Cisco WAE Design Archive 6.2 User and Administration Guide

July 2015

Cisco Systems, Inc.
www.cisco.com

Cisco has more than 200 offices worldwide.
Addresses, phone numbers, and fax numbers
are listed on the Cisco website at
www.cisco.com/go/offices.

Text Part Number:

CONTENTS

Overview

The WAE Design Archive application is a collection of tools that enable you to capture, store, and display network changes over time in a standard web browser. The application works on information gathered in multiple network snapshots and stored in a repository called an *archive*, and is often used for the following common tasks.

- Visualize changes in topology and traffic patterns over time, from a remote location using a web browser. For instance, you might want to view the maximum interface utilization over an interval, such as a day or week. Another frequent use is to view the total network traffic for many traffic levels for every hour for the last 24 hours. Based on your requests, WAE Design Archive retrieves summary information from an archive in real-time and formats it for viewing in a browser.

- Status or events displayed in the web browser might require more detailed investigation. Because the application saves the original plan with the summary, you can drill down to a time of interest to view the full network plan.

Related Topics

- *WAE Platform Configuration Guide*
- *WAE System Administration Guide*
- *WAE Network Visualization Guide*
- *WAE Design Table Schema and CLI Reference*

Related Topics

Using WAE Design Archive

This chapter, which is organized as follows, assumes that the WAE Design Archive application has been set up and is already running and available via a web browser.

- View Weathermaps
- View Time-Sequence Plots
- Navigation
- Manage Settings

Reading the Home Page

The home page appears with two types of views: Map and incremental options for Network Statistics.

Eastern Region

| Year | Month | Week | Day | Map |

Description: Description of the archive

Archive Path: /builds/archive/Sample_Archive

Snapshot status: OK

Operation team contact details: Link
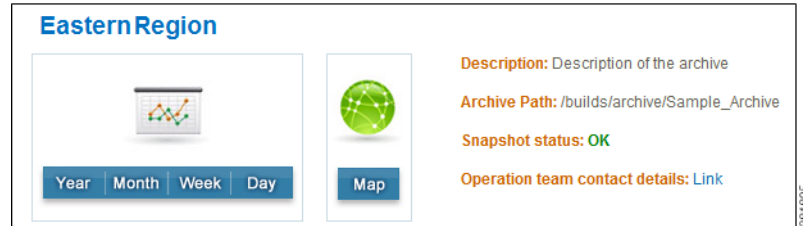
- Map—Displays snapshots of the network topology in a weathermap format.
- Network Statistics—Displays time-sequence plots in yearly, monthly, weekly, and daily increments.

These views are available on a per-archive basis. Archives might be grouped together. If so, click on the group name to expand the list.

Note To produce high-quality time-sequence plots, the application uses scalable vector graphics (SVG) format, which is built into most browsers with the exception of Internet Explorer. If you are using Internet Explorer, the first time you request a plot you are given instructions on how to download the browser plug-in for SVG.

View Weathermaps

WAE Design Archive dynamically displays weathermaps. For example, Figure 2-1 shows the display of a plan from a sample archive.

To access a weathermap, follow one of these steps.

- Select the Map option from the home page.

- From the Network Statistics page, click on Map in the top navigation area.

- From a time-sequence plot in the Network Statistics page, press and hold the SHIFT key while clicking any place within the plot.

Figure 2-1   Weathermap with Site Report
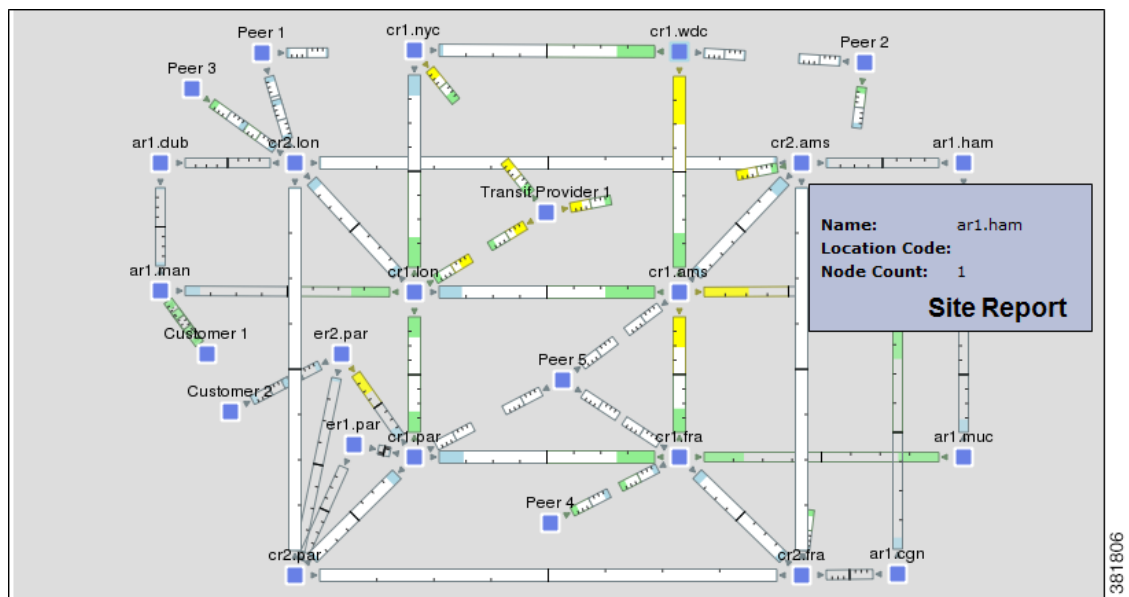
Weathermap Objects

The objects appearing in the weathermap represent the network topology. How they appear can differ depending on how the layout was set up to visualize the network.

- A node (router) appears as either a disk or a rectangle. Nodes can reside both inside and outside of sites.

- A site is a WAE Design construct to make visualization of networks easier to read. Sites appear as either a square (which is a peer or non-peer site), a circle (non-peer site), or cloud (peer site).
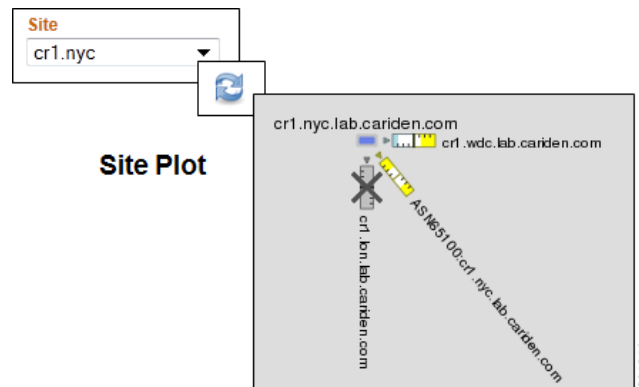
Unless a site is empty, there is a hierarchy of the sites and nodes that a site contains. A site can be both a parent and a child site. A site that contains another site is called a *parent* site. The contained nodes and sites are called *children*. Often the child nodes and sites are geographically co-located. For instance, a site might be a PoP where the routers reside.

- In the weathermap, the parent site shows all egress inter-site interfaces of all nodes contained within it, no matter how deeply the nodes are nested. Similarly, this is true for each child site view within it.

- To view a site report (Figure 2-1) listing the name, location code, and node count, double-click a site. A node count in a site report (tooltip) identifies the nodes directly within that site. That is, it does not count nodes for nested sites.

- To view a site plot, select the desired site from the Site drop-down list in the control panel below the weathermap. Then click the Refresh icon. To return to the network plot, select Full Plot from the Site list and click Refresh.

- Interface—Each pair of interfaces connects two different nodes. Their colors represent the outbound traffic utilization. This example shows interface utilization in two different layouts: Design and Weathermap.

Example Interface Traffic Utilization
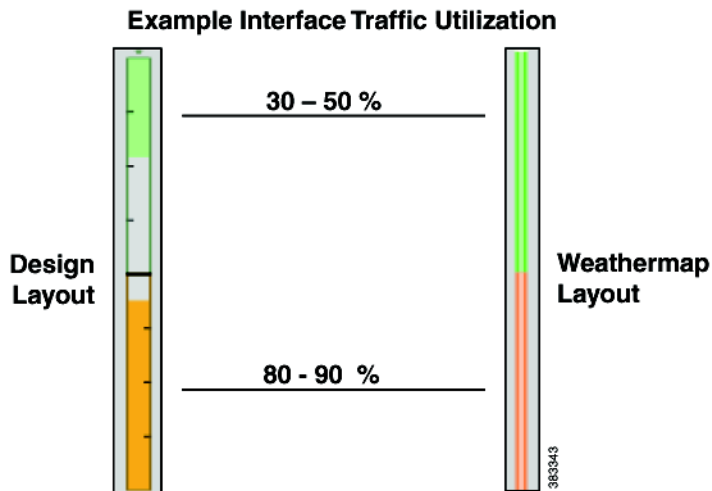
Change Weathermap Parameters

The legend at the bottom of the weathermap shows its parameters (Figure 2-2). Below that is a control panel with drop-down lists that enable you to control these parameters and thus, affect the display of the weathermap (Table 2-1). The adjustments apply only to the current browser session and are not saved for future use.

Figure 2-2   Map Legend and Control Panel
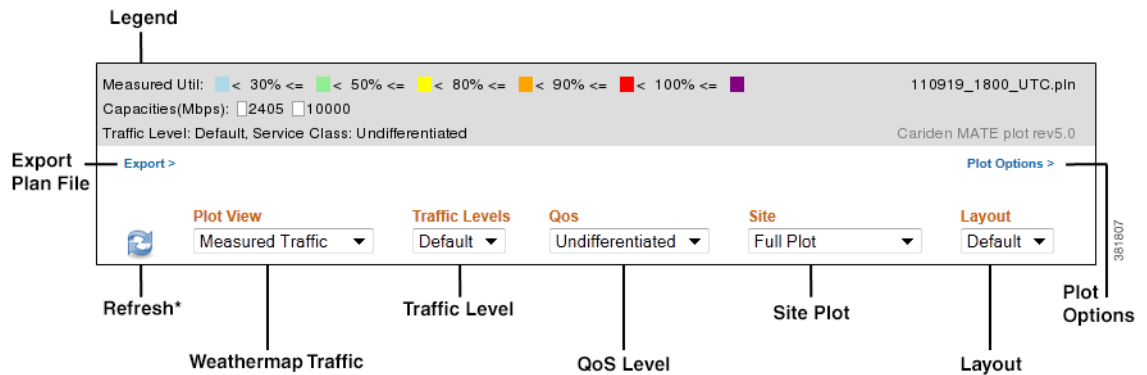
You must press Refresh after each selection from a drop-down list.

Note   All traffic is displayed in Mbps. In the weathermap, the traffic utilization colors represent outbound traffic.

Table 2-1   Map Control Panel

Toolbar Item	Description
Export	Click to save the file to a location of your choice. You can then open this file either here or in the WAE Design GUI. This option is also available below the time-sequence plots.
Plot Options	Enables you to modify visual attributes of the weathermap on a per-user basis. See the Set Plot Options section.
Refresh	Click to refresh the weathermap after making a selection from any of the drop-down lists.
Plot View	Displays a list of available traffic to display in the weathermap. The choices include non-failure states of measured traffic, simulated traffic, or LSP reservation traffic, as well as weathermaps based on simulated failures showing worst-case scenarios or failure impact.
Traffic Levels	Displays a list of available traffic levels for viewing. For example, you might have a peak traffic level or a morning traffic level. The names vary according to how they are named in the plan file.
QoS	Displays the type of traffic to view in the weathermap as differentiated by the QoS model. • Undifferentiated traffic—Aggregate traffic on an interface. • Service class—Interface traffic belonging to the selected service class. Service classes are network-wide, and are administratively defined and mapped to specific queues. Examples might include voice, video, and Internet. • Queue—Interface traffic belonging to the selected queue as configured on the router.

Toolbar Item	Description
Site	Displays a list of sites available for viewing, as well as the entire weathermap (full plot).
Layout	Displays a list of available weathermap layouts. Example layouts might include schematic layouts, geographic layouts, or separate layouts for different continents.

Set Plot Options

You can modify the visual attributes of the circuits and plot via the Plot Options dialog box. Options are retained for future sessions. Note that although an administrator can set these options on a per-archive basis, you can override those settings using the Plot Options link that is located just below the weathermap. For detailed information about the effects of plot options, see the *WAE Network Visualization Guide*.

Administrative Plot Options	Per-User Plot Options
1. Click the ADMIN link at the top of the home page. 2. Select the appropriate archive. 3. Click Edit Configuration. 4. Select Plot Settings (at top).	Select the Plot Options link just below the Legend in the Map page.

- Circuit Width—The circuit width is based on its capacity (the higher the capacity, the wider the circuit). Using these options, you can set the minimum width and the capacity it represents, as well as how fast the width grows as the capacity grows.

- Interface Text—By default, there is no text on the interfaces. Using this option, you can display the percentage of interface filled with traffic, or the interface name, IP address, or IGP metric.

- Parallel Grouping—This option enables you to simplify the visual display by grouping circuits that are parallel in nature using any of the following methods. The worst or highest utilization displays for the grouping, thus enabling you to see congestion.

  - None—Each parallel circuit is displayed as a separate circuit (default).

  - Node—Groups parallel circuits between two nodes.

  - Metric—Groups parallel circuits between two nodes whose interfaces have the same IGP metric.

  - Site—Groups parallel circuits between two sites.

  - SRLG—Groups parallel circuits that belong to the same SRLG.

  - Group Name—Groups circuits belonging to a user-specified group.

  There is also an option to set the maximum display width for parallel circuits.

- Show QoS Bounds—This option enables you to toggle on/off the display of QoS bounds, which is the maximum interface capacity available without violating the QoS requirements. The default is On.

View Time-Sequence Plots

Step 1   Enter the URL path to the archive in the browser URL, which takes you to the home page.

Step 2   Click on the time frame that you want to view: Year, Month, Week, or Day. Time-sequence plots for that time period appear (Figure 2-3).

The Y-axis shows the names of the time-sequence plots. The defaults are as follows.

- Max Util—Utilization of the five most heavily used circuits in the network.

- Total Traffic—Sum of traffic on all interfaces.

- Metric Event for Interfaces—Interfaces going up, down, and their capacity changes.

- Metric Event for Metric Changes—Nodes going up and down.

The X-axis shows the time and is located at the bottom of the time-sequence plot. The default time is UTC.

Historic activity is shown on the left of the display, and predicted traffic (optional) is shown on the right with a gray background. Predicted data points are generated based on the previous day's network activity and the current network topology and configuration. For example, if there was a network failure, this portion of the plot might show how the network would respond against a repeat of the previous day's traffic loads. This tool is very useful for predicting and anticipating congestion problems that might occur in the event of a network failure or during planned equipment downtime for maintenance.

This is an interactive plot where you can mouse over to obtain additional information.

- To view an actual value (for instance, the Max Util), move the mouse over a specific data point. As you do, the Panel Legend displays the value associated with that data point.

- To view descriptive information, move the mouse over a specific data point. A tooltip (popup window) appears displaying information about that data point. For example, moving the cursor over a spike utilization point gives you the network interface associated with that spike. If you do not see a tooltip, then the application has not been configured to show one.

Figure 2-3   Network Statistics Page Showing Time-Sequence Plots
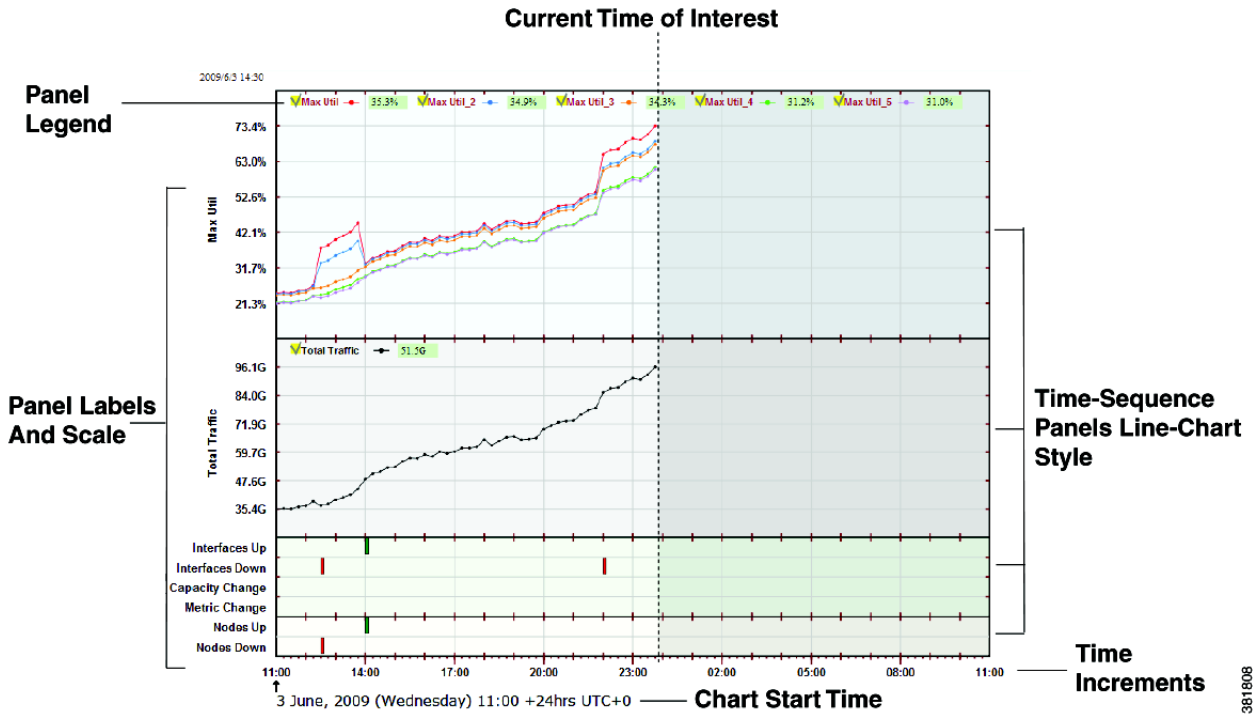
Navigation

You can easily navigate between different time scales from increments in minutes to years, as well as navigate between weathermaps and time-sequence plots.

Navigate Time Scales

On the top is a series of time-scale buttons for different time ranges. Whether in the Map or Network Statistics page, clicking on one of these takes you to the most recent time-sequence plot for that time increment.

Navigate to Specific Dates and Times

In either the Map or Network Statistics page, to go to a snapshot of a specific date, use the date mechanisms in the top left (Table 2-2).

Table 2-2   Navigate Dates and Times

To ...	Do This ...
Change date	Follow one of these steps in the Map or Network Statistics pages. • Enter the date directly into the Date/Time field in mm/dd/yyyy format, and press Enter. • Click the calendar icon. In the calendar, select the desired date.

Change time	Follow one of these steps in the Map or Network Statistics pages.
	
	• Enter the time directly into the Date/Time field after entering the date (mm/dd/yyyy) or enter just the time. Use a 24-hour format of hh:mm.
	
	• Click the calendar icon.
	
	  – Click the hour and minute fields to increase the time.
	
	  – Press and hold Shift while dragging the cursor over either the Hour or the Minute field. Move the cursor to the left to decrease the time or to the right to increase it.

View to the most recent point in time	Click the advance-to-end arrow in the Weathermaps or Network Statistics page. In a time-sequence plot, this becomes the time of interest.
Move forwards or backwards by one increment in time	Click the forward and back arrows (top left) to move forwards or backwards in time, respectively. • In the Weathermap page, this moves the snapshot by the time interval at which snapshots were taken and put into the archive. • In the Network Statistics page, this moves the time of interest by an increment of year, month, week, or day, depending on which increment you are viewing.
Change time of interest to any point in time	Click anywhere in a time-sequence plot.

Manage Settings

You can set application-wide parameters that affect the Map page, the Network Statistics page, or both, depending on the parameter. To change these settings, click the SETTINGS link in the upper, left corner, and a Settings dialog box appears.

• Time Zone—Controls weather time zone is local or user-specified UTC time zone, which you can select from the drop-down list. To change the time zone to local, select Local. To change the time zone to another, select UTC and then select the desired zone from the drop-down list.
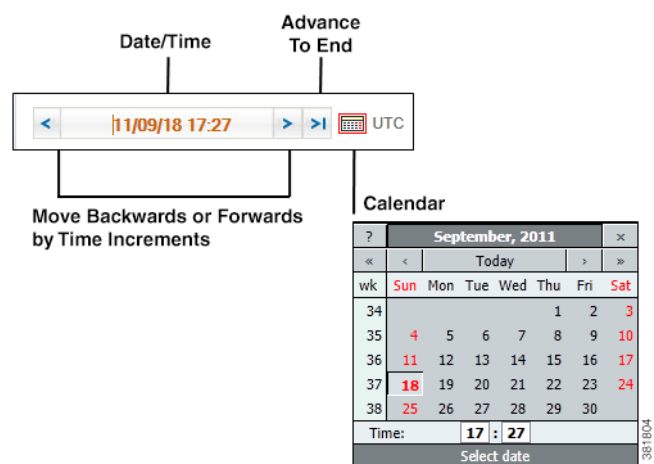
- Color—Controls the color depth of the weathermap to be either 8-bit or 32-bit. The 8-bit setting decreases the quality of the weathermap images, but increases the speed at which the image is transmitted, which can be helpful if you are viewing the archive remotely.

- Legend—Controls whether the legend at the bottom of weathermaps is displayed. The toolbar remains visible.

- Width—Smaller numbers reduce the size of the weathermap. Larger numbers increase the space on the left and right of the weathermap.

- Height—Smaller numbers reduce the size of the weathermap. Larger numbers increase the space above and below of the weathermap.

- Enable interactivity (SVG)—Controls the response to mouse clicks in the Network Statistics page. If this is disabled, mouse clicks are disabled and the image is downloaded to the browser in PNG format, instead of SVG. This non-interactive display of network status might be useful if copying or saving the image locally.

- Refresh rate—Refreshes the weathermap in minute increments.

Managing the WAE Design Archive Application

WAE Design Archive is a web application that enables you to store, preview, and retrieve plan files gathered from numerous network snapshots. It shows both a weathermap and time-sequence plots of the network data.

This chapter is divided into these topics, which are specific to managing the WAE Design Archive application.

- Customize the Home Page
- Customize Weathermaps
- Customize Visual Format Files

Note Use the System UI page to manage users.

Customize the Home Page

You can customize the WAE Design Archive application home page in several ways.

- Group archives together for easy access.
- Add custom content that appears next to each archive and points to either an HTML file or URL.

Visually Group Archives

You can group archives together so that they can be easily identified on the WAE Design Archive home page. Doing so creates a group icon and name with an associated list from which users can select.

To add archives to an existing group, use the `archive_config` tool with these options.

- `-action edit`—Edit the archive to place it in a group for display on the WAE Design Archive home page.
- `-name <value>`—Name of the archive.
- `-group-name <value>`—Name of the group. If this group does not exist, it is created.

Example: This groups an archive named "Backbone" within a group named "Chicago."

```
archive_config -action edit -name Backbone -group-name Chicago
```

Add Custom Content

You can add custom information that is displayed next to the archive name on the WAE Design Archive home page. This custom content includes a name (text that appears next to the archive) and a link to either an HTML file or a URL. The HTML content is then interpreted and output to the WAE Design Archive home page.

Example: The content name is "Status." The link is to an HTML file with the following contents.

OK

The home page would have the following custom content for the specified archive.

Status: **OK**

To add this custom content, use the `archive_config` tool with the following options.

- `-action edit`—Edit the archive to add custom information next to its displayed name on the WAE Design Archive home page.
- `-name`—Name of the archive.
- `-custom-archive-content-name`—Custom content name, which is text that appears next to the archive.
- Use one of these two options.
    - `-custom-archive-content-html`—Points to an HTML file location.
    - `-custom-archive-content-url`—Points to a URL.

Additionally, two system variables are available.

- `$archive_name`—Name of the archive.
- `$latest_snapshot_datetime`—Snapshot file that was most recently inserted into the archive repository.

Examples: Refer to Figure 3-1 for the output of the following two customization examples.

- Create custom content with "Snapshot Status" as the name. It outputs HTML file information about the latest snapshot status. The archive name is "Backbone."

```
archive_config -action edit -name Backbone -custom-archive-content-name "Snapshot
status" -custom-archive-content-html
/noc/$archive_name-$latest_snapshot_datetime-status.html
```

- For the same archive, create another custom content named "Operation team contact details" that links to a URL of associated information.

```
archive_config -action -edit -name Backbone -custom-content-name "Operation team
contact details" -custom-archive-content-url
"http://acme_company/noc.html?archive_name=$archive_name"
```

Figure 3-1   Example Customized Home Page
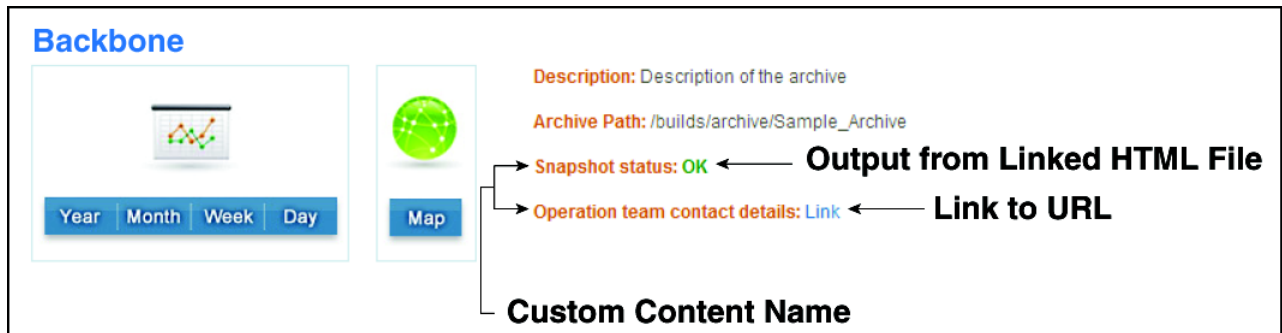
Customize Weathermaps

Set Plot Options for All Users

You can set up and later modify the visual attributes of the circuits and weathermaps on a per-archive basis. These changes affect all users on a per-archive basis. However, a user has the option to override these settings.

Step 1   In the main window, click on the ADMIN link. The Administration dialog box appears with a list of available archives.

    a.   Select the archive on which you want to set these parameters.

    b.   Click Edit Configuration.

Step 2   Click Plot Settings tab. The Plot Layout Options dialog box appears.

Step 3   Modify the values as needed. For a description of each of these values, see the Using WAE Design Archive chapter.

Add Popup Windows

You can add popup windows to show interfaces, nodes, and sites in the weathermap. The popup windows display information about the selected component, such as the endpoint nodes for an interface, the vendor and model for a single node, or location and node count for sites. You can also specify their visual appearance, such as size.

The content and appearance of the popup windows are defined in a weathermap visual format file, which contains the following tables. If a table is empty, no popup tooltip is displayed.

- `<InterfaceTooltipFormat>` (Table 3-1)
- `<NodeTooltipFormat>` (Table 3-2)
- `<SiteTooltipFormat>`
- `<TooltipAppearanceParams>`

The first three tables have three columns each.

- Heading—Text label

- SQL Expression—Queries columns in the `table_extract` file
- Type—Defines the data type; can have the following values.
    - string—Text string to display
    - img—URL reference to an image; implemented as `<img src='url'/>`
    - url—URL reference; implemented as: `<a href='url'>Header-value</a>`

Table 3-1   <InterfaceTooltipFormat>

Heading	SQLExpression	Type
From	Node || '|' || Interface	string
To	RemoteNode || '|' || Interface	string
Description	Description	string

- From—Selects the name of the source endpoint for the Node or Interfaces columns in the `<Interfaces>` table residing in the report file.
- To—Selects the name of the destination endpoint for the Node or Interfaces columns in the `<Interfaces>` table residing in the report file.
- Description—Adds text from the Description column in the Interfaces table residing in the report file.

The `default_weathermap_visual_format.txt` file in the `$CARIDEN_HOME/etc/archive` directory contains sample popup definitions.

Table 3-2 and Table 3-3 show definitions for the nodes and sites. Each provides a test header for the popup, the column to query, and the data type. Each of the entries in the SQLExpression column are valid names in the corresponding `<Nodes>` and `<Sites>` tables.

Table 3-2   <NodeTooltipFormat>

Heading	SQLExpression	Type
Node Name	Name	string
Description	Description	string
Vendor	Vendor	string
Model	Model	string

Table 3-3   <SiteTooltipFormat>

Heading	SQLExpression	Type
Name	Name	string
Location Code	LocationCode	string
Node Count	NodeCount	string

The `<TooltipAppearanceParams>` table (Table 3-4) identifies the size of the popup, its margin, and type.

Table 3-4   <TooltipAppearanceParams>

Attribute	Value	Type
PopupWidth	350	numeric
PopupHeight	200	numeric
ContentMargin	5	numeric
BgColor	#B8BFD8	string

The attribute names describe the size of the popup and its margin. These are fixed values and cannot be changed.

The ContentMargin is the margin (in pixels) around the edge of the popup.

Customize Visual Format Files

In WAE Design Archive, the time-sequence plots displayed in the Network Statistics view are based on both `timeplot_summary_format` and `timeplot_visual_format` files. Dynamic features of the time-sequence plots, such as pop-ups, are not available when they are created directly using the `time_plot` tool.

- `timeplot_summary_format.txt`—Extracts information from archive plan files by running an SQL query on the archive database. These parameters identify what is available for viewing in the web browser. If this file is not saved in the archive, the `default_timeplot_summary_format.txt` file in the `$CARIDEN_HOME/etc/archive` directory is used.

- `timeplot_visual_format.txt`—Identifies how the web browser displays summary data (`timeplot_summary_format.txt`) from that archive. The default file name is `default_timeplot_visual_format.txt` and is stored in the `$CARIDEN_HOME/etc/archive` directory. It uses two tables: `<Panels>` and `<PlotData>`.

  WAE Design Archive uses a single visualization format for all archives. You can override this behavior by copying different visual format files into the root directory of each archive.

Panels

For WAE Design Archive, the `<Panels>` table in the `timeplot_visual_format.txt` file identifies the panels (plot regions) displayed. Each row defines a separate panel.

Table 3-5   <Panels> Table

Number	Type	Heading	Height	Color
1	UtilPlot	Max Util	250	lightblue
2	TrafficPlot	Total Traffic		gray
3	EventPlot	Link Events		lightgreen
4	DotPlot	Node Events		

- Number—Panel number that determines the order in which the panel appears; for each panel number, there must be an associated PanelNum in the `<PlotData>` table.

- Type—Type of plots in the panel. Each plot type interprets the summary data and the `<PlotData>` columns. See Panel Types.

- Heading—Name of the panel.

- Height—Height of the panel in pixels.

- Color—Color of the panel background using standard HTML color definitions or RGB values. For example, red = #FF0000. For a reference to HTML colors, see http://www.w3schools.com/html/html_colornames.asp.

- MinValue—Minimum value of the Y-axis. If omitted, this value scales to the data; only valid for UtilPlot, ProportionPlot, and BarGraphPlot.

- URL—This column is not used.

Panel Types

The panel types determine how the summary data assigned to each panel is plotted.

- TrafficPlot—Displays traffic values; similar to UtilPlot, but the Y-axis is in bits per second (bps).

- CumTrafficPlot—Displays traffic values with plots stacked on top of each other to show cumulative traffic totals.

- ProportionPlot—Displays cumulative traffic with an overall total that is scaled to 100%. An example application is to show proportions of traffic entering or leaving the data from particular peers.

- BarGraphPlot—Shows utilizations or values represented as percentages; utilizations are shown as bars. Otherwise, this plot is similar to UtilPlot.

- EventPlot—If there are one or more entries in the referenced group in the summary table, a tick mark is displayed in the plot. The only relevant column in the summary table is the Details column. If the mouse is held over the data point, a pop-up displays the first few entries in this column.

  The above example `<Panels>` tables uses EventPlot to mark changes in the plot topology: nodes and interfaces added or removed, capacities and metrics changed. In this case, the Details column defined in the query section of `timeplot_summary_format` file provides details of all the changes. Refer to the Interfaces Up query in the `default_timeplot_summary_format.txt` file as an example of how the Details column is defined.

- DotPlot—Similar to the EventPlot, except that instead of a data point, a column of dots equal to the number of rows assigned to the displayed group is shown. If small numbers of events are expected, the dot plot can provide more immediate detail. Refer to the MaxUtilMeas group in the `default_timeplot_summary_format.txt` file. This query returns the top five utilized interfaces. The results are going to be five plot lines with the same grouping that is MaxUtilMeas. As a result, the label will be Label_1 through Label_5.

- EventBarPlot—Similar to the EventPlot and DotPlot, except instead of a dot, a filled colored bar graph with a height that represents the number of rows in the displayed group. The color is defined in the `<PlotData>` table.

- Spacer—Creates space between panels, with height equal to the `Height` setting.

Plot Data

The `<PlotData>` table in the `timeplot_visual_format.txt` file specifies which parameters the `timeplot_summary_format` file should query for and display in the web browser. Each row defines a separate plot and a distinct query.

Table 3-6   ***<PlotData> Table***

PanelNum	Group	Label	Color	Aggregation
1	MaxUtil			Max
2	TotalTraffic	Total Traffic	black	
3	AddedInterface	Added Interfaces	green	
3	RemovedInterface	Removed Interfaces	red	
3	CapacityChange	Capacity Change	blue	
3	MetricChange	Metric Change	blue	
4	AddedNode	Added Nodes	green	
4	RemovedNode	Removed Nodes	red	

- PanelNum—Number of the panel assigned to the time-sequence plot. This number must also exist as a Number parameter in the `<Plot>` table.

- Group—Reference to the parameter in the summary file containing data that is plotted. For instance, row 2 (panel 2) in Table 3-6 identifies that the second panel shows the total traffic. This value must be in the `timeplot_summary_format` file, which then queries the archive for this information and displays it in the web browser.

- Label—Label that distinguishes between multiple time-sequence plots that are in the same group across summary files. If multiple labels have the same name they are renamed label, label_2, label_3, etc, in the sequential order they appear in the file.

- Color—Color of the line, data point, or other marking for the data that is plotted.

- Aggregation—Specifies how values in the `timeplot_summary_format` file are aggregated for week, month, and year time-sequence plots. The default is Avg (average) for all plots. The exception is the DotPlot, which defaults to Sum (summary). Options are Avg, Min, Max, and Sum.

- URL—This column is not used.

Customize Summary Files

The `timeplot_summary_format.txt` file extracts information from archive plan files by running an SQL query on the archive database. These parameters identify what is available for viewing in the web browser. If this file is not saved in the archive, the `default_timeplot_summary_format.txt` file in the `$CARIDEN_HOME/etc/archive` directory is used. The time-sequence plots displayed in the Network Statistics view are based on both `timeplot_summary_format.txt` and `timeplot_visual_format.txt` files.

Summary files contain the measured or simulated data that you want to plot using either the application or the `time_plot` CLI tool. Summary files for an archive are automatically generated every time a plan is inserted into the archive using `archive_insert`. The summary file is created using rules in the summary format file that is saved in the archive, using `archive_init`.

You can also manually create a summary file using `mate_summary` and then insert the summary file using `archive_insert`. This is not generally required, but is illustrated here to show how a summary file is constructed from a summary format.

To manually create a summary file, first create a report that contains the relevant tables from the plan, and then extract the summary information from the report file. The `table_extract` tool creates a report file from a plan file, and the `mate_summary` tool queries the report to produce the summary file.

Customize the Summary Format

The `mate_summary` tool uses a summary format file to generate a summary file, which generally contains selected data that you want to subsequently display in a time-sequence plot. The default summary format file, which is located in the `$CARIDEN_HOME/etc` directory, is used to explain how a summary format file is used to generate a summary file. Table 3-7 shows an excerpt from the default summary file, which defines queries for maximum utilization of measured traffic and totals for measured traffic.

Table 3-7   <Summary Format> Table Excerpt

Group	SQL
# The top 5 utilized	
MaxUtilMeas	SELECT 'Max Util' AS Label, Node|'|'||Interface|'|'||RemoteNode AS Details, UtilMeas AS Value
MaxUtilMeas	FROM Interfaces
MaxUtilMeas	ORDER BY UtilMeas DESC
MaxUtilMeas	LIMIT 5;
# The total traffic	
TotalTrafficMeas	SELECT 'Total Traffic' AS Label, Sum(TraffMeas) AS Value
TotalTrafficMeas	FROM Interfaces;

Table 3-8 shows the contents of the summary file produced by the example in the previous section, `us_wan_sum.txt`.

Table 3-8   <Summary> Table Excerpt

Group	Label	Details	Value
MaxUtilMeas	Max Util	cr2.wdc|{to_cr1.nyc}|cr1.nyc	76.29
MaxUtilMeas	Max Util	cr1.nyc|{to_cr2.wdc}|cr2.wdc	72.17
MaxUtilMeas	Max Util	cr2.nyc|{to_cr1.chi}|cr1.chi	65.57
MaxUtilMeas	Max Util	cr1.chi|{to_cr2.nyc}|cr2.nyc	63.75
MaxUtilMeas	Max Util	cr2.sjc|{to_cr2.lax}|cr2.lax	58.03
TotalTrafficMeas	Total Traffic		58391.57
AddedInterface		cr1.chi|{to_cr2.sea}	
AddedInterface		cr2.sea|{to_cr1.chi}	

The summary format file is in a WAE Design table format. It must contain a table called <SummaryFormat> with Group and SQL columns. Each row specifies an SQL query that generates zero or more rows of the <Summary> table. These rows are appended to the <Summary> table, one after the

other. The particular implementation of SQL is described in the in the *WAE Design Integration and Development Guide*. The query is performed by `mate_summary` on tables passed to it, the `table-file` and, and, optionally, the `old-table-file`. Typically, as in the example above, these tables are generated from a plan file using `table_extract`. This is the method that `archive_insert` uses to generate summary files.

The summary file also uses the WAE Design table format, containing the `<Summary>` table with columns defined by the queries in the summary format. Particular columns (Group, Label, Value, Details) are used by Archive to display time-sequence plots of this information in a web browser.

The tables available to the SQL queries in the summary format file are the following.

- `<TableName>`, for each table in the `table-file`.

  These tables contain exactly the columns of the corresponding tables in the `table-file`. Examples used in the summary format above are the `<Interfaces>` and `<Nodes>` tables. The `<Interfaces>` table, for example, contains the columns Node, Interface, RemoteNode, and UtilMeas.

- `Old_<TableName>`, for each table in the `old-table-file`.

  These tables contain exactly the columns of the corresponding tables in the `old-table-file`, if it is specified.

- `Joined_<TableName>`, for each object table in the `table-file`. These tables are listed in the *WAE Design Integration and Development Guide*, and they contain following columns. For key column information, refer to the `$CARIDEN_HOME/docs/table_schema.html` file.

  - `<ColumnName>`, for each column name in `<TableName>` in the `table-file`,

  - `Old_<ColumnName>`, for each column name `<TableName>` in the `old-table-file`.

    That is, `Joined_<TableName>` is the result of a an *outer join* between the two tables, matching rows by the key columns. This means that the table contains the union of the rows in the two tables. The join fills in NULL entries for `TableName` rows that are not in `Old_TableName`, and for `Old_TableName` rows that are not in `TableName`. This is used by the example summary format shown above to list the names of the added and removed nodes and interfaces in the plan, compared to the old plan.

An example is the `Joined_Interfaces` table.

A special case is the `Joined_Interfaces_IP` table, which is defined in the same way as `Joined_Interfaces`, except that

- The tables are joined on Node and IP Address, rather than Node and Interface.

- Entries with blank IP Address in the `<Interfaces>` table are removed.

`Joined_Interfaces_IP` is used in the default summary format to signal changes in interface settings. It has been found generally more reliable to match interfaces across time using the IP Address tables than using the Interface name. Note that `copy_from_template` also, by default, matches interfaces between plans using the IP Address.

Related Topics

- *WAE Network Visualization Guide*

- *WAE System Administration Guide*

- *WAE Design Integration and Development Guide*

WAE Design GUI and Remote WAE Design Archive

Plan files and templates are stored in archive repositories, which can be installed on a different device than the one on which the WAE Design GUI is used. From the WAE Design GUI, you can extract .pln plan files from remote archive directories, make whatever modifications are necessary, and re-insert them as .pln files into an archive used by the WAE Design Archive application. You can also open, modify, and then save a remote archive template.

Note The recommendation is to open the remote plan file, modify it to create the visual template, and save it to the remote archive as a template. When uploading a template to a remote archive, you are overwriting the template that is in the archive.

Access Remote WAE Design Archive

Prerequisites

You must have an admin role assigned to you through the web System UI, and you must know that username and password.

Save and Clear Settings

- To save all settings for use the next time you open the remote access dialog box, click Save Settings. This saves all settings whether the fields and all entries in the drop-down lists are empty or not. You can optionally save the authentication password.

- To clear all current user-specified settings from the fields and from the drop-down lists, click Clear Settings. Note that this does not clear the default Protocol, Port, and UTC Offset fields, though manual entries in these fields are cleared.

- To delete all user-specific settings so the next time you open the remote access dialog box all fields and all drop-down lists are empty (except for the default Protocol, Port, and UTC Offset values), follow these steps.

    1. Click Clear Settings.
    2. Ensure Save Settings is enabled.

3. Click OK to exit. Upon being prompted for whether to continue, click Yes.

Access Remote Archive

Step 1   In the WAE Design GUI, use the file menu to start the process.

- To open a WAE Design Archive plan file or template from a remote archive directory, select the File->Open from->Design Archive menu.
- To save a WAE Design Archive plan file or template in a remote archive directory, select the File->Save to->Design Archive menu. You must have an administrative username and password to upload plan files or templates.

Step 2   After opening the dialog box, enter or select the hostname or IP address of the server.

Step 3   Identify how to connect to the server by selecting the appropriate protocol and entering or selecting the port number (for example, HTTP 8080).

Step 4   Enter or select the name of the archive you are accessing.

Step 5   Enter the username and password that gives you access to the server. Both are case sensitive. If you do not know the password, contact your web system administrator. You must have an admin role assigned to you.

Step 6   Enter the UTC offset to apply to the date specified in the "Plan at Time" field. If you do not enter a date, the file is opened or saved according the server's UTC time.

Step 7   If opening a plan file, identify which one by the latest or by a specific time.

If saving a plan file, identify the time as current or as a specific time.

If entering a time, use the YY/MM/DD HH:MM format.

If opening or saving a template, select the Template option.

Then click OK.

Upload Templates from WAE Design Archive UI

Step 1   From the WAE Design Archive home page, select the ADMIN link.

Step 2   Select the archive into which you are uploading the template, and then click Edit Configuration.

Step 3   In the Upload Template dialog box, the archive directory name on the server and the current template name appear.

Browse to or enter the name of the local file to be used as the new template, and click Upload.