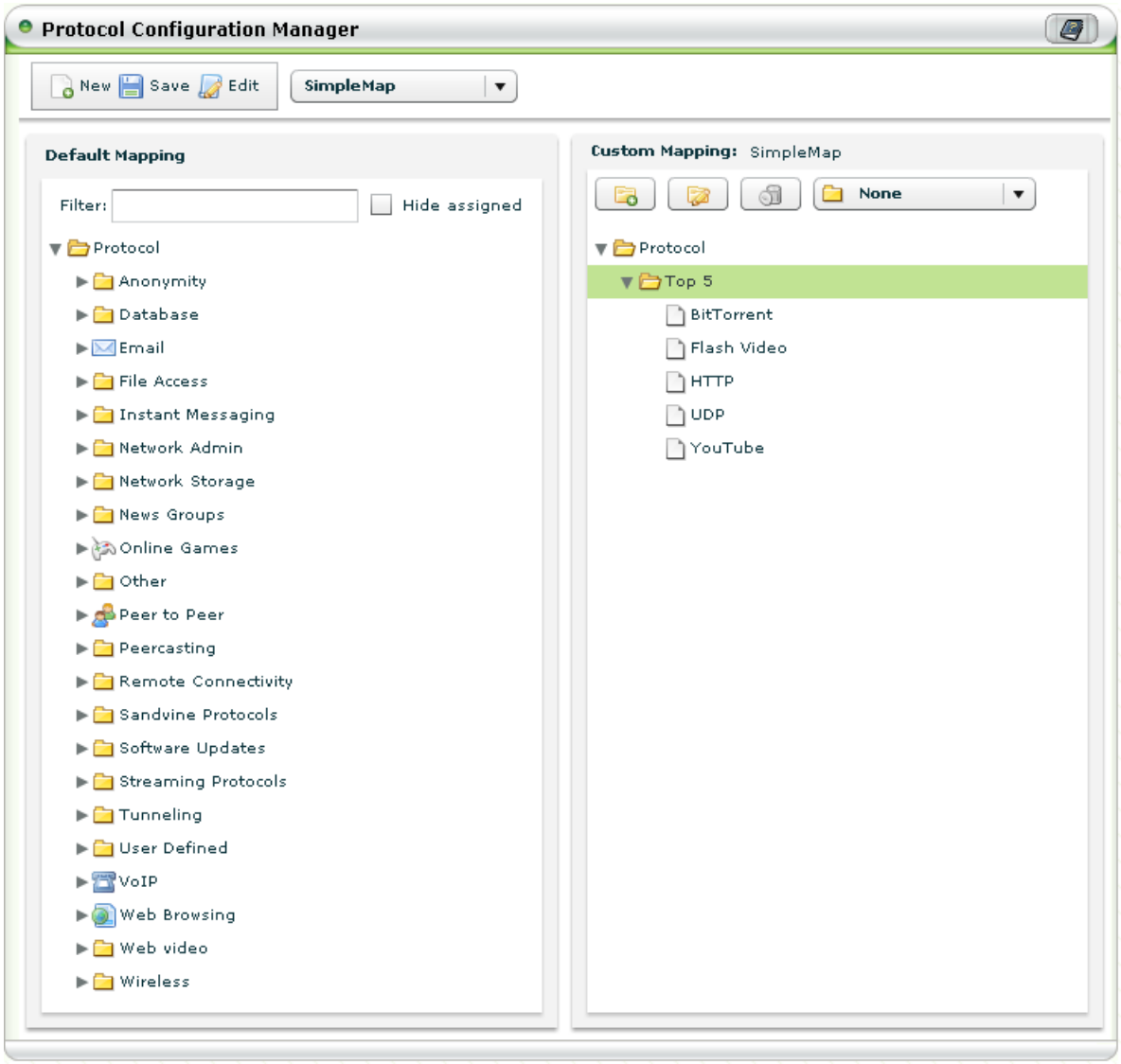
To delete a DSN:

1. Expand Configuration in the Report Explorer pane.
2. Select **DSN Manager**.
3. Point to the DSN, on the Database page, to delete.
4. Display the options menu, and select **Delete this DSN**.
5. Click **OK** when prompted with **Do you want to delete the DSN “DSN**.

# 6.7 Protocol Configuration Manager

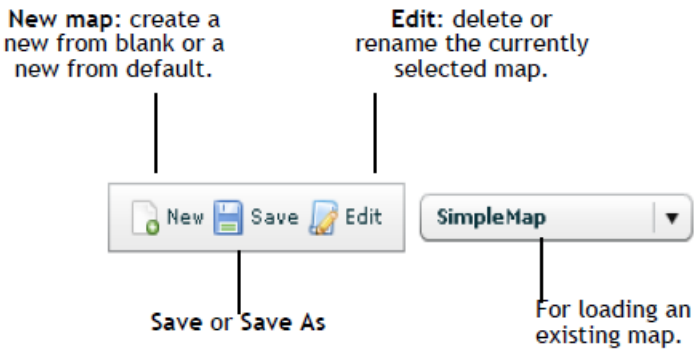
Use the Protocol Configuration Manager to create a custom mapping of protocols. Folders can be created and protocols can be grouped into folders for reporting purposes.

The Protocol Configuration Manager screen has two panes. The Default Protocol Mapping pane displays the default protocol category folders. Use the Custom Protocol Mapping pane to display custom maps and create custom protocol maps.




# 6.7.1 Protocol Manager Toolbar

The Protocol Manager toolbar has controls for managing protocol map files.




## 6.7.2 Creating a Protocol Map

When you create a protocol map you can choose to use the default protocol mapping as a starting point or you can begin with an empty tree. You can create categories (folders) and populate these categories with protocols as required.

Use one of the New menu options to create a new protocol map:

- New from Blank—This creates a new empty map with just the root as root. Use this option to create a new map.
- New from Default—This creates a copy of the default protocol map. Use this option to make minor changes to the default protocol map.

## 6.7.3 Editing a Protocol Map

You can drag-and-drop protocols and categories from the default tree to the custom tree. Create your own category names and drag the protocol names into them.

The default tree options are:

- Dragging category—Dragging a category to the Protocol node in the custom map copy's the category and its content to the custom tree. Dragging a category to another category node in the custom tree only copies the contents of the source category into the destination category; the source category itself is not added to the custom mapping.
- Select multiple—Hold down the SHIFT key to select multiple categories and protocols.
- Filter—Type a search string into the textbox to filter the tree to only show protocols that match the filter string.
- Hide Assigned—Select the checkbox to only show protocols that have not been mapped in the custom tree. This is a useful feature to identify the protocols that have not been assigned yet.

The custom tree options are:

- **Move:** Dragging and dropping a protocol from one category to another in the custom mapping will move the protocol.
- **Copy:** To copy a protocol in the custom mapping from one category to another, hold down the CTRL key when dragging.
- **Rename Map:** The name of the map can by changed by clicking on the map name beside "Custom Mapping:" and typing in a new name.

### 6.7.3.1 Default Mapping Toolbar

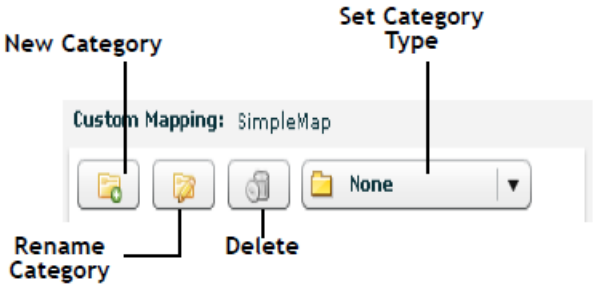
The toolbar for the default protocol mapping:


Select **Hide** to configure the default protocol tree to only show protocols that have not been assigned to the custom protocol tree. Deselect the box to show all protocols.

Enter a search string in the Filter text field to configure the default protocol tree so that it only shows protocols that match the filter string. Clear the text in the field to show all protocols.

### 6.7.3.2 Custom Mapping Toolbar

The custom map toolbar includes these options to edit the custom protocol map:




- New Category—Creates a new category folder. Sub-categories are not supported at this time.
- Rename Category—Renames the selected category folder. Select only one folder at a time when using this option.
- Delete—Removes the selected categories and protocols. Hold the SHIFT key down to select multiple items. Deleting a folder also removes all protocols inside it.
- Set Category Type—Use the dropdown to set the category type. Category types are used in the application-specific bandwidth by protocol report.

### 6.7.3.3 Setting the Category Type

When a folder is initially created, a generic folder icon is used. You can select a different icon from the “Set Category Type” dropdown to identify the type of protocol stored in the folder. Folder icons are used in specialized reports where a subset of protocols is available for selection in the configuration page. If such a report is selected, the category type is used to filter which protocol categories in the custom protocol map are displayed. Unassigned folders, or those that not in the desired, are not displayed in the protocol selection list.

For example, only categories of type "VoIP" appear in the protocol tree of the "Voice over IP Bandwidth by Protocol" report.

The category types are:

- Email
- Online Gaming

- Peer to Peer
- VoIP
- Web Browsing

### 6.7.3.4 Saving a Protocol Map

The Save menu item provides these options for saving protocol maps:

- Save—Saves the map using the name beside the "Custom Mapping:" label.
- Save As—Saves the map using a name that you provide at the text prompt.

### 6.7.3.5 Loading a Protocol Map

The dropdown at the top of the Protocol Manager contains the list of protocol mappings that exist on the system. To load a protocol map, select it from the dropdown and the protocol tree is automatically update with the selected map.

### 6.7.3.6 Deleting a Protocol Map

The Edit menu item provides these options for working with protocol maps:

- Delete Map—Deletes the map currently selected in the dropdown.
- Rename Map—Renames the map currently selected in the dropdown.

# 6.8 System Configuration

Use the System Configuration screen to edit variables that affect how Network Demographics functions. This screen displays the name of the variable and the current value assigned to it. Point to any variable to display a short definition.

If you do not have the permissions required to edit the configuration, this message appears when you select System Configuration:

Inadequate permissions to manage this configuration section.

## 6.8.1 Editing Variables

You can edit any displayed variable. To do this:

1. Expand System Configuration, in the Report Explorer pane.
2. Select **Edit**, on the System Configuration page, for the variable you want to edit.
3. Enter the new value for the variable in the text field.
4. Click **Save**.

# 6.9 Time Zone Configuration

Use the Time zone configuration page to change the default time zone. The Available Time Zones pane displays a list of currently available time zones and includes a way to delete individual time zones from that list. Use the Detailed Information panel to add a time zone to the list.

## 6.9.1 Selecting a Time Zone

To select a default time zone:

1. Access the Available Time Zones list
2. select the desired time zone
3. Click **set as default**.

## 6.9.2 Deleting a Time Zone

To delete a time zone from the list:

1. Access the Available Time Zones list.
2. highlight the time zone to remove
3. Click **Delete**.

## 6.9.3 Creating a New Time Zone

To create a new time zone:

1. Navigate to the Detailed Information area.
2. Select an option from the Olson Reference Code drop-down.
3. Enter a Display name.
4. Click **Add**.

# 6.10 Using the Policy Expression Manager

The Policy Expression Manager has the added functionality of being able to deactivate classifier, subscriber classifier, and policy histogram measurements. In addition, information about the particular measurements has also been added to show all the available measurements currently available to the user. The new fields are: the classifications of a measurement, whether or not it includes protocol, and the current state of the measurement.

## 6.10.1 Editing a SandScript Expression

Any user can edit an existing SandScript expression. While you cannot the SandScript expression itself, you can edit the display name, description and units.

To edit a SandScript expression:

1. Expand Configuration, in the Report Explorer pane.
2. Select **Policy Expression Manager**.
3. Click **Edit** to edit the published expression.
4. Edit the desired field(s).
5. Click Save to retain the edits or **Cancel** to discard those edits.

# 6.11 Customizing the Favorite Reports Navigation Tree

## 6.11.1 Adding Reports

Each user can have their own custom navigation tree defined on the Favorite Reports page. To customize the navigation tree, drag the desired reports from the All Reports navigation tree, to the navigation tree on the Favorite Reports page. You can drop pre-defined reports on the NDS Reports folder and user-defined reports on the Custom Reports folder.

When a report is added to the Favorite Reports navigation tree, the user is prompted to assign a name to the report. You can accept the default name assigned to the report. If the report name already exists, a message appears indicating this.

To add a report to the Favorite Reports navigation tree:

1. Drag the desired report icon, from the All Reports navigation tree, to the Favorite Reports tab.
2. Drop the report on either the NDS Reports or Custom Reports folder, as appropriate.

## 6.11.2 Deleting Reports

To delete a report from the Favorite Reports navigation tree, right-click the desired report name. A pop-up menu appears and gives you the Delete option.


Report Explorer
Favorites
All Reports
NDS Reports
Bandwidth by Protocol
Custom Reports
Top Protocol Histogram
My Reports
Logout
Options
Run Report
View Last Scheduled Run
Rename Report
Delete Report

# A

# NDS Report Configuration Commands

# A.1 System configuration commands

## A.1.1 Data source defaults

This command configures the DSN data source:

### A.1.1.1 set config nds data-source

Database connection settings.

```
set config nds data-source default <default>
set config nds data-source multihome enabled <true|false>
set config nds data-source timeout <int:1..>
```

| Attribute | Description |
|---|---|
| default | Default data source to use |
| multi-homeenabled | Enable/disable multi-home mode for report configuration |
| timeout | Length of time in seconds to wait for a reply from the data source |

## A.1.2 File cache

These CLI commands configure internal file caching:

### A.1.2.1 set config nds caching

Configures server file cache settings.

```
set config nds caching config-duration <int>
set config nds caching enabled <true|false>
set config nds caching report-duration <int:-1..>
```

| Attribute | Description |
|---|---|
| config-duration | Length of time to cache parameter configuration values, in minutes |
| enabled | Enable/disable caching of report data |
| report-duration | Length of time to cache report data, in minutes |

## A.1.3 Notification

These CLI commands configure the mail servers to use when emailing reports:

### A.1.3.1 set config nds email

Notification and email server settings.

```
set config nds email bounce-address <bounce-address>
set config nds email email-server <email-server>
set config nds email enabled <true|false>
set config nds email from-address <from-address>
set config nds email reply-to-address <reply-to-address>
```

| Attribute | Description |
|---|---|
| bounce-address | Email address to receive bounced emails for when the recipient address is invalid |
| email-server | Email server to use when sending notifications |
| enabled | Enable/disable email functions in the Network Demographics. |
| from-address | Email address to use when sending notifications |
| reply-to-address | Email address to set in the reply-to field |

## A.1.4 Security operations

These CLI commands configure the Sandvine Security Operation Services report:

### A.1.4.1 set config nds logging

Server log settings.

```
set config nds logging audit level <debug|error|fatal|info|none|warn>
set config nds logging level <debug|error|fatal|info|none|warn>
set config nds logging performance level <debug|error|fatal|info|none|w
set config nds logging repository-path <repository-path>
set config nds logging wsdl <true|false>
```

| Attribute | Description |
|---|---|
| audit level | Granularity level for audit logs |
| level | Granularity level for the Network Demographics debug logs |
| performance | Granularity level for performance logs |
| repository-path | Path to where log files are stored on the reports server |
| wsdl | Enable/disable logging of WSDL requests and responses |

### A.1.4.2 set config nds web-debug

Web debug settings.

```
set config nds web-debug enabled <true|false>
set config nds web-debug error-level <error|false|stacktrace>
set config nds web-debug level <debug|error|fatal|info|none|warn>
set config nds web-debug show-progress <true|false>
set config nds web-debug timer <true|false>
set config nds web-debug type <type>
```

| Attribute | Description |
|---|---|
| enabled | Displays a debug button on the report toolbar to access the debug page of the report |
| error-level | Error message level that is displayed in the browser screen |
| level | Granularity level of the debug statements written to the web browser screen |
| show-progress | Enable/disable report progress information on the loading page |
| timer | Displays a timer on the report loading page |
| type | Comma-separated list of log types to output to the browser screen (all, none, event, audit, perf, web) |

## A.1.5 HTTP server for reports

These CLI commands configure the web server:

### A.1.5.1 set config nds scheduler

use this CLI command to configure Report Scheduler settings.

```
set config nds scheduler enabled <true|false>
set config nds scheduler server <server>
set config nds scheduler timeout <int:1..1440>
set config nds scheduler archive <1..20>
```

| Attribute | Description |
|---|---|
| enabled | Enables or disables the scheduler process. |
| server | Identifies the Network Demographics that generates scheduled reports. |
| timeout | Specifies the number of minutes that a report runs before timing out. |
| archive | Sets the default number of scheduled reports to archive. |

### A.1.5.2 set config nds http-server

HTTP server settings.

```
set config nds http-server enabled <true|false>
set config nds http-server max-clients dynamic <int:1..25>
```

```
set config nds http-server max-clients static <int:1..500>

set config nds http-server port <int:1024..65535>
set config nds http-server protocol <http|https>
set config nds http-server security-config <file-path>

set config nds http-server ssl-config <file-path>
```

| Attribute | Description |
|---|---|
| enabled | Enable/disable the Apache server |
| max-clients dynamic | Number of supported Apache HTTP clients to serve dynamic requests |
| max-clients static | Number of supported Apache HTTP clients to serve static requests |
| port | Listening port of the HTTP server |
| protocol | Protocol accepted by the HTTP server |
| security-config | Server path to the Apache security configuration file |
| ssl-config | Server path to the Apache SSL configuration file |

## A.1.6 Report Parameter

These CLI commands configure data retrieval settings:

### A.1.6.1 set config nds report-parameters

```
set config nds report-parameters query-local enabled
set config nds report-parameters show-inactive enabled
```

| Attribute | Description |
|---|---|
| query-local | Enable or disable querying only local datahome for protocols. |
| show-inactive | Enable or disable inactive network topology elements in report configuration. |

# A.2 Access management

These CLI commands control access to various NDS configurations.

## A.2.1 set config nds security

This series of set commands control various security settings.

```
set config nds security login-access anonymous <true|false>
set config nds security login-access local <true|false>
set config nds security login-access root  <true|false>
set config nds security login-access spbadmin  <true|false>
set config nds security pam-service <name>
set config nds security session-length <int:300..>

set config nds security trusted-ip-address <trusted-ip-address>

set config nds security trusted-ip-login <name>
```

| Attribute | Description |
|---|---|
| login-access anonymous | Enables or disables anonymous access to the Network Demographics. |
| login-access local | Enables or disables anonymous access for internal queries. The Scheduler process uses this command. |
| login-access root | Enables or disables root user access to the Network Demographics. |
| login-access spbadmin | Enables or disables spbadmin user access to the Network Demographics. |
| pam-service | Identifies the service name for PAM authentication. |
| session-length | Specifies the length, in seconds, of a user session. |
| trusted-ip-address | Generates a comma-delimited list of all remote WDTM PTS IP addresses that also generate alert emails. |
| trusted-ip-login | Specifies the username to use when accessing the Network Demographics from a trusted host. |

# A.3 Reports

## A.3.1 Reporting intervals

These CLI commands configure the reporting interval of various report types:

### A.3.1.1 set config nds report-intervals

Reporting and logging interval settings.

```
set config nds report-intervals bestfit-performance enabled false|true
set config nds report-intervals demographics <int:1..>
set config nds report-intervals interface <int:1..>
set config nds report-intervals policy-histogram <int:1..>
set config nds report-intervals policy-histogram-by-protocol <int:1..>
set config nds report-intervals published-expression <int:1..>
set config nds report-intervals subscriber basic <int:1..>
set config nds report-intervals subscriber detail <int:1..>
```

| Attribute | Description |
|---|---|
| bestfit-performance enabled | Enables/disables using the best-fit algorithm to determine the start and end dates to improve performance. |
| demographics | Default minimum stats logging interval, in minutes |
| interface | Minimum logging interval for network port stats, in minutes |
| policy-histogram | Minimum logging interval for policy histogram stats, in minutes |
| policy-histogram-by-protocol | Minimum logging interval for policy histogram protocol stats, in minutes |
| published-expression | Minimum logging interval for published expression stats, in minutes |
| subscriber basic | Minimum logging interval for subscriber basic stats, in minutes |
| subscriber detail | Minimum logging interval for subscriber protocol stats, in minutes |

# A.3.2 Favorite Reports

The favorite reports view displays a list of commonly accessed reports. The CLI commands that configure the favorite reports view are:

## A.3.2.1 set config nds navigation favorite-reports

Configures the reports available in the navigation tree in the "Favorites" tab.

```
set config nds navigation favorite-reports display custom-reports <true|false>
set config nds navigation favorite-reports display personal-reports <true|false>
set config nds navigation favorite-reports display reports <true|false>
set config nds navigation favorite-reports enabled <true|false>
set config nds navigation favorite-reports xml-config <file-path>
```

| This attribute... | Enables or disables the... |
|---|---|
| custom-reports | Custom Reports folder in the navigation tree. |
| personal-reports | My Reports folder in the navigation tree. |
| reports | The Network Demographics Reports folder in the navigation tree. |
| enabled | Favorites navigation tab. |
| xml-config | This XML file is located on the server that defines which reports appear in the "Favorites" navigation tree. |

# A.3.3 Enabling Reports

These CLI commands enable/disable the reports visible in the navigation tree

## A.3.3.1 set config nds navigation

Reports to show in the navigation tree.

### A.3.3.1.1 set config nds navigation all-reports

Configures the reports available in the navigation tree in the "All reports" tab.

```
set config nds navigation all-reports dns <true|false>
set config nds navigation all-reports  malicious-bandwidth <true|false>
set config nds navigation all-reports nat <true|false>
set config nds navigation all-reports network <true|false>
set config nds navigation all-reports network-interface <true|false>
set config nds navigation all-reports peer-to-peer <true|false>
set config nds navigation all-reports quality-of-experience <true|false>
set config nds navigation all-reports resource <true|false>
set config nds navigation all-reports subscriber basic <true|false>
set config nds navigation all-reports subscriber detail  <true|false>
set config nds navigation all-reports subscriber lookup  <true|false>
set config nds navigation all-reports subscriber top-talkers <true|false>
set config nds navigation all-reports subscriber-licensing active <true|false>
set config nds navigation all-reports subscriber-licensing provisioned <true|false>
set config nds navigation all-reports url <true|false>
set config nds navigation all-reports voip <true|false>
set config nds navigation all-reports voip-qoe <true|false>
```

| This attribute... | Enables or disables the... |
|---|---|
| dns | DNS reports. |
| malicious-bandwidth | WDTM reports. |
| nat | NAT IP lookup reports. |
| network | Network reports. |
| network-interface | Network Interface reports. |
| peer-to-peer | Peer-to-Peer reports. |
| quality-of-experience | QoE reports. |
| resource | Resource Monitoring reports. |
| subscriber basic | Subscriber Basic reports. |
| subscriber detail | Subscriber Protocol reports. |
| subscriber lookup | Subscriber Lookup reports. |
| subscriber-licensing active | Enables or disables subscriber licensing report for active providers. |
| subscriber-licensing provisioned | Enable or disables subscriber licensing report for provisioned providers. |

| This attribute... | Enables or disables the... |
|---|---|
| subscriber top-talkers | Top talkers by Protocol reports. |
| url | Top URL reports. |
| voip | VoIP reports |
| voip-qoe | VoIP QoE reports |

#### A.3.3.1.2 set config nds navigation scheduled-reports

Configures the reports available in the navigation tree in the "Scheduled " tab.

```
set config nds navigation scheduled-reports enabled <true|false>
set config nds navigation scheduled-reports restricted-users <restricted-users>
```

| Attribute | Description |
|---|---|
| enabled | Enables and disables the "Scheduled" navigation tab. |
| restricted-users | Generates a comma-separated list of users with access to viewing cached reports only. |

# A.3.4 Enabling report components

These CLI commands will show or hide various report components within a report:

## A.3.4.1 set config nds applications hosts

Configures the hosts report component in connection reports.

```
set config nds applications hosts new <true|false>
set config nds applications hosts peak <true|false>
```

| Attribute | Description |
|---|---|
| new | True to enable, false to disable the New Hosts report component in connection reports |
| peak | True to enable, false to disable the Hosts Connections report component in connection reports |

## A.3.4.2 set config nds applications connections

Configures the connections report component in connection reports.

```
set config nds applications connections new <true|false>
set config nds applications connections peak <true|false>
```

| Attribute | Description |
|---|---|
| new | True to enable, false to disable the New Connections report component in connection reports |
| peak | True to enable, false to disable the Peak Connections report component in connection reports |

### A.3.4.3 set config nds applications subscriber

Configures subscriber report settings.

```
set config nds applications subscriber gmt-timezone enabled false|true
set config nds applications subscriber min-bytes
set config nds applications subscriber rx-bandwidth
set config nds applications subscriber total-bandwidth
set config nds applications subscriber tx-bandwidth
set config nds applications subscriber usage-histogram max-bins
set config nds applications subscriber usage-histogram min-bandwidth
```

| Attribute | Description |
|---|---|
| gmt-timezone enabled | Enables/Disables GMT as the default timezone for subscriber reports. |
| min-bytes | Minimum bytes to use when counting subscribers; used to filter out subscribers. |
| rx-bandwidth | True to enable, false to disable the Received Bandwidth report component in the Subscriber Bandwidth Usage reports. |
| total-bandwidth | True to enable, false to disable the Total Bandwidth report component in the Subscriber Bandwidth Usage reports. |
| tx-bandwidth | True to enable, false to disable the Transmitted Bandwidth report component in the Subscriber Bandwidth Usage reports. |
| usage-histogram max-bins | Maximum number of bins allowed in the histogram usage reports. |
| usage-histogram min-bandwidth | Minimum bytes to use in histogram usage reports to filter out subscribers with no traffic. |

## A.3.5 VoIP QoE

### A.3.5.1 set config nds applications voip-qoe

Configures VoIP quality of experience (QoE) report settings.

```
set config nds applications voip-qoe cq-rfactor-threshold <int:0..100>
set config nds applications voip-qoe cq-threshold <float>
set config nds applications voip-qoe formula <arc_mos|g107_mos|pesq_mos|ttc_mos|wideband_mos>
set config nds applications voip-qoe g107-threshold <float>
set config nds applications voip-qoe lq-rfactor-threshold <int:0..100>
set config nds applications voip-qoe lq-threshold <float>
set config nds applications voip-qoe show-blocked-calls <true|false>
```

| Attribute | Description |
|---|---|
| cq-rfactor-threshold | R-factor threshold to classify a call as poor quality for CQ |
| cq-threshold | MOS score threshold to classify a call as poor quality for CQ |
| formula | Formula for calculating MOS scores from r-factor values |
| g107-threshold | MOS score threshold to classify a call as poor quality for G.107 |
| lq-rfactor-threshold | R-factor threshold to classify a call as poor quality for LQ |
| lq-threshold | MOS score threshold to classify a call as poor quality for LQ |

| Attribute | Description |
|---|---|
| show-blocked-calls | Enable/disable the Blocked VoIP Calls report component in VoIP reports |

# A.4 Presentation commands

The default parameters for presenting data sets are:

## A.4.1 set config nds presentation

Report presentation settings

```
set config nds presentation bytes-conversion <1000|1024>
set config nds presentation charting chart-height <int:1..>

set config nds presentation charting chart-width <int:1..>
set config nds presentation charting color-prefernce-file <file-path>
set config nds presentation charting magnify-enabled <true|false>
set config nds presentation csv compression <gzip|none >
set config nds presentation csv orientation <horizontal|vertical>

set config nds presentation data decimal-place <int:0..6>
set config nds presentation data default-iteration <int:1..>
set config nds presentation data sort-order <asc|desc>
set config nds presentation data thousands-separator <thousands-separator>
  set config nds presentation date format <format>

set config nds presentation date-time format <format>
set config nds presentation date-time peak-hour end <int:0..23>

set config nds presentation date-time peak-hour start <int:0..23>

set config nds presentation date-time show date <true|false>
set config nds presentation date-time show interval <true|false>
set config nds presentation date-time show timezone <true|false>
set config nds presentation default-protocol-map <file-path>
set config nds presentation forward-report enabled <true|false>
set config nds presentation forward-report path <file-path>
set config nds presentation pdf chart-height <int:1..>

set config nds presentation pdf chart-width <int:1..>
```

```
set config nds presentation pdf footer-text <footer-text>
set config nds presentation pdf orientation <landscape|portrait>
set config nds presentation pdf page-size <a4|letter|universal>
set config nds presentation pdf permission annotate <true|false>
set config nds presentation pdf permission copy <true|false>
set config nds presentation pdf permission modify <true|false>
set config nds presentation pdf permission print <true|false>
set config nds presentation powerpoint ignore-first-slide <true|false>
set config nds presentation powerpoint show-title <true|false>
set config nds presentation powerpoint template <default|blank|no-title|file-name:..>
```

| Attribute | Description |
|---|---|
| bytes-conversion | Base for byte unit conversion. |
| charting chart-height | Default height of the chart image |
| charting chart-width | Default width of the chart image |
| charting color-preference-file | Default color preference file to use |
| charting magnify-enabled | Enables/disables the dynamic chart magnification feature |
| csv compression | Use compression when downloading CSV files from download-only reports |
| csv orientation | Orientation of data table in CSV |
| date format | Sets the chart package-specific formatting string for formatting dates |
| decimal-place | Default number of decimal places to show in reports |
| default-iteration | Default number of report iterations to show on a page |
| sort-order | Default sort order for data |
| thousands-separator | Delimiter to use to format numbers larger than 3 digits (ie. 1,000) |
| date-time format | Sets the chart package-specific formatting string for formatting dates |
| date-time peak-hour end | Hour when peak hours end |
| date-time peak-hour start | Hour when peak hours start |
| date-time show date | Enable or disable date information in report subtitle when subtitle is hidden |
| date-time show interval | Enable or disable date interval display in the report |
| date-time show timezone | Enable or disable whether the time zone parameter is shown in the report configuration page and report subtitle |
| default-protocol-map | Default protocol configuration map to load |
| forward-report enabled | Enable or disable automatically loading a report on user login |
| forward-report path | Report to automatically load on user login |
| pdf chart-height | Height of the chart image |
| pdf hart-width | Width of the chart image |
| pdf footer-text | Footer message to place at the bottom of each page in the PDF |

| Attribute | Description |
|---|---|
| pdf orientation | Page orientation of the PDF document |
| pdf page-size | Page size to use for PDF document |
| pdf permission annotate | Enable or disable annotation support in the PDF document |
| pdf permission copy | Enable or disable copying content from the PDF document |
| pdf permission modify | Enable or disable modifying the content of the PDF document |
| pdf permission print | Enable or disable printing of the PDF document |
| ignore-first-slide | Do not modify the first slide in the template |
| show-title | Enable or disable the title slide |
| powerpoint template | PowerPoint template file to use when generating PowerPoint reports |

## A.4.2 set config nds applications classifier

Configures policy classifier reports.

```
set config nds applications classifier max-plot <int:0..>
```

| Attribute | Description |
|---|---|
| max-plot | Sets the maximum number of instances to plot in a policy expression overtime chart |

## A.4.3 set config nds applications subscriber

Configures subscriber report settings.

```
set config nds applications subscriber gmt-timezone enabled false|true
set config nds applications subscriber min-bytes
set config nds applications subscriber rx-bandwidth
set config nds applications subscriber total-bandwidth
set config nds applications subscriber tx-bandwidth
set config nds applications subscriber usage-histogram max-bins
set config nds applications subscriber usage-histogram min-bandwidth
```

| Attribute | Description |
|---|---|
| gmt-timezone enabled | Enables/Disables GMT as the default timezone for subscriber reports. |
| min-bytes | Minimum bytes to use when counting subscribers; used to filter out subscribers. |
| rx-bandwidth | True to enable, false to disable the Received Bandwidth report component in the Subscriber Bandwidth Usage reports. |
| total-bandwidth | True to enable, false to disable the Total Bandwidth report component in the Subscriber Bandwidth Usage reports. |
| tx-bandwidth | True to enable, false to disable the Transmitted Bandwidth report component in the Subscriber Bandwidth Usage reports. |
| usage-histogram max-bins | Maximum number of bins allowed in the histogram usage reports. |

| Attribute | Description |
|---|---|
| usage-histogram min-bandwidth | Minimum bytes to use in histogram usage reports to filter out subscribers with no traffic. |

## A.4.4 set config nds applications session-qualifier

Configures session qualifier settings.

```
set config nds applications session-qualifier display-name
set config nds applications session-qualifier enabled <true|false>
set config nds applications session-qualifier tag-name
```

| Attribute | Description |
|---|---|
| display-name | Display name of the session qualifier node. |
| enabled | Enable/disable use of session qualifiers in Subscriber Lookup reports. |
| tag-name | XML tag name of the session qualifier node. |

# B

# Administrative tasks

# B.1 Backing up Network Demographics custom files

A shell script is provided for backing up and restoring all Network Demographics Server custom files including scheduled reports, files from scheduled runs, and customized configuration files such as color schemes and user preferences. More specifically, everything in these folders are backed up:

- Custom reports folder
- My Reports folder
- Scheduled reports archives
- $svreports_var_repository/customizations: where $svreports_var_repository is a configurable variable in rc.conf
- $svreports_var_repository/preferences

The script is:

```
/usr/local/sandvine/reports/bin/ndsBackup.sh backup|restore|help
```

Where:

- backup: backs up NDS custom reports and personal preferences
- restore: restores the targeted backup file
- help: displays help

## B.1.1 To create a backup:

As an administrative user, at a command prompt, execute: */usr/local/sandvine/reports/bin/ndsBackup.sh backup* A tar file is created in $svreports_cache_repository, where *$svreports_cache_repository* is the rc.conf variable specifying the location of the cache directory. By default, the back up file is added to */usr/local/sandvine/var/nds*.

## B.1.2 To restore a backup:

As an administrative user, at a command prompt, execute: */usr/local/sandvine/reports/bin/ndsBackup.sh restore path_to_file*

## B.1.3 To restore a specific file:

For example, to restore protocol_map configuration only, you will need to restore preferences.tgz, which includes color preferences as well as protocol mappings and user preferences. The following procedure assumes the backup file is */d2/tmp/ndsBackup.2.tgz*

1. Extract ndsBackup.tgz with: *tar -xvzf /d2/tmp/ndsBackup.2.tgz -C /d2/tmp/*

2. Extract preferences.tgz with the command: *tar -xvzf /d2/tmp/preferences.tgz -C /d2/tmp/*

3. Copy the ProtocolMappings file to the NDS preferences folder using the command: *cp /d2/tmp/ProtocolMappings* /d2/local/sandvine/reports/var/preferences/.*

**Example:**
You can use this same procedure to restore other functionality:

| Functionality | File to restore |
|---|---|
| Cluster/Element/Network Visibility | customizations.tgz -- customizations/NetworkCustomization.xml |
| Color Preferences | preferences.tgz -- preferences/ColourPreferences-*.xml |
| DNS Manager | /usr/local/etc/odbc.ini -- NOT backed up in the ndsBackup.sh script |
| Protocol Configuration Manager | preferences.tgz -- preferences/ProtocolMappings-*.xml |
| Time Zone Configuration | etc.tgz -- /usr/local/sandvine/reports/etc |
| Policy Expression Manager | Not needed, stored in database |
| Schedule Manager | Not needed, stored in custom reports themselves |
| User Preference | preferences.tgz -- preferences/UserPreferences |
| Custom Reports | customReports.tgz /usr/local/sandvine/reports/packages/custom |
| My Reports | personalReports.tgz /usr/local/sandvine/reports/packages/home |
| Generated Template Reports | classifierReports.tgz /usr/local/sandvine/reports/packages/classifier |

# B.2 Backing up Custom Reports

At the present time, custom reports cannot be backed up.

# B.3 Adding your own branding

## B.3.1 Changing the PowerPoint template

To use a custom template for PowerPoint files:

1. Place your .ppt file in */usr/local/sandvine/reports/templates*
2. Issue this CLI command: *set config nds presentation powerpoint template <filename.ppt>* where filename.ppt is just the file name of your custom PowerPoint file, without any path information.

## B.3.2 Adding Your Company Name to PDF Files

You can add a custom message to the bottom of each page of PDF files:

Run the `set config nds presentation pdf footer-text <your text>` CLI command.

**Example:**
`set config nds presentation pdf footer-text "For internal use only"`

# B.4 Adding a new user to NDS

To add a local user to the SRP, complete the sections in bold.

```
# adduser
Username: ndsuser
Full name:
Uid (Leave empty for default):
Login group [ndsuser]:
Login group is ndsuser. Invite ndsuser into other groups? []:
Login class [default]:
Shell (bash sh ftpd-nologin bash nologin) [sh]: nologin
Home directory [/home/ndsuser]:
Use password-based authentication? [yes]:
Use an empty password? (yes/no) [no]:
Use a random password? (yes/no) [no]:
Enter password:
Enter password again:
Lock out the account after creation? [no]:
Username : ndsuser
Password : *****
Full Name :
Uid : 26980
Class :
Groups : ndsuser
Home : /home/ndsuser
Shell : /usr/sbin/nologin
Locked : no
OK? (yes/no): yes
adduser: INFO: Successfully added (ndsuser) to the user database.
Add another user? (yes/no): no
Goodbye!
```

## B.4.1 Restricting a user-scheduled cache view

A user can be configured to only access the static results of scheduled reports. For more information, see *"Scheduled Cache View"*

# C

# Frequently asked questions

• "Frequently asked questions" on page 118

# C.1 Frequently asked questions

**I want to scale the report image in my browser, how do I do this?**

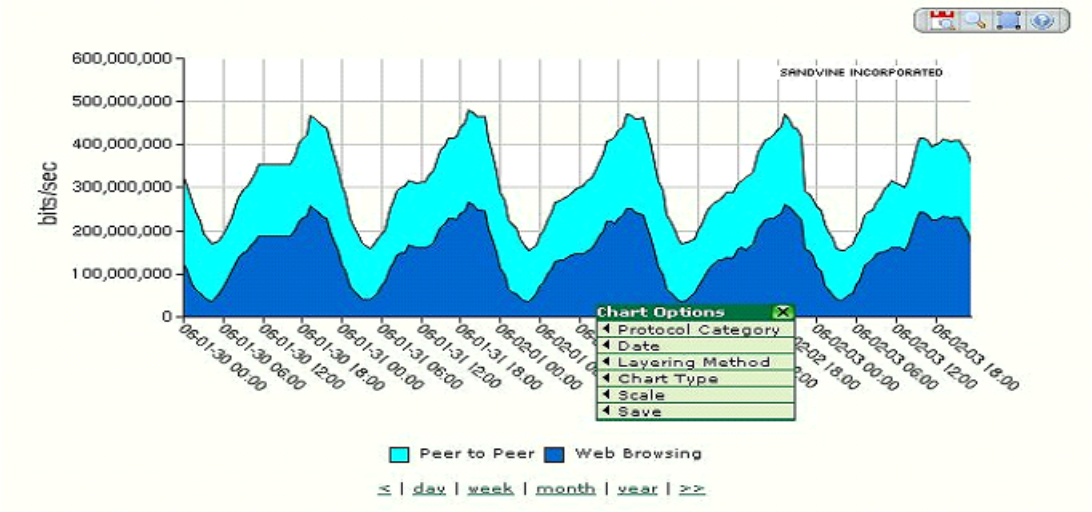
In NDS there is a new tool bar that appears on the right hand side of the report chart, which includes a resize button. When the button is clicked, a resize handle will appear in the bottom-right corner of the chart. With the mouse holding down on the handle button, drag the mouse across the screen to stretch the image to the desired size. If you hold down the SHIFT key while dragging the image will maintain the aspect ratio of the original image. When you are done, click the "Confirm" button to complete the resize operation, or the "Cancel" button to cancel.

**Firefox is giving me an error that the connection took too long to execute. What's happening?**

Some versions of Firefox have a timeout default that generates an error if a report takes longer than 5 minutes to generate. Try adjusting the timeout settings in Firefox to give it more time to complete the report before hitting the timeout.

**How do I change the report output, from an area chart to a pie chart, for example?**

There are two ways to do this. First, you can switch to the components page, and use the Display Mechanism drop down menu there to select the type of chart output that is desired. Second, you can run the report, and then use the Chart Options menu, to select the desired chart output. This is shown in the figure below. To access the Chart Options menu, click the right mouse button, when the mouse pointer is located over the area in the chart. On the Chart Options menu, select the Chart Type option, and then select the desired chart type. Once selected, the report will be regenerated in the desired format.




**How can I zoom in on the report image?**

In NDS 4.0, the new tool bar that appears on the right hand side of the report chart includes a date zoom button, and a magnify button. The date zoom allows you to change the date range of the report, by using the mouse to set the location of the "curtains" that appear on the chart, to the area that you want to focus on. When you are done, click the "Confirm" button to complete the resize operation, or the "Cancel" button.

The magnify button will magnify a portion of the report chart.

**I want to schedule a report, but the schedule tab says that this option is not available. How do I schedule a report?**

To schedule a report, first you must select the configuration you want for that report. It is easiest to run this report first. When the report has been generated, you can use the "save" button on the tool bar. You will be asked to enter a name for the report, and a location. This will save the report into the Custom Reports folder.

Once a report has been defined as a Custom Report, the schedule functions will be available on the schedule page.

**I want to run a Bandwidth by Category report for the past week, but then compare the results to the week before on the same chart - how can I do this?**

This can be done by using the "ghost data" feature. This feature is available on the Presentation Page, in the Chart Enhancements section. This feature contains options to let you select how many previous intervals you want to see. The user can also select to have the ghost data plotted separately (separate charts appear on the report), or it can be included on one chart. The example below shows the ghost data plotted separately. If one chart is selected, then the date range is extended, and the ghosted data is shown as a partially filled area chart.

**Why do the Dropped and Malicious Bandwidth reports not correlate?**

For a given detection type, it is possible for the dropped bandwidth to be less than malicious bandwidth. To understand why, it becomes necessary to understand how the WDTM Detection Engine and WDTM Detection Aggregator work. When an attack starts, it is analyzed by the WDTM Detection Engine. During this time, the attack is not confirmed, but its bytes and packets are counted. When the Detection Engine determines that thresholds were crossed (as specified by detection-config rules) the event is reported to the WDTM Detection Aggregator which is responsible for aggregating detection events in an attempt to reduce false positives. When the Detection Aggregator confirms that the event(s) constitute an attack due to timed-host-percent thresholds being crossed (as specified by aggregator-config rules) it applies mitigation actions (as specified by wmd-rules). At this point, the bytes/packets counted before the attack was confirmed are logged as malicious bytes/packets and show up in the Malicious Bandwidth/Malicious Packet Rate charts. This counted malicious traffic is impossible to mitigate since it would require knowledge that the traffic was malicious before it looked malicious, and so the traffic will not be counted as mitigated. Since new malicious traffic is always being detected for the first time, this means that overall, malicious traffic will typically be greater than mitigated traffic. For some detections, this contrast between malicious and mitigated is much larger.

Spam especially exhibits this large contrast. This is because the mitigated traffic is predominantly SYN packets that are dropped before the TCP flow is established. As a result, the minutes required to confirm a spam attack could result in many bytes and packets of unmitigated malicious traffic. When the attack is confirmed, although many bytes and packets are in theory mitigated by dropping the flow, we can only honestly report a very small fraction of that traffic that was actually mitigated on the wire, specifically the SYN packets.

**Why does the Total Malicious Bandwidth for aggregation of individual hosts not correlate with the summarized bandwidth?**

When running the general Malicious Bandwidth report and comparing the bit-rate for a particular class of malware (Address Scans, SYN Floods, et al.) with the aggregated bandwidth of all hosts detected during the same time interval, the values will not correlate. The aggregation of the individual hosts is expected to be a higher value than that of the general report. The reason for this is that the individual malicious host bandwidth reports have access to the duration of the detection for the given time period. In most cases, this duration is not equal to the entire time window, which causes the denominator to be lower and the overall rate to be higher. For example, if the following hosts were detected during a fifteen minute interval with the following measures, we would obtain the following bitrates:

```
Host         Bits        Duration (seconds) bps
10.0.0.1    10,0000 450   (10,000 / 450) = 22.2
10.0.0.2 20,0000 600   (30,000 / 600) = 33.3
10.0.0.3 30,0000 900   (30,000 / 900) = 33.3
```

This would give us a total bitrate of: 88.8 bps

The more general malicious bandwidth reports do not have access to the duration of each individual attack, and thus, have to evenly distribute the bandwidth across the full fifteen minute window. This would result in a bitrate of: 66.6 bps

Calculation: (10,000 + 20,000 + 30,000) / (15 minutes) = 66.6 bps

**Peak values appear to dilute when running reports over longer periods**

Due to the manner in which running average data is presented (in particular, area charts), peak values may appear to scale depending on the configured time interval for the report. It is generally recommended that if you are looking for higher-grain accuracy that you run the report for a shorter interval of time. The scaling issue results from peak values being diluted over the interval of the report. For example, if you chose to report on data for a one week period of time, that reporting interval may be broken up into one hour segments within the chart. Lets assume that if we took four consecutive plotted points within the chart we had the series (4, 5, 17, 5). These values would represent the average rate of events for that particular hour. If we re-ran the report with a two week time period, we would find that in this particular time range, we would have less bins with lower values. In this example, we would expect to see the following series of values for the same appropriate time points (4.5, 11). This is

caused by the fact that the two-week report must collapse time bins, which dilutes peak rate values through averaging ( 4 + 5 / 2 = 4.5, 17 + 5 / 2 = 11). So the peak value of 17 in the one-week report has been diluted to a value of 11 due to the way rounding occurs when looking at data at a larger time window.

**Peak values in bar charts seem to increase when running reports over longer periods**

Due to the manner in which raw count data is presented (in particular, bar charts), Network Demographics can appear to display different peak results depending on the configured time interval for the report. For example, if you chose to report on data for a one week period of time, that reporting interval may be broken up into one hour segments within the chart. Lets assume that if we took four consecutive plotted points within the chart we had the series (4, 7, 13, 17). These values would represent the total number of events for each particular hour. If we re-ran the report for a two week time period, we would find that in this particular time range, we would have less bins but with higher values. In this example, we would expect to see the following series of values for the same appropriate time points (11, 30). This is caused by the fact that the two-week report must collapse time bins, which in turn stacks the resulting bin values. This results from the fact that we have extended the width of each bar by doubling the amount of time that it contains, which effectively includes more events to occur within that time threshold.

**NDS draws straight line in charts when stat records are suppressed due to database unavailability**

Network Demographics fully understands that data was available during the time interval, however, is unable to apply a rate of change during that time. As such, NDS applies a constant rate of change for the data over the number of intervals that records were unable to be logged.

**How do I return more than 5000 subscribers in a report?**

NDS will only render 5000 rows in a report due to performance and usability considerations. However, NDS can be configured to send all data (more than 5000 rows) from a report into a raw CSV file that can be consumed by third-party systems:

1. Load the report in NDS
2. Click on the “Save Report” icon on the upper right of the report configuration screen
3. At the bottom, under “Save as type:”, click on the dropdown and change the selection to “Download-Only”
4. Save the report
5. In the Presentation tab, change Top N to 0
6. Click on the “Download” button to run the report

**Why am I getting the error message "No data was found for the parameters you specified to generate this component of the report" for all of my reports?**

The attribute archiver is likely not turned on. On the SRP, try running:

```
set config service attribute-archiver enabled true
```

Commit the changes. It may take up to 24 hours for the archiver to gather enough data to fill the reports.

**How can there be more traffic mitigated than detected?**

It is possible that mitigation counts will exceed detection counts in the WDTM rule counters and in the database. This occurs because all traffic that is mitigated is reported, yet only a subset of malicious traffic is detected and reported (but all of it is mitigated).

For example, when mitigation actions are put in place, they are typically left in place until there is a long period of inactivity. A common detection-timeout is five minutes. Each time a detection happens, it resets the timeout. With a detection period that is smaller than the detection-timeout period (which it almost always is, detection periods are usually 15 or 30 seconds) it is common for detection periods to go by without detection events and hence without counting and reporting. This will happen any time a malicious host fails to cross a threshold in a given detection period. This traffic will still be mitigated, however, since the detection-timeout has not passed without detected events.

**How long does it take for a report to run?**

Network Demographics reports can sometimes take up to fifteen minutes to run. The complexity of your report and whether or not the report statistics are being accessed from a parent or child SPB can impact the length of time required.

**I'm not getting any results when I run the Bandwidth by Protocol Report**

Check your subnets. Refer to the PTS Network Configuration Guide for more information.

**Why, when a start date value is configured for a time series report, is the start date different in the generated report ?**

This occurs because the best-fit performance algorithm (which is enabled by default) is used for data fetching and report generation. This feature takes the user-provided start date and moves the date to an earlier time/date so the data is fetched at a faster rate from the database. It considers the given report duration while calculating the new start date.

For example, with this feature enabled, when the Bandwidth by Protocol report runs for 7 days with the start date 2015-08-01 00:00, the start date is modified to “2015-07-31 23:00”.

You can disable this feature by running the `set config nds report-intervals bestfit-performance enabled false` command.

You must commit the change for it to take effect.

**Why am I getting "Missing Protocol Info" in Bandwidth by Protocol reports?**

Your MCDText file is probably out of date or the versions may be mismatched between the PTS and the SRP. For example:

**Example:**

```
[PTS] $ pkg_info | grep mcdtext svmcdtext-BSD-4.09.0025 Sandvine MCD code to text mapping
[SRP] $ pkg_info | grep mcdtext svmcdtext-BSD-4.09.0023 Sandvine MCD code to text mapping
```

Update your MCDText files so that the same version is running on both boxes.

Frequently asked questions

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