

Solace PubSub+ Monitor User's Guide

Version 5.2



RTView Enterprise®

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RTView®

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Preface

Welcome to the *Solace PubSub+ Monitor User's Guide*.

Read this preface for an overview of the information provided in this guide and the documentation conventions used throughout, additional reading, and contact information. This preface includes the following sections:

- [“About This Guide”](#)
- [“Additional Resources”](#)
- [“Contacting SL”](#)

About This Guide

The *Solace PubSub+ Monitor User's Guide* describes how to install, configure and use the Monitor.

Document Conventions

This guide uses the following standard set of typographical conventions.

Convention	Meaning
<i>italics</i>	Within text, new terms and emphasized words appear in italic typeface.
boldface	Within text, directory paths, file names, commands and GUI controls appear in bold typeface.
Courier	Code examples appear in Courier font: amnesiac > enable amnesiac # configure terminal
< >	Values that you specify appear in angle brackets: interface <ipaddress>

Additional Resources

This section describes resources that supplement the information in this guide. It includes the following information:

- [“Release Notes”](#)
- [“Documentation and Support Knowledge Base”](#)

Release Notes

The Release Notes document, which is available on the SL Technical Support site at <http://www.sl.com/support/>, supplements the information in this user guide.

Documentation and Support Knowledge Base

For a complete list and the most current version of SL documentation, visit the SL Support Web site located at <http://www.sl.com/support/documentation/>. The SL Knowledge Base is a database of known issues, how-to documents, system requirements, and common error messages. You can browse titles or search for keywords and strings. To access the SL Knowledge Base, log in to the SL Support site located at <http://www.sl.com/support/>.

Contacting SL

This section describes how to contact departments within SL.

Internet

You can learn about SL products at <http://www.sl.com>.

Technical Support

If you have problems installing, using, or replacing SL products, contact SL Support or your channel partner who provides support. To contact SL Support, open a trouble ticket by calling 415 927 8400 in the United States and Canada or +1 415 927 8400 outside the United States.

You can also go to <http://www.sl.com/support/>.

CHAPTER 1 Quick Start

These instructions are for those customers who wish to evaluate the Solace PubSub+ Monitor for purchase. These are the minimum steps required to gather monitoring data and get the Monitor up and running. Default settings are used and Apache Tomcat, which is delivered with the Monitor, is preconfigured as the default application server.

After you complete your evaluation, if you wish to setup and use all monitoring features in your organization, see ["Configuration"](#).

Prerequisites

- Obtain login credentials for each Solace broker you wish to monitor.
- Java JDK 1.8 64 bit
- Set the **JAVA_HOME** environment variable to point to your Java installation. For example:

UNIX

```
export JAVA_HOME=/opt/Java/jdk1.8.0
```

Windows

```
set JAVA_HOME=C:\Java\jdk1.8.0
```

- Linux Users:
 - These instructions require a Bourne-compatible shell.
 - **JAVA_HOME** is required to be in the **PATH** for Tomcat to start correctly.

To evaluate Solace PubSub+ Monitor:

1. Download **SolacePubSubMonitor_<version>.zip** to your local server and extract the files: **unzip -a SolacePubSubMonitor_<version>.zip**

Important: On UNIX systems it is a requirement that the installation directory path not contain spaces.

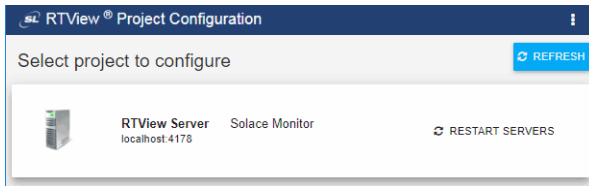
2. Navigate to the **SolacePubSubMonitor/bin** directory and execute **./start_servers.sh -eval** (**start_servers.bat -eval** in Windows).


NOTE: To stop the PubSub+ Monitor when it's running in evaluation mode, execute **./start_servers.sh -eval** (**start_servers.bat -eval** in Windows).

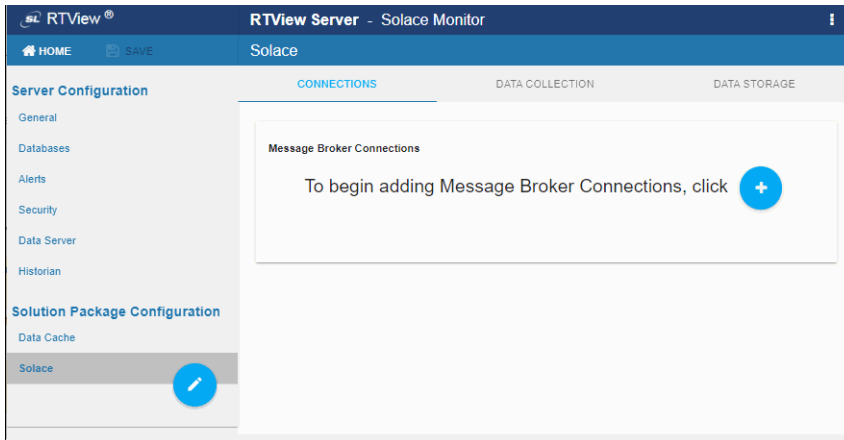
3. Browse to the following URL and login (**rtvadmin/rtvadmin**) to open the RTView Configuration Application **HOME** page:
 - **http://IPAddress:8068/rtview-solmon-rtvadmin** if you are executing your browser on a different host than where the monitor is running.
 - **http://localhost:8068/rtview-solmon-rtvadmin** if you are executing your browser in the same host where the monitor is running.



Quick Start



4. Select the **Solace Monitor** project to open the **Solace** configuration page.



5. Select **Solace** in the navigation tree (left panel), then click  to add a broker connection.



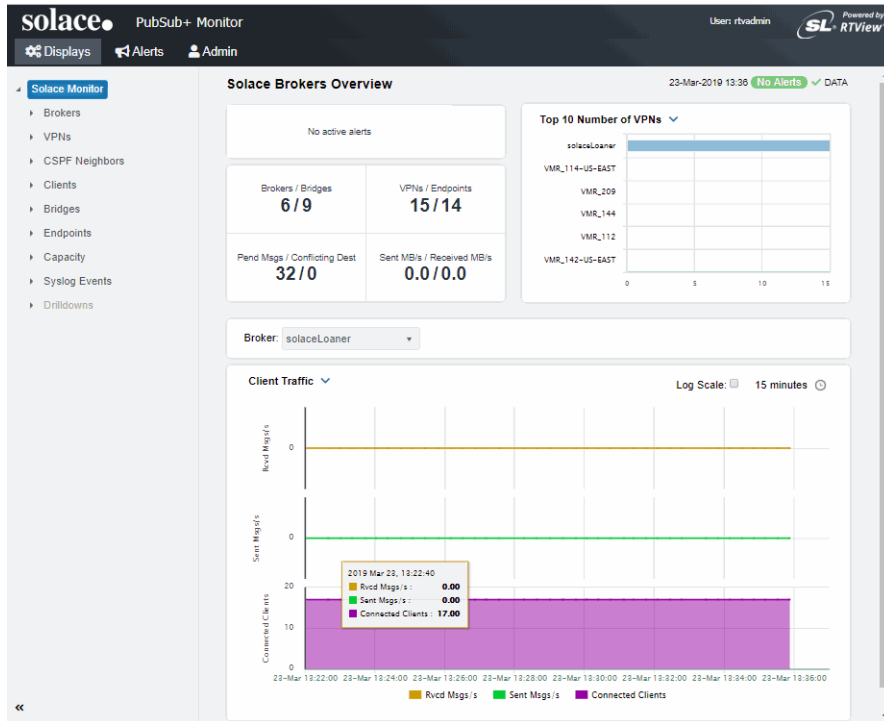
6. In the **Add Connection** dialog, toggle ON either HA Pair or Standalone Broker and make the following entries:
 - **HA Pair:** Enter the **Connection Name**, **Primary** and **Backup URLs**, **Username** and **Passwords**. Turn on the **SSL Connection** toggle if your broker pair is SSL Secured.
 - **Standalone Broker:** First select the Edition.
 - For Cloud Service Brokers, enter the **Connection Name**, **URL**, **Username**, **Password**, **SEMP Version*** and **VPN Name**. Turn on the **SSL Connection** toggle if your broker is SSL Secured. See ["Obtain SEMP Version"](#) for instructions about getting the SEMP version installed in your message brokers.
 - For Non-Cloud Service Brokers, enter the **Connection Name**, **Host:Port**, **Username** and **Password**. If the broker is secured, the **URL** should use **https** instead of **http**.
7. Repeat these steps to add more brokers and when finished, click  to close the dialog and  (in title bar) to save your settings.

The connections you created are listed in the **Connections** tab. For the HA Pair, the connection string for the backup broker will have **"-standby"** concatenated to it.
8. If you turn on the **SSL Secured** option for any of your connections, select **SECURITY** (in the navigation tree) and fill in the **SSL Credentials** section with the appropriate **Truststore** and **Truststore Password** values for your Brokers.
9. Click  (in title bar) to save your settings.
10. Click  to apply changes. The data server will be available again in 10-15 seconds.

11. Browse to the Solace PubSub+ Monitor and login (username/password are **rtvadmin/rtvadmin**):

http://IPAddress:8068/rtview-solmon if you are running the monitor remotely

http://localhost:8068/rtview-solmon if you are running the monitor locally



You should now see monitoring data. If you encounter issues, check the log files in the **SolacePubSubMonitor/projects/rtview-server/log** directory for errors.

You have completed the Quick Start!

12. To stop the PubSub+ Monitor, execute **./start_servers.sh -eval (start_servers.bat -eval in Windows)**.

If you wish to setup and use all monitoring features in your organization, proceed to ["Configuration"](#).

CHAPTER 2 Introduction to the Monitor

This section contains the following:

- [“Overview,”](#) next
- [“System Requirements”](#)
- [“Install PubSub+ Monitor”](#)
- [“Upgrade PubSub+ Monitor”](#)

Overview

The Solace PubSub+ Monitor is an easy to configure and use monitoring system that gives you extensive visibility into the health and performance of your Solace brokers and the infrastructure that relies on them.

The Solace PubSub+ Monitor enables Solace users to continually assess and analyze the health and performance of their infrastructure, gain early warning of issues with historical context, and effectively plan for capacity of their messaging system. It does so by aggregating and analyzing key performance metrics across all broker versions, bridges, endpoints and clients, and presents the results, in real time, through meaningful dashboards as data is collected.

Users also benefit from predefined dashboards and alerts that pin-point critical areas to monitor in most environments, and allow for customization of thresholds to let users fine-tune when alert events should be activated.

The Solace PubSub+ Monitor also contains alert management features so that the life cycle of an alert event can be managed to proper resolution. All of these features allow you to know exactly what is going on at any given point, analyze the historical trends of the key metrics, and respond to issues before they can degrade service levels in high-volume, high-transaction environments.

Solace PubSub+ Monitor is comprised of the following which you access with a browser:

- Solace PubSub+ Monitor, which monitors Solace performance metrics and used by teams to monitor the health of Solace components (brokers, bridges, clients, endpoints and VPNs).
- [“RTView Manager”](#), an application which administrators use to monitor the health of Solace PubSub+ Monitor components. That is, to monitor components of the monitoring system itself (RTView servers, JVMs, Tomcat servers, hosts and alert settings for these components). RTView Manager is installed with Solace PubSub+ Monitor and requires minimal setup.
- RTView Configuration Application, which administrators use to configure the majority of the monitoring system. For details, see [“Configuration”](#).

You can monitor Syslog events from PubSub+ message brokers using the Solace Event Module application. See [“”](#) for details.

You can also install the monitor as a Solution Package (rather than a standalone product). See [“Solution Package Version”](#) for details.

Solace PubSub+ Monitor

To evaluate the Solace PubSub+ Monitor, go to [“Quick Start”](#) to get up and running with Solace PubSub+ Monitor using default settings.

Solution Package Version

The Solace PubSub+ Monitor can also be installed as a Solution Package within the RTView® Enterprise product. RTView Enterprise is an end-to-end monitoring platform that allows application support teams to understand how infrastructure, middleware, and application performance data affect the availability and health of the entire system. Used as a Solution Package within RTView Enterprise, the Solace metrics are but one source of data, among many other sources (solution packages are available for TIBCO EMS, Amazon CloudWatch, TIBCO BusinessWorks, MicroSoft SQL and many others), that determine the entire health state of the application.

For more information about RTView® Enterprise, see the *RTView Enterprise User's Guide*, available at <http://www.sl.com/support/documentation/>.

System Requirements

For browser support, hardware requirements, JVM support and other system requirement information, please refer to the **README_sysreq.txt** file from your product installation. A copy of this file is also available on the product download page.

Install PubSub+ Monitor

See [“Upgrade PubSub+ Monitor”](#) if you are upgrading from an earlier version of Solace PubSub+ Monitor.

To install Solace PubSub+ Monitor, download the **SolacePubSubMonitor_<version>.zip** file and unzip the **SolacePubSubMonitor_<version>.zip** file into a directory of your choosing. The **SolacePubSubMonitor/rtvapm/solmon** directory is auto-created after you unzip the file.

Important: On UNIX systems it is a requirement that the installation directory path not contain spaces.

File Extraction Considerations

On Windows systems, using the extraction wizard of some compression utilities might result in an extra top-level directory level based on the name of the .zip file. The additional directory is not needed because the .zip files already contain the **rtvapm** top-level directory. This extra directory must be removed before clicking the **Next** button that performs the final decompression.

On UNIX/Linux systems, use the -a option to properly extract text files.

Upgrade PubSub+ Monitor

This section describes the steps necessary to upgrade existing Solace PubSub+ Monitor applications. It is organized by version. To upgrade your application, follow the steps for each version between the version you are upgrading from and the version you are upgrading to. Note that this section does not include upgrade information for the Solution Package for Solace. This section includes:

- [“Solace PubSub+ Monitor v5.1.x”](#)
- [“Solace PubSub+ Monitor v5.0 and Earlier”](#) (previously referred to as “RTView Monitor for Solace”)

Solace PubSub+ Monitor v5.1.x

The Solace PubSub+ Monitor file structure has been refactored. Review the release note for TN23877 for a list of all changes.

1. Download the new deliverable and extract it in a new directory on the same system as your old deliverable.
2. In the new deliverable, make a backup copy of the **projects** directory.
3. In the new deliverable, make a backup copy of the **bin** directory.
4. If you have a permanent license, copy the following file from the old installation to the new installation: **rtvapm/rtview/lib/KEYS**
5. If you modified the scripts under **RTViewSolaceMonitor\bin** in the old installation, reapply those changes to the scripts under **SolacePubSubMonitor**. Do not copy the scripts from the old installation to the new installation as they have all changed to work with the new directory structure.
6. If you modified any files under **projects\custom** in your old installation:
 - The following files under **projects\custom** were changed between 5.1 and 5.2. If you modified them in your old installation, reapply the changes to the new versions of the following files:
 - **projects/custom/src/make_classes.bat**

- **projects/custom/src/make_classes.sh**
 - Copy any other java files you modified from **projects/custom/src/com/si/rtvapm/custom** in the old installation to the new.
 - Execute **make_classes.bat** or **make_classes.sh** in an initialized command prompt to rebuild your custom classes against the new release.
7. The following files under **projects/rtview-server** were changed between 5.1 and 5.2. If you modified them in your old installation, reapply the changes to the new versions of these files.
- **update_wars.bat**
 - **update_wars.sh**
8. Copy all files not mentioned in the previous step under **projects/rtview-server** from the old installation to the new installation.
9. Execute **projects/rtview-server/update_wars** in an initialized command prompt and copy the generated jars to **SolacePubSubMonitor/apache-tomcat-*-si/webapps** or your application server.
10. The following files under **projects/rtview-manager** were changed between 5.1 and 5.2. If you modified them in your old installation, reapply the changes to the new versions of these files:
- **update_wars.bat**
 - **update_wars.sh**
11. The following files under **projects/rtview-manager** were changed between 5.1 and 5.2. These are modified via the configuration application. Any changes you made to the **rtview-manager** via the configuration application in the previous release will be addressed in a later step.
- **project.properties**
 - **project.properties.json**
12. Copy all files not mentioned in the previous 2 steps under **projects/rtview-manager** from old to new.
13. Execute **projects/rtview-manager/update_wars** in an initialized command prompt and copy the generated jars to **SolacePubSubMonitor/apache-tomcat-*-si/webapps** or your application server.
14. In the previous installation, **projects/rtvservers.dat** was used for both **projects/rtview-server** and **projects/rtview-manager**. In the new installation, this has been split into **projects/rtview-server/rtvservers.dat** and **projects/-rtview-manager/rtvservers.dat**. If you modified the **projects/rtvservers.dat** in your previous installation, apply the Solace monitor changes to **projects/rtview-server/rtvservers.dat** and the RTView Manager changes to **projects/rtview-manager/rtvservers.dat**.

15.If you are using the Solace Event Module:

- Copy **rtvapm\solmon\soleventmodule\conf\soleventmodule.properties** from your old installation to your new installation to keep your old configuration. This configuration has been moved to the Solace **DATA COLLECTION** tab of the Configuration application. The next time you run the Configuration Application and save your properties files, the properties will be automatically transferred to **rtview-server/project.properties***. After that, the **soleventmodule.properties** file will no longer be used and all further configuration changes to the Solace Event Module must be done through the Configuration Application.
- Copy the **rtvapm\solmon\soleventmodule\config\log4j2.properties** file in your old installation to **projects\rtview-server\soleventmod.log4j2.properties** in the new installation. All further changes to the Solace Event Module logging configuration should be done in **projects\rtview-server\soleventmod.log4j2.properties**.

16.If using HSQLDB, copy **projects/DATA** in your old installation to **projects/DATA** and **projects/rtview-manager/DATA** in your new installation.

17.Add new **CacheMetric** column to your alert database as described in the release note for TN24246.

18.Alter the Solace history database tables as described in the release note for TN24464.

19.If your previous installation included LDAP integration

- Copy **apache-tomcat-*-sl/lib/ldapUser.jar** from the old installation to the new installation.
- Copy **apache-tomcat-*-sl/conf/server.xml** from the old installation to the new installation.
- Copy **apache-tomcat-*-sl/conf/Catalina.properties** from the old installation to the new installation.

20.If you modified **rtvapm/common/conf/sl.log4j.properties** in your old installation, copy the **sl.log4j.properties** file from your old installation to **projects/sl.log4j.properties**. All changes to the logging configuration should be made in **projects/sl.log4j.properties**.

21.Start up the new installation using the **start_servers** script under **bin**.

22.If you entered secure connection properties in the RTView Configuration Application **CUSTOM PROPERTIES** tab, they will continue to work with no changes. However, it is recommended that you remove those properties from the **CUSTOM PROPERTIES** and enter them in the Solace **CONNECTIONS** tab for easier editing in the future. The **truststore** information can be entered on the **SECURITY** tab.

23.If you made changes to the **rtview-manager** using the configuration application in your previous installation:

- Open the configuration application at **http://localhost:3070/rtvadmin**.
- Use **rtvadmin/rtvadmin** for the login.
- Click **SAVE** at the top, the **Restart Servers** to save and apply your changes.
- Click on the **RTView Manager** server and reapply all changes you made in the previous version.

24. In the previous release, the RTView Manager was accessible at **<http://localhost:3070/rtview-manager-classic>** or **<http://localhost:8068/rtview-manager-classic>**. This has been replaced by the new HTML user interface which is available at:
<http://localhost:3070/rtview-manager> or **<http://localhost:8068/rtview-manager>**.

Solace PubSub+ Monitor v5.0 and Earlier

Users upgrading projects from the previous version must do the following:

Database Table Schemas

The database table schemas in the **rtvapm\solmon\dbconfig** directory have been updated to include all updated table schemas. To upgrade, drop the following database tables from the RTVHISTORY database:

- SOL_BRIDGE_STATS
- SOL_CSPF_NEIGHBOR
- SOL_VPNS
- SOL_CLIENT_STATS

Recreate the database tables using the appropriate table creation SQL sentence for your supported platform which are in the **rtvapm\solmon\dbconfig** directory.

RTView Configuration Application

The connection properties previously entered with the RTView Configuration Application are functional but not shown in this application correctly. To show connections properly in the RTView Configuration Application remove the past connections and recreate them in the RTView Configuration Application provided in this version of the Solace PubSub + Monitor.

CHAPTER 3 Configuration

This chapter describes how to setup Solace PubSub+ Monitor.

You first [“Setup Data Output Location”](#) (decide where you want to send and store your collected monitoring data).

Note: If you [“Output Data to PubSub+ Monitor”](#) you can then proceed to [“Optional Setup”](#) and take advantage of the many other Solace PubSub+ Monitor features.

This section contains:

- [“Setup Data Output Location”](#)
- [“Optional Setup”](#)
- [“Troubleshoot”](#)

If you wish to evaluate Solace PubSub+ Monitor using default settings, see [“Quick Start”](#).

Assumptions

This document assumes that you have:

- verified [“System Requirements”](#).
- installed the Monitor per instructions in [“Install PubSub+ Monitor”](#).

Setup Data Output Location

The first configuration step is to determine the location for the monitoring data. You have three options:

- [“Output Data to PubSub+ Monitor”](#)
- [“Output Data to InfluxDB”](#)
- [“Output Data to Solace Broker”](#)

Output Data to PubSub+ Monitor

To output monitoring data to PubSub+ Monitor, you [“Start and Login to the Solace PubSub+ Monitor”](#) and [“Configure Data Collection”](#).

Proceed to [“Start and Login to the Solace PubSub+ Monitor”](#).

Start and Login to the Solace PubSub+ Monitor

Navigate to the `SolacePubSubMonitor/bin` directory and execute the `start_servers.sh` script (or `start_servers.bat` for Windows).

Open a browser and go to:

- `http://IPAddress:8068/rtview-solmon` if you are executing your browser on a different host than where the monitor is running.

- **http://localhost:8068/rtview-solmon** if you are executing your browser in the same host where the monitor is running.

Use **rtvadmin/rtvadmin** for username/password.

The Solace PubSub+ Monitor opens. The displays populate with data after you add connection properties for your Solace Message Brokers (which is subsequently described in these instructions).

Proceed to [“Open the RTView Configuration Application”](#).

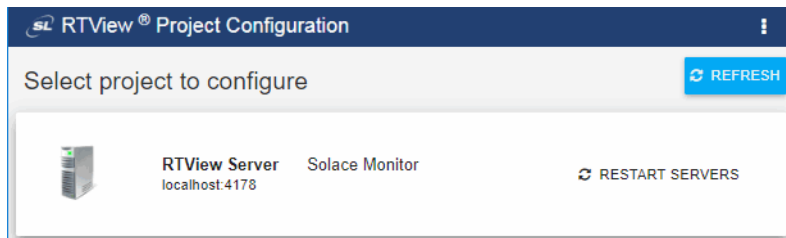
Open the RTView Configuration Application

Open a browser and go to:

- **http://IPAddress:8068/rtview-solmon-rtvadmin** if you are executing your browser on a different host than where the monitor is running.
- **http://localhost:8068/rtview-solmon-rtvadmin** if you are executing your browser in the same host where the monitor is running.

Use **rtvadmin/rtvadmin** for username/password.

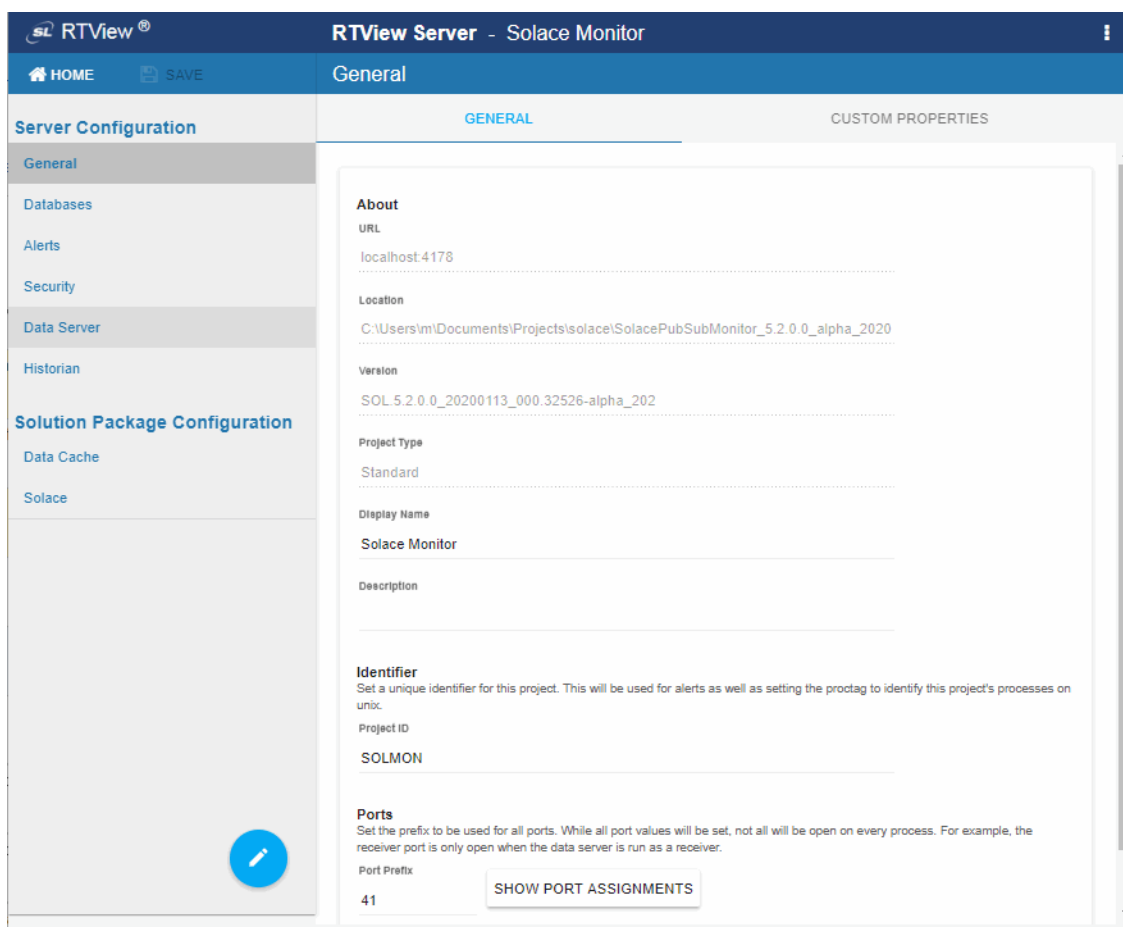
The RTView Configuration Application **HOME** page opens.



Select the **Solace Monitor** project.

The main configuration page for the **RTView Server - Solace Monitor** project opens.

The navigation tree is in the left panel and the **General** and **Custom Properties** tabs are shown in the upper part of the main page. The name of the selected tab is highlighted and the other tabs are grayed out. You click on either of the grayed tabs to change the selected tab.



These instructions use the following format to describe navigation to each tab: **Navigation tree>Tab**. For example, the figure above illustrates the **General>GENERAL Tab**.

Proceed to [“Configure Data Collection”](#) (a required configuration).

Configure Data Collection

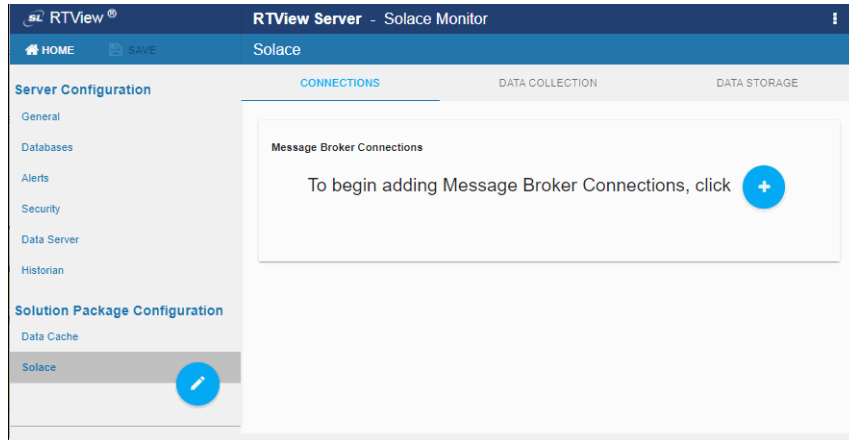
This section describes how to define the connection for the brokers you wish to monitor and verify that data is collected from them. This configuration must be performed before running any deployment of the Monitor. This configuration is the only required configuration.

If you don't have special requirements for running the monitor (such as running multiple data collectors in the same host), there is no need to cover the optional subsections. Consult Technical Support before modifying other configurations to avoid the circumstance of future upgrade issues.

Note that for Solace Cloud Event Brokers you will need the exact SEMP version on each of your Solace Cloud Brokers. See [“Obtain SEMP Version”](#).

To define Solace Broker connections:

1. “Open the RTView Configuration Application”, select **Solace** (in navigation tree) > **CONNECTIONS** tab and click .



The **Add Connection** dialog opens.

2. In the **Add Connection** dialog, toggle ON either HA Pair or Standalone Broker and make the following entries:
 - **HA Pair:** Enter the **Connection Name**, **Primary** and **Backup URLs**, **Username** and **Passwords**. Turn on the **SSL Connection** toggle if your broker pair is SSL Secured.
 - **Standalone Broker:** First select the Edition.
 - For Cloud Service Brokers, enter the **Connection Name**, **URL**, **Username**, **Password**, **SEMP Version*** and **VPN Name**. Turn on the **SSL Connection** toggle if your broker is SSL Secured. See “[Obtain SEMP Version](#)” for instructions about getting the SEMP version installed in your message brokers.
 - For Non-Cloud Service Brokers, enter the **Connection Name**, **Host:Port**, **Username** and **Password**. If the broker is secured, the **URL** should use **https** instead of **http**.

- Repeat these steps to add more brokers and when finished, click **SAVE** to close the dialog and **SAVE** (in title bar) to save your settings.

The connections you created are listed in the **Connections** tab. For the HA Pair, the connection string for the backup broker will have **"-standby"** concatenated to it.

- If you turn on the **SSL Secured** option for any of your connections, select **SECURITY** (in the navigation tree) and fill in the **SSL Credentials** section with the appropriate **Truststore** and **Truststore Password** values for your Brokers.

- Click **SAVE** (in title bar) to save your settings.

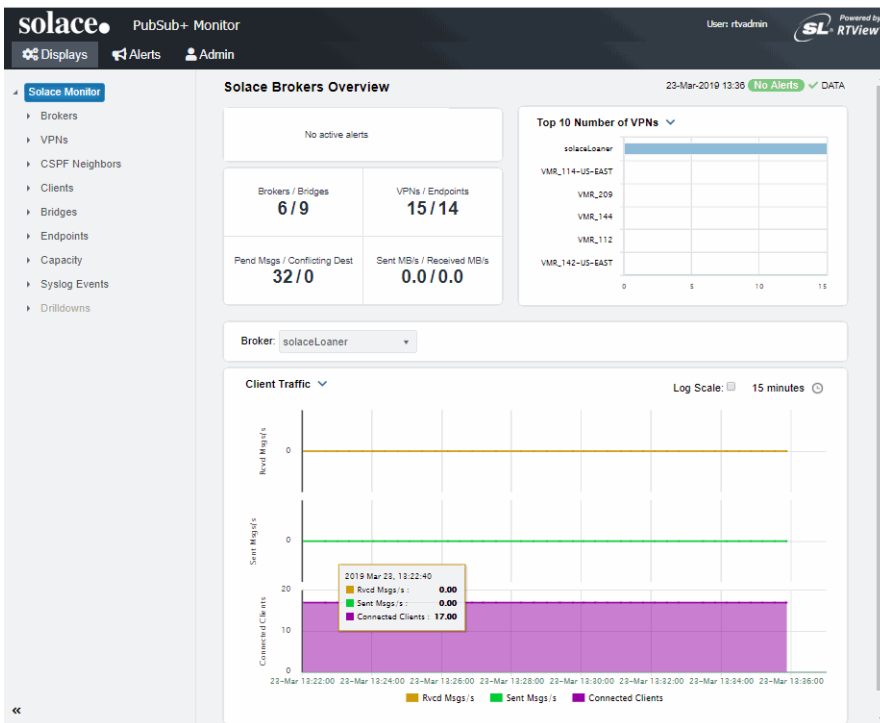
- Click **RESTART SERVERS** to apply changes. The data server will be available again in 10-15 seconds.

- Open a browser and go to the Solace PubSub+ Monitor:

http://IPAddress:8068/rtview-solmon if you are executing your browser on a different host than where the monitor is running.

http://localhost:8068/rtview-solmon if you are executing your browser in the same host where the monitor is running.

Use **rtvadmin/rtvadmin** for username/password.



You should now see monitoring data. If you encounter issues, check the log files in the **SolacePubSubMonitor/projects/rtview-server/log** directory for errors.

8. If you are going to:

- [“Output Data to InfluxDB”](#), proceed to [“Create Database and User Account”](#).
- [“Output Data to PubSub+ Monitor”](#), congrats! You have finished the required setup. You can take advantage of the many optional Solace PubSub+ Monitor features. See [“Optional Setup”](#) for details.

Obtain SEMP Version

This section only applies to Solace Cloud Event Brokers. You need to provide the exact SEMP version on each of your Solace Cloud Brokers.

Use the Solace Cloud console to get the value for the **Solace Broker Version** field, under **Stats**. The broker version aligns with the SEMP v1 version. You will use the first three digits, including any decimal points, of the value shown in the Solace Cloud Event Broker **Solace Broker Version** field, concatenated with this string: **VMR**.

For example, if the value for the **Solace Broker Version** field is **9.1.1.1.0**, you enter:
9.1.1VMR

Output Data to InfluxDB

To output monitoring data to InfluxDB, you need to [“Start and Login to the Solace PubSub+ Monitor”](#), [“Open the RTView Configuration Application”](#) to configure connections to Solace Brokers, then [“Create Database and User Account”](#).

Create Database and User Account

This section assumes you have already configured connections to your Solace Brokers using the RTView Configuration Application.

To send monitoring data to InfluxDB you edit the **stats-receiver.properties** file, located in the **Data Collector** directory, define the metrics to poll and store, and specify the IP address and port number on the InfluxDB platform.

1. Create a database and a user with read and write privileges in your InfluxDB platform using the following InfluxDB shell commands:

```
create database <yourSolaceStatsDB>
```

```
use <yourSolaceStatsDB>
```

```
create user <SolaceStatsUser> with password <'yourPwdWithSingleQuotes'>
```

```
with all privileges grant all on <yourSolaceStatsDB> to <SolaceStatsUser> exit
```

2. Edit the **stats-receiver.properties** file, located in the directory where the data server will be started.

3. Enable InfluxDB Tap by commenting out the following line:

```
#TAP_PLUGIN_CLASS = com.sl.statsds.RTViewStatsTap
```

and uncommenting the following line:

```
TAP_PLUGIN_CLASS =
```

```
com.solace.psg.enterprisestats.receiver.influxdb.InfluxDBStatsTap
```

This enables the plugin to send monitoring data to InfluxDB.

Note: At present, there is no option to send monitoring data to both InfluxDB and PubSub+ Monitor. To revert back to collect all caches and send data to the PubSub+ Monitor, uncomment the RTViewStatsTap line and comment out the InfluxDBStatsTap line. Also revert **DB_FIELD_SUBSCRIPTIONS** to its initial value (**DB_FIELD_SUBSCRIPTIONS = ** which means the filter passes everything, as appropriate for the PubSub+ Monitor).

4. Select the list of topics identifying the fields to write to InfluxDB by copying the list of topics in the **DB_FIELD_SUBSCRIPTIONS** property. These topics are semicolon separated and multiple lines are identified by "\" at the end of the topic. Initially you can choose from the examples that are provided in the **stats-receiver.properties** file itself. For example:

```
DB_FIELD_SUBSCRIPTIONS=\
SYSTEM_CONFIG-SYNC/authentication/client-certificate/max-certificate-chain-depth;\
SYSTEM_MEMORY/subscription-memory-usage-percent;\
SYSTEM_MEMORY/physical-memory-usage-percent;\
SYSTEM_MEMORY/slot-infos/*/nab-buffer-load-factor;\
SYSTEM_STATS_CLIENT/>;\
SYSTEM_STATS_NEIGHBOR/>;\
SYSTEM_CSPF_NEIGHBOR_STATS/>;\
SYSTEM_MSG-SPOOL_DETAIL/*;\
SYSTEM_MSG-SPOOL_STATS/>;\
VPN_STATS/maximum-spool-usage-mb;\
>;\
```

Refer to Solace documentation for the complete list of metrics that can be requested.

5. Add the connection properties to InfluxDB by scrolling down to the **Influx DB Properties** and defining the following:

- **INFLUXDB_HOST**: the hostname and port used for Influx DB. For example, if you run it locally in the default port: **INFLUXDB_HOST = localhost:8086**.
- **INFLUXDB_DB**: the database name to which InfluxDB will write. For example: **INFLUX_DB=yourSolaceStatsDB**
- **INFLUXDB_USER**: the user previously created in Influx DB to execute the inserts in the DB. For example: **INFLUXDB_USER = SolaceStatsUser**
- **INFLUXDB_PASSWORD**: the password you set in InfluxDB encrypted with the Solace PSG Password Utility. To use the Solace PSG Password Utility:
 - Open a command prompt or terminal and initialize it
 - Change directory (cd) to **<installation_dir>/rtvapm>** and execute **./rtvapm_init.sh (UNIX)**

or

cd <installation_dir>\rtvapm> and execute **rtvapm_init.bat (Windows)**

- Change directory (cd) to **rtvapm\solmon\bin** and execute:
pwd-utility[.bat] <yourPwdString>

The following message appears:

"The encrypted password is: 'encryptedString' (without the quotes).

You should use this value in the password field in configuration property files."

You should now see monitoring data being stored in the InfluxDB database. If you encounter issues, check the log files in the **SolacePubSubMonitor/projects/rtview-server/log** directory for errors and verify that InfluxDB is available and running.

You have completed configuring data collection! There are no other required configurations.

Output Data to Solace Broker

To send monitoring data to a Solace Broker do the following. The files you edit are located in the **rtvapm/solmon/bin/config** directory. No other configuration steps than those provided here are needed to output monitoring data to a Solace Broker. Refer to Solace documentation for additional information about the available message formats you can choose for sending the data.

1. Define the Solace Brokers to monitor by editing the **<primary> ... </primary>** section of the **appliance_config_demo.xml** file (this adds connection properties to the monitored Solace Brokers). Add as many **<primary> ... </primary>** sections as brokers you want to monitor.
2. Define the Solace Broker to receive monitoring data by editing the **<mgmt.-msg-bus> ... </mgmt.-msg-bus>** section from the **appliance_config_demo.xml** file. You should define the message format for the data being transmitted by choosing one of the container factories: **SempXmlFragmentFactory**, **JsonMapFactory** or **StdMapFactory** for SEMP, and **JSON** or standard message formats respectively.
3. If the data to be polled isn't already defined in the preconfigured XML files, or you need additional poller groups for different monitoring options, do the following:
 - Define the monitoring data to poll by editing the **pollers_sl.xml** file (this file contains SEMP request details and response parsing specifics which the poller sends to Solace Brokers).
 - Define the poller groups that you want to use by editing the **groups_sl.xml** file (this file enables you to separate published statistics into groups of interest, publishes the statistics on the associated topic, and provides the configured poll interval).

4. Start StatsPump as follows:

In a Windows command prompt or UNIX terminal, go to the **SolacePubSubMonitor/rtvapm** directory and execute **rtvapm_init.bat** (Windows) or **rtvapm_init.sh** (UNIX).

Change directory (**cd**) to **rtvapm/solmon/bin** directory and execute the following in the order provided (if you change the order it will not execute properly):

```
[statspump|statspump.bat] config\pollers_sl.xml config\groups_sl.xml
config\appliance_config_demo.xml
```

You should now see published monitoring data in the receiving Solace Broker.

You have finished configuration instructions to send monitoring data to a Solace Broker!

Optional Setup

This section describes how to setup optional features that are available if you [“Output Data to PubSub+ Monitor”](#):

- [“Choose and Setup an Application Server”](#): You have two options: [“Using the Pre-configured Apache Tomcat”](#) or [“Using an Alternate Application Server”](#)
- [“Modify Default Polling Rates for Solace Caches”](#): Change the default polling rates for Solace caches.
- [“Modify Default Settings for Storing Historical Data”](#): Change the default settings for how historical data is collected, aggregated and stored in caches.
- [“Change Port Assignments”](#): Change the default port settings.
- [“Configure Alert & Historical Database Connections”](#): Configure a production database.
- [“Configure Alert Notification”](#): Configure alerts to execute an automated action (for example, to send an email alert).
- [“High Availability”](#): Configure failover and failback for Data Servers and the Historian.
- [“Configure PubSub+ Message Broker & Syslog Destination”](#): Configure PubSub+ Brokers and Solace Monitor to receive Syslog events and activate Syslog event-driven alerts.
- [“Troubleshoot”](#): Investigate configuration issues.

Choose and Setup an Application Server

Solace PubSub+ Monitor requires an application server. You have two options:

- [“Using the Pre-configured Apache Tomcat”](#)
- [“Using an Alternate Application Server”](#)

Using the Pre-configured Apache Tomcat

Solace PubSub+ Monitor includes a pre-configured Apache Tomcat installation which hosts all of the servlets necessary to run the Monitor on port **8068**. If you would like to use this application server for your deployment, no further configuration is required. You can optionally change user names and passwords for the servlets hosted in Tomcat in

SolacePubSubMonitor/apache-tomcat*/conf/tomcat-users.xml. The user names and passwords in this file can be changed, but you must assign them one of the defined roles as these are required by the servlets. For details about predefined user roles, see [“User Permissions”](#).

Proceed to [“Start and Login to the Solace PubSub+ Monitor”](#).

Using an Alternate Application Server

Alternately, you can use another application server. To use another application server:

1. In a windows command prompt or UNIX terminal go to **SolacePubSubMonitor/rtvapm** and execute **rtvapm_init.bat** (Windows) or **.rtvapm_init.bat** (UNIX).
2. Change directory (**cd**) to **SolacePubSubMonitor/projects/rtview-server** and execute **update_wars.bat** (Windows) or **update_wars.sh** (UNIX).

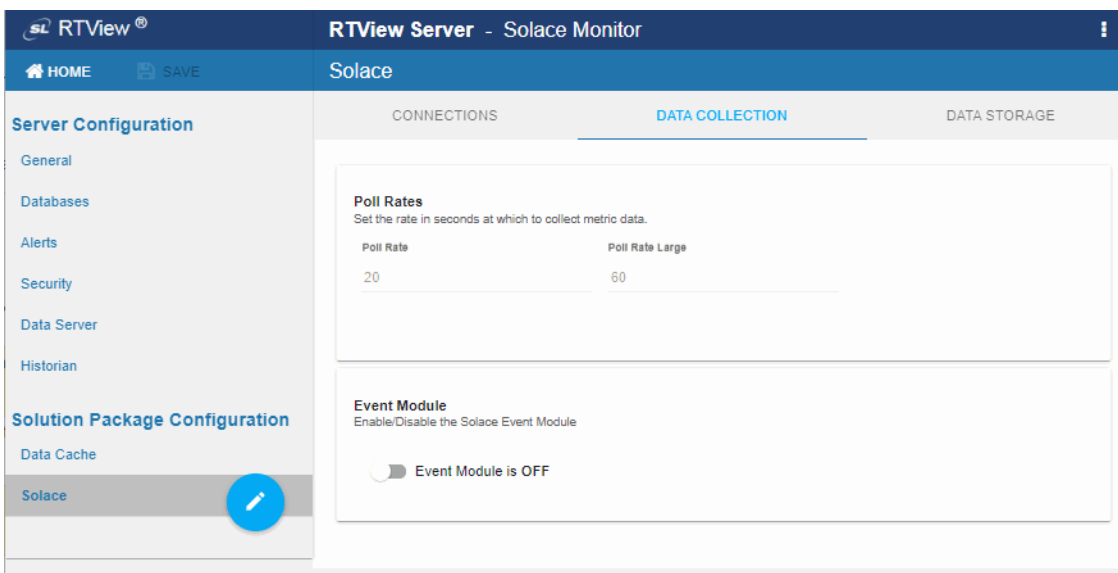
3. Deploy the resulting war files to your application server.
4. If you are using the RTView Manager, repeat the previous two steps in the **projects/rtview-manager** directory.
5. Add the following user roles to your application server: rtvuser, rtvadmin, rtvalertmgr. For details about user roles, see ["User Permissions"](#).

The instructions in this document refer to the pre-configured Apache Tomcat host and port (**localhost:8068**). When following instructions, use the application server's host and port instead.

Modify Default Polling Rates for Solace Caches

To modify the default polling rate settings for Solace caches, perform the following:

- ["Open the RTView Configuration Application"](#) and go to **Solace>DATA COLLECTION** tab.



Poll Rate: Collection period in seconds. This configuration element affects the following caches: SolEndpointStats, SolEndpoints, SolClients, SolClientStats, SolBridges, SolAppliances, SolBridgeStats, SolApplianceInterfaces and SolApplianceMessageSpool.

Poll Rate Large: Slower collection period in seconds for monitoring data that can impact the performance of the monitoring systems if the rate is very fast. This configuration element affects the following caches: SolCspfNeighbors, SolAppliances and SolEnvironmentSensors.

Solace Event Module Alerts Clear Time: Defines the time interval, in seconds, when non-clearable event alerts from the Solace Event Module will be dismissed from the monitor.

- Click **SAVE** your settings, then click **RESTART SERVERS** to apply changes. The data server will be available again in 10-15 seconds.

Modify Default Settings for Storing Historical Data

Use the RTView Configuration Application to change the default settings for storing historical data for Solace and the default cache settings to modify the default behavior of the data being collected, aggregated and stored.

- [“Define the Storage of In Memory History”](#): Specify the maximum number of history rows to store in memory.
- [“Define Compaction Rules”](#): Define rules for reducing the amount of data stored over time.
- [“Define Duration”](#): Specify when data becomes expired and/or deleted from the Monitor.
- [“Enable/Disable Storage of Historical Data”](#): Choose the metrics you want to store in the database and specify a prefix for history table names.
- [“Define Prefix for All History Table Names”](#): Specify a prefix to prepend to database table names.



Define the Storage of In Memory History

You can define the maximum number of history rows to store in memory in the **Solace/Data Storage/History Rows** property. This property can improve Monitor responsiveness.

Note that changing this value is only recommended if you have a high degree of understanding about how historical data is being stored in memory, as well as how that data is compacted and stored in the database.

The **History Rows** property defines the maximum number of rows to store for the SolVpns, SolClientStats, SolAppliances, SolEndpoints, SolCspfNeighbors, SolBridgeStats, SolApplianceInterfaces, SolApplianceMessageSpool, SolEndpointStats, SolEventModuleEvents and SolAppliancesQuality caches. The default setting for **History Rows** is **50,000**.

To modify the default settings:

- [“Open the RTView Configuration Application”](#) and go to **Solace>DATA STORAGE** tab.
- Under **Size**, enter the desired number of rows in the **History Rows** field.
-  **SAVE** your settings, then click  **RESTART SERVERS** to apply changes. The data server will be available again in 10-15 seconds.

RTView Server - Solace Monitor

HOME SAVE Solace

Server Configuration

- General
- Databases
- Alerts
- Security
- Data Server
- Historian

Solution Package Configuration

- Data Cache
- Solace**

CONNECTIONS DATA COLLECTION **DATA STORAGE**

Size
Set the number of history rows to keep in memory.

History Rows
50000

Compaction

Condense Interval	Condense Raw Time	Compaction Rules
60	1200	1h - ;1d 5m ;2w 15m

Duration
Set the number of seconds between data updates before metrics are expired or deleted.

Expire Time	Delete Time	Delete Time for Clients
120	3600	600

Expire Time for Solace Event Module Events
3600



Delete Time for Solace Event Module Events
86400

Define Compaction Rules

Data compaction, essentially, is reducing redundancy in the data to be stored in the database by using a rule so that you store sampled data instead of raw data, which prevents storing of redundant data which potentially can overload the database. The compaction rule is defined through the following fields:

- **Condense Interval:** The time interval at which the cache history is condensed. The default is **60** seconds, which means that every **60** seconds all rows of the same index are condensed. As a result of this first condensing operation there will be only one row per index every minute. The following caches are impacted by this setting: SolVpns, SolClientStats, SolAppliances, SolEndpoints, SolCspfNeighbors, SolBridgeStats, SolApplianceInterfaces, SolApplianceMessageSpool and SolEndpointStats.
- **Condense Raw Time:** The time span of raw data kept in memory. The default is 1200 seconds. The following caches are impacted by this setting: SolVpns, SolClientStats, SolAppliances, SolEndpoints, SolCspfNeighbors, SolBridgeStats, SolApplianceInterfaces, SolApplianceMessageSpool and SolEndpointStats.
- **Compaction Rules:** This field defines the rules used to condense your historical data in the database. By default, the columns kept in history are aggregated by averaging rows with the following rule **1h - ;1d 5m;2w 15m**, which means the data from the last hour is not aggregated (1h - rule), the data from the last day is aggregated every 5 minutes (1d 5m rule), and the data from the last 2 weeks old is aggregated every 15 minutes (2w 15m rule). The following caches are impacted by this setting: SolVpns, SolClientStats, SolAppliances, SolEndpoints, SolCspfNeighbors, SolBridgeStats, SolApplianceInterfaces, SolApplianceMessageSpool and SolEndpointStats.

To modify these settings do the following:

- [“Open the RTView Configuration Application”](#) and go to **Solace>DATA STORAGE** tab.
- Under **Compaction**, enter values in the **Condense Interval**, **Condense Raw Time** and **Compaction Rules** fields.
-  your settings, then click  to apply changes.



Define Duration

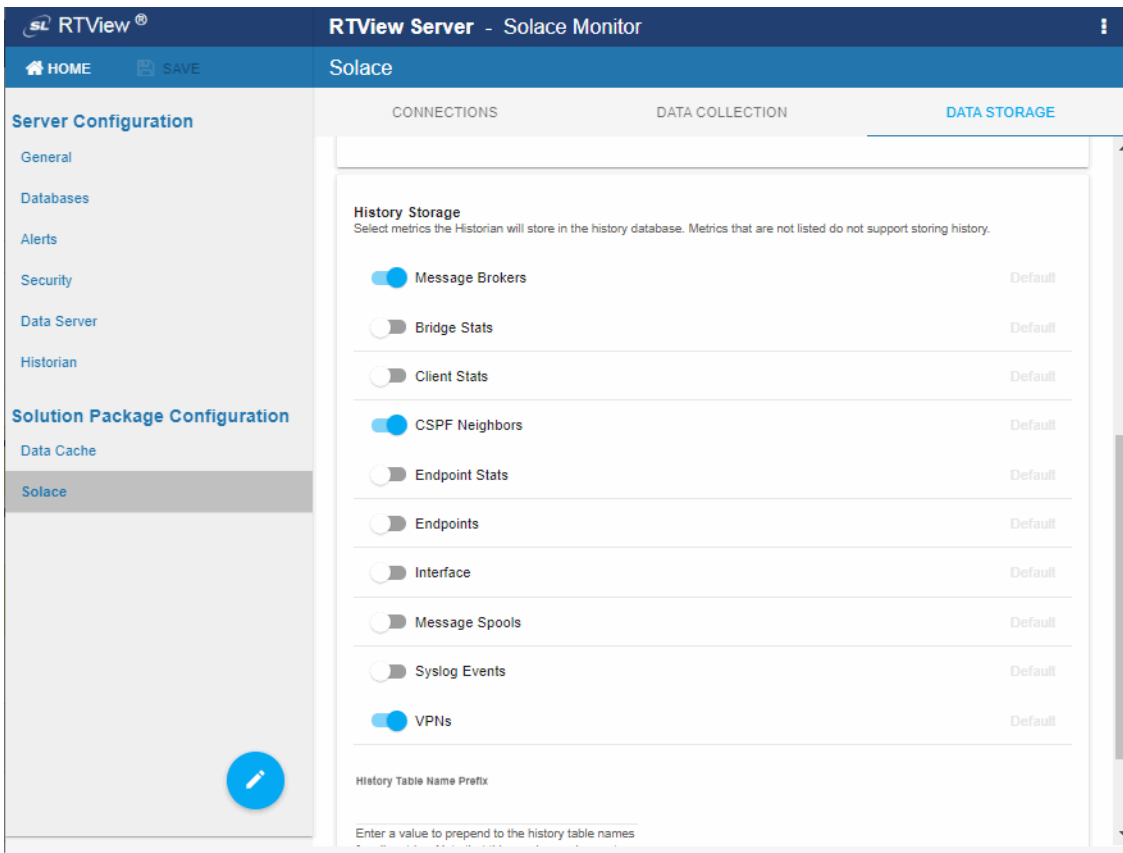
The data for each metric is stored in a specific cache and, when the data is not updated in a certain period of time, that data either marked as expired or, if it has been expired over an extended period of time, it is deleted from the cache altogether.

- **Expire Time:** This field sets the period of time when the Expire metric from the cache is set to true indicating the entry row is expired. The default expiration time is 120 seconds. The following caches have this attribute defined: SolVpns, SolBridges, SolClients, SolClientStats, SolAppliances, SolEndpoints, SolCspfNeighbors, SolBridgeStats, SolApplianceInterfaces, SolApplianceMessageSpool, SolEndpointStats, SolEnvironmentSensors and SolAppliancesQuality.
- **Delete Time:** This field sets the period of time that a given entry row should be expired before it gets deleted from the cache. It defaults to 3600 seconds and applies to the following caches: SolVpns, SolBridges, SolEndpoints, SolBridgeStats, SolEndpointStat and SolEnvironmentSensors caches.
- **Delete Time for Clients:** The meaning of this field is the same as of the Delete Time but applying to the SolClients and SolClientStats caches. The default is 600 seconds.
- **Expire Time for Solace Event Module Events:** This field sets the expiration period exclusively for the SolEventModuleEvents cache, which defaults to 3600 seconds.
- **Delete Time for Solace Event Module Events:** The meaning is as the two previous fields but for the SolEventModuleEvents cache. The default is 1 day (86,400 seconds).

Enable/Disable Storage of Historical Data

Under **History Storage** you can select which tables you want the Historian to store in the database. To enable/disable the collection of historical data, perform the following:

- [“Open the RTView Configuration Application”](#) and go to **Solace>DATA STORAGE** tab.
- Scroll down to **History Storage** and toggle to enable/disable the storage of various database tables in the database. Blue (toggled right) enables storage, gray (toggled left) disables storage. The caches impacted by these settings are SolAppliances (Message Brokers), SolBridgeStats (Bridge Stats), SolClientStats (Client Stats), SolCspfNeighbors (CSPF Neighbors), SolEndpointStats (Endpoint Stats), SolEndpoints (Endpoints), SolApplianceInterfaces (Interface), SolApplianceMessageSpool (Message Spools), SolEventModuleEvents (Syslog Events) and SolVpns (VPNs).
-  your settings, then click  to apply changes.



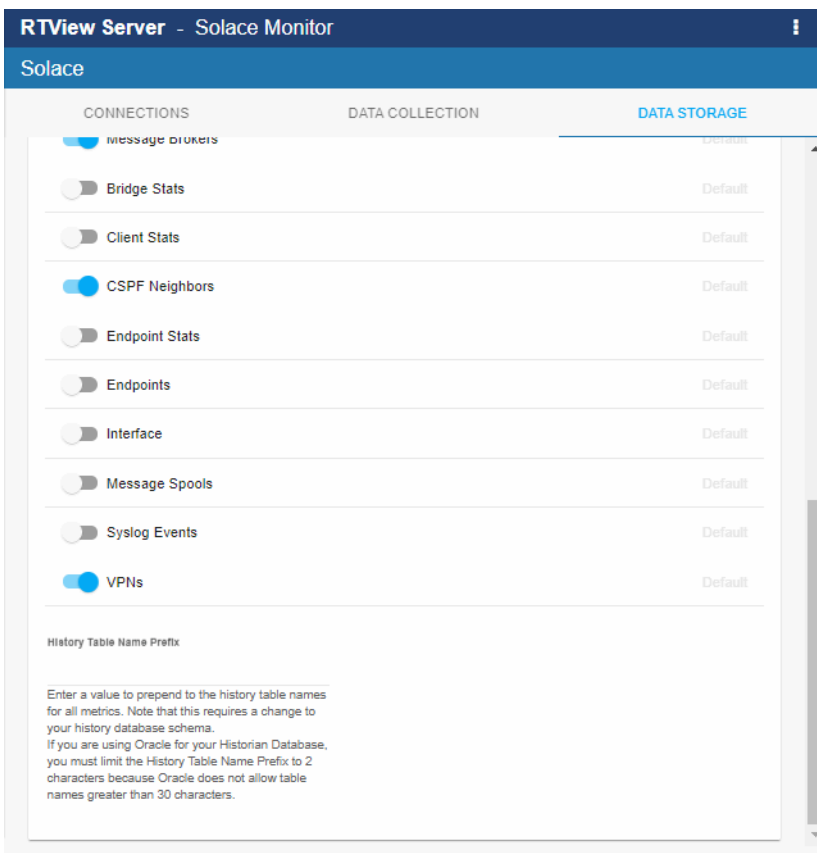
Define Prefix for All History Table Names

The **History Table Name Prefix** field allows you to define a prefix that is added to the database table names so that the Monitor can differentiate history data between data servers when you have multiple data servers with corresponding Historians using the same solution package(s) and database. In this case, each Historian needs to save to a different table, otherwise the corresponding data server will load metrics from both Historians on startup. Once you have defined the **History Table Name Prefix**, you need to create the corresponding tables in your database as follows:

- Locate the .sql template for your database under **SolacePubSubMonitor/rtvapm/solmon/dbconfig** and make a copy of it
- Add the value you entered for the **History Table Name Prefix** to the beginning of all table names in the copied .sql template
- Use the copied .sql template to create the tables in your database

To add the prefix do the following:

- “[Open the RTView Configuration Application](#)”, go to **Solace>DATA STORAGE** tab and scroll down to the bottom of the page.
- In the **History Table Name Prefix** field, enter the desired prefix name.
- **SAVE** your settings, then click **RESTART SERVERS** to apply changes.



Change Port Assignments

This configuration is optional.

There are deployment architectures that might require the change of default ports for selected processes, either because the process will be executed multiple times in the same host or because the selected port number is already in use by another application. In these circumstances, you should reassign ports for Solace using the RTView Configuration Application.



Java Process	Description	Default Port(s)
RTView Data Server	Gathers performance metrics.	Default Port= 4178 Default JMX Port = 4168
Receiver RTView Data Server	Receiver Data Server in a fault tolerant pair.	Default Port= 4172 Default JMX Port= 4168
Sender RTView Data Server	Sender Data Server in a fault tolerant pair.	Default Port= 4176 Default JMX Port= 4166

**RTView
Historian**

Retrieves data from the RTView Data Server and archives metric history to a database.

Default JMX Port= **4167**

To modify port settings or deploy Java processes on different hosts (rather than on a single host):

1. “[Open the RTView Configuration Application](#)” and go to **General>GENERAL** tab.
2. Under **Ports** (scroll down to the bottom of the page), specify the port prefix that you want to use in the **Port Prefix** field. Click **Show Port Assignments** to see the port numbers that are created using the **Port Prefix** you specify.
3. Click  (in the title bar), then click  to apply changes.
4. Edit the **update_wars** (.bat or .sh) file and change the port prefix for all ports to the prefix you just specified.
5. Rebuild the war files and install them to the application server by executing the following script, located in the **SolacePubSubMonitor/bin** directory:

Windows:

make_all.bat

UNIX:

./make_all.sh

Configure Alert & Historical Database Connections

The Monitor is delivered with a default memory resident HSQLDB database, which is suitable for evaluation purposes. However, in production deployments, we recommend that you deploy one of our supported databases. For details, see the *RTView Core® User's Guide*.

This section describes how to setup an alternate production database, and how to configure the Alert Settings Database connection and the Historian Database connection. You connect and configure the databases using the RTView Configuration Application. You also copy portions of the **database.properties** template file (located in the **common\dbconfig** directory) into the RTView Configuration Application.

Monitor Databases

The Monitor requires two database connections that provide access to the following information:

Alert Settings

The ALERTDEFS database contains alert administration and alert auditing information. The values in the database are used by the alert engine at runtime. If this database is not available, the Self-Service Alerts Framework under which alerts are executed cannot work correctly.

Historian

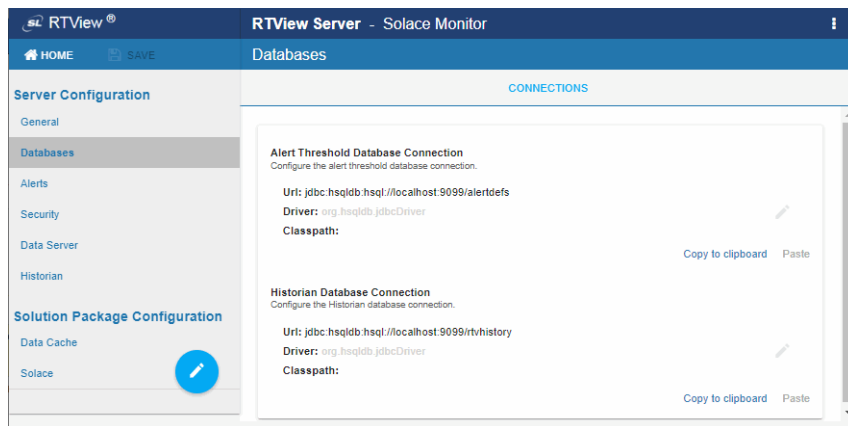
The RTVHISTORY database contains the historical monitoring data to track system behavior for future analysis, and to show historical data in displays.

To Configure the ALERTDEFS and RTVHISTORY Databases:

1. Install a database engine of your choice. Supported database engines are Oracle, Microsoft SQL Server, MySQL, and DB2.

NOTE: The default page size of DB2 is 4k. It is required that you create a DB2 database with a page size of 8k. Otherwise, table indexes will not work.

2. Open the **database.properties** template file, which is located in the **common\dbconfig** directory, find the line that corresponds to your supported database in the "Define the ALERTDEFS DB" section and make a note of this information. Keep the **database.properties** template file open.
3. "Open the RTView Configuration Application" and go to **Databases>CONNECTIONS** tab.



4. Click the **Alert Threshold Database Connection** to open the **Edit Connection** dialog.
5. Enter the information (you previously noted from the **database.properties** file) into the **Edit Connection** dialog and click **Save**.

URL: Enter the full database URL to use when connecting to this database using the specified JDBC driver.

Driver: Enter the fully qualified name of the JDBC driver class to use when connecting to this database.

Classpath: Enter the location of the jar where the JDBC driver resides in your environment.

Username: Enter the username to enter into this database when making a connection.

Password: Enter the password to enter into this database when making a connection.

Run Queries Concurrently: Select this check box to run database queries concurrently.

Click **SAVE** to close the dialog and **SAVE** (in title bar) to save your settings.

6. Return to the **database.properties** template file, which is located in the **common\dbconfig** directory, find the line that corresponds to your supported database in the "Define the RTVHISTORY DB" section and make a note of this information.
7. In the RTView Configuration Application, click the **Historian Database Connection** to open the **Edit Connection** dialog.

8. Enter the information (you previously retrieved from the **database.properties** file) into the **Edit Connection** dialog and click **Save**.

URL: Enter the full database URL to use when connecting to this database using the specified JDBC driver.



Driver: Enter the fully qualified name of the JDBC driver class to use when connecting to this database.

Classpath: Enter the location of the jar where the JDBC driver resides in your environment.

Username: Enter the username to enter into this database when making a connection.

Password: Enter the password to enter into this database when making a connection.

Run Queries Concurrently: Select this check box to run database queries concurrently.

9. Click  to store the newly added connection and close the dialog and  (in title bar) to save your settings.

10. Click  to apply changes.

11. Manually create database tables. If your configured database user has table creation permissions, then you only need to create the Alerts tables. If your configured database user does not have table creation permission, then you must create both the Alert tables and the History tables.

To create tables for your database, use the **.sql** template files provided for each supported database platform, which is located in the **dbconfig** directory of the **common** and **solmon** directories, where:

`<db> = {db2, mysql, oracle, sqlserver, sybase}`

- **Alert Settings**

`SolacePubSubMonitor/rtvapm/common/dbconfig/
create_common_alertdefs_tables_<db>.sql`

- **Historian**

`SolacePubSubMonitor/rtvapm/solmon/dbconfig/
create_solmon_history_tables_<db>.sql`

`SolacePubSubMonitor/rtvapm/common/dbconfig/
create_common_history_tables_<db>.sql`

`SolacePubSubMonitor/rtvapm/rtvmgr/dbconfig/
create_rtvMgr_history_tables_<db>.sql`

NOTE: The standard SQL syntax is provided for each database, but requirements can vary depending on database configuration. If you require assistance, consult with your database administrator.

The most effective method to load the **.sql** files to create the database tables depends on your database and how the database is configured. Some possible mechanisms are:

- **Interactive SQL Tool**

Some database applications provide an interface where you can directly type SQL commands. Copy/paste the contents of the appropriate **.sql** file into this tool.

- **Import Interface**

Some database applications allow you to specify a **.sql** file containing SQL commands. You can use the **.sql** file for this purpose.

Before loading the **.sql** file, you should create the database and declare the database name in the command line of your SQL client. For example, on MySQL 5.5 Command Line Client, to create the tables for the Alert Settings you should first create the database:

```
create database myDBName;  
before loading the .sql file:  
mysql -u myusername -mypassword myDBName <  
create_common_alertdefs_tables_mysql.sql;
```

If you need to manually create the Historical Data tables, repeat the same process. In some cases it might also be necessary to split each of the table creation statements in the **.sql** file into individual files.

Third Party Application

If your database does not have either of the two above capabilities, a third party tool can be used to enter SQL commands or import **.sql** files. Third party tools are available for connecting to a variety of databases (RazorSQL, SQLMaestro, Toad, for example).

You have finished configuring the databases.

Troubleshoot

This section includes:

- [“Log Files for Solace”](#)
- [“JAVA_HOME”](#)
- [“Permissions”](#)
- [“Network/DNS”](#)
- [“Data Not Received from Data Server”](#)
- [“Obtain SEMP Schemas”](#)

Log Files for Solace

When any Solace PubSub+ Monitor component encounters an error, an error message is output to the console and/or to the corresponding log file. Logging is enabled by default. If you encounter issues with log files, verify the **logs** directory exists.

Solace PubSub+ Monitor Log Files

If you encounter issues, look for errors in the following log files, located in the **SolacePubSubMonitor/projects/rtview-server/logs** directory:

- **dataserver.log**
- **historian.log**

RTView Manager Log Files

If you encounter issues, look for errors in the following log files, located in the **SolacePubSubMonitor/projects/rtview-manager/logs** directory:

- **dataserver.log**
- **displayserver.log**
- **historian.log**

JAVA_HOME

If you encounter issues starting Solace PubSub+ Monitor or RTView Manager processes on Linux, verify that JAVA_HOME is set correctly in the path as JAVA_HOME is required for Tomcat to start correctly. On Windows, JAVA_HOME or JRE_HOME should exist as environment variables indicating a valid Java path.

Permissions



If you encounter permissions-related errors in the response from the **start_servers** command, check ownership of the directory structure.

Network/DNS

If any log file shows reference to an invalid URL, check your system's hosts file and also confirm with your network administrator that you're not being blocked from accessing the remote system.

Data Not Received from Data Server

In the Solace PubSub+ Monitor, if you go to the **Administration>RTView Cache Tables** display and see that caches are not being populated with monitoring data (the number of rows in the table is zero), check for connection property errors that are provided to the Data Server. Do the following:

1. ["Open the RTView Configuration Application"](#) and go to the **Solace>CONNECTIONS** tab.
2. Verify the connection parameters associated with your brokers.
3. Verify the SEMP version is correct for each of your Cloud Brokers (monitoring data cannot be collected if the SEMP version is incorrect) and make corrections if necessary.
Click  in the title bar when finished, then click  to apply changes. It takes about 10-15 seconds for the data server to be available again.
4. In the Solace PubSub+ Monitor, go to the **Admin>RTView Cache Tables** display and verify that all caches are being populated with monitoring data (the number of rows in the table is greater than zero).

Obtain SEMP Schemas

When SEMP schemas that are used for connecting to a Solace Broker are missing, the Broker is not shown in the PubSub+ Monitor **Broker Table** and the log from the dataserver under the **projects\rtview-server\logs** directory shows the following exception:

... **java.lang.IllegalStateException: Have not loaded schemas for 'soltr/9_OVMR'. Ensure schema version looks like 'soltr/x_y'. Call loadSchemas() first, or import new schema files...**

To resolve this problem, download the schemas from the Solace Customer Portal (<https://products.solace.com/>) where you as a customer have access to download Solace products as well as the SEMP schemas from any supported release (either Software or Appliance Brokers).

Be aware that the SEMP schemas from Software and Appliance Brokers, even from the same version, might differ. Therefore, verify that the downloaded files for either Software or Appliance Brokers are uniquely identified.

After you download the SEMP schemas do the following to include them:

1. Change directory (**cd**) to the **resources** directory (for example, **yourProjectDir/rtvapm/solmon/lib/ext/resources**) and create a separate directory for the downloaded SEMP schemas.
2. Copy the two schema files into the newly created directory.
3. **Stop/start** PubSub+ Monitor and verify that the missing Broker is connected and data is being collected properly.
4. Verify that the **dataserver.log** file no longer shows the missing schema error.

Contact SL Technical Support if you have issues downloading or adding these files to the product.

CHAPTER 4 Additional Configurations

This section contains the following:

- [“Solace Event Module”](#)
- [“High Availability”](#)
- [“Property Editor REST API”](#)

Solace Event Module

You can monitor Solace PubSub+ message broker Syslog events using the Solace Event Module application. To use the Solace Event Module you [“Configure PubSub+ Message Broker & Syslog Destination”](#) to send Syslog messages, and set the Solace Event Module to run and listen for the Syslog messages the broker sends.

This section contains:

- [“Introduction”](#)
- [“Configure PubSub+ Message Broker & Syslog Destination”](#)
- [“Configure Solace Event Module”](#)
- [“Solace Event Module Logging”](#)

Introduction

To monitor the PubSub+ message brokers using Syslog events, you can use the Solace Event Module application. The Solace Event Module listens for Syslog event messages that are generated by Solace PubSub+ message brokers and filters them to generate Syslog event-based alerts when required.

The Syslog event messages generated in the PubSub+ message brokers are forwarded to the SolEventModuleEvents cache from the RTView Solace Data Server. The events that trigger alerts are stored in the SolEventModuleAlerts cache from the RTView Solace Data Server.

The Solace Event Module is licensed separately from the Solace PubSub+ Monitor. And therefore, it is not executed by default and requires additional configuration.

Configure PubSub+ Message Broker & Syslog Destination

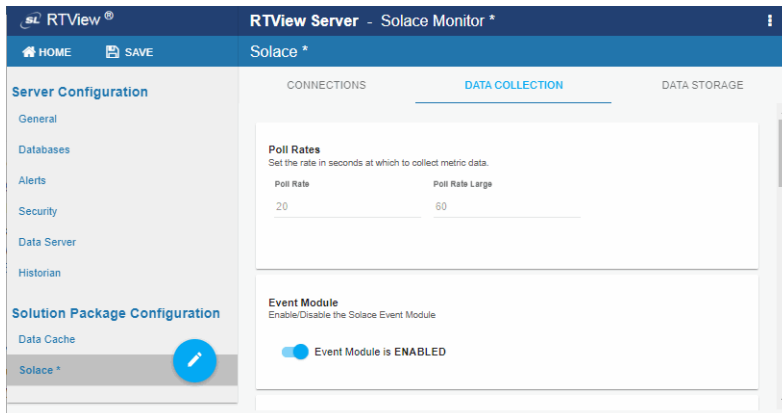
To use the Solace Event Module, you must first configure your Solace brokers to send Syslog messages for either the **system.log** or **event.log** and also configure a receiver for those messages that can be accessed by your Solace data server.

For the configuration of PubSub+ message brokers with Syslog, please refer to:

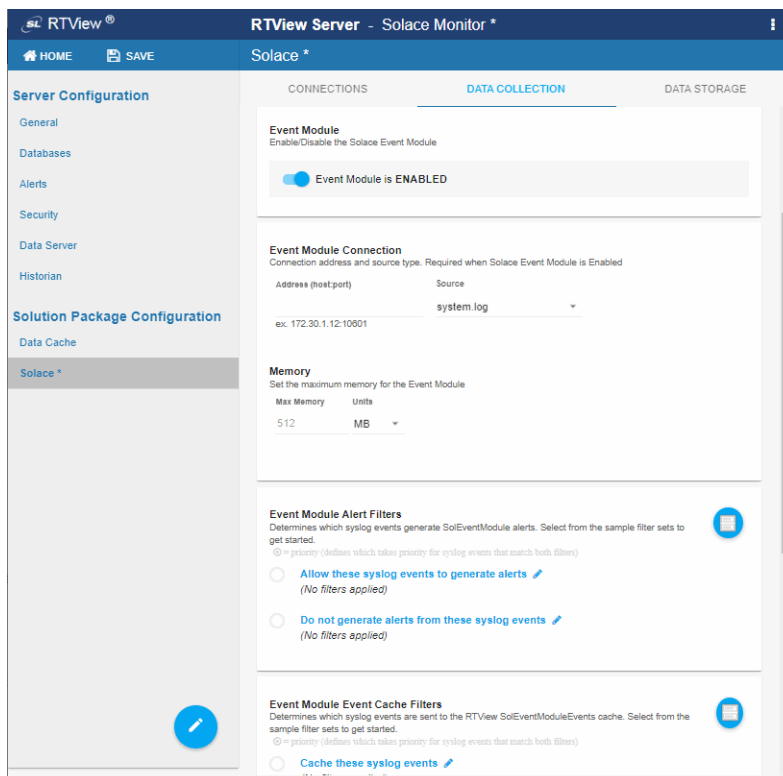
<https://docs.solace.com/System-and-Software-Maintenance/Monitoring-Events-Using-Syslog.htm>.

Configure Solace Event Module



1. Stop RTView by executing the `SolacePubSubMonitor\bin\stop_servers.bat/sh` script.
2. “Open the RTView Configuration Application”, select **Solace** (in the navigation tree)>**DATA COLLECTION** tab and toggle ON **Event Module** (toggle is blue when enabled).



3. Scroll down to see Solace Event Module options that become available.



4. Select **event.log** or **system.log** for the Source to match the settings on your broker and enter the address.

5. Optionally enter the **Max Memory** for the Solace Event Module application and select the Units (**MB** or **GB**). Note that this must not be set to a value smaller than **512M** or to a value higher than the resources allocated for your JVM.
 6. The Solace Event Module generates alerts based on incoming Syslog events as defined by Solace. See [“Solace Event Module Caches and Alerts”](#) for more information. Under **Event Module Alert Filters** you can optionally filter which syslog events will generate alerts.
Click  to choose from a list of sample filters or enter your own. Filters must use XPath 1.0 expressions that return a boolean value. Multiple expressions can be separated by commas. For example, you might choose to filter out alerts based on severity or scope using the **Do not generate alerts from these syslog events** filter. Exceptions to the rules for filtering out should be entered in **Allow these syslog events to generate alerts**.
 7. Solace events are stored in the SolEventModuleEvents cache. See [“Solace Event Module Caches and Alerts”](#) for more information. Under **Event Module Event Cache Filters** you can optionally filter which syslog events are sent to the SolEventModuleEvents cache. To do so:
Click  to choose from a list of sample filters or enter your own. Filters must use XPath 1.0 expressions that return a boolean value. Multiple expressions can be separated by commas. For example, you might choose to filter out events based on severity or scope using the **Do not cache these syslog events** filter. Exceptions to the rules for filtering out should be entered into the **Cache these syslog events**.
 8. Some alerts generated by the **Solace Event Module** are cleared based on another event. Others do not have a corresponding clear event. Under **Event Module Alerts** you can optionally set the amount of time to wait, in seconds, before clearing a not clearable alert. The default is **86400**.
 9. Some alerts generated by the Solace Event Module are cleared based on another event. Under **Event Module Duration** you can optionally set the amount of time, in seconds, after an event that generates a clearable alert is received to wait for the corresponding clear event before generating the alert. If the corresponding clear event is received during this time, no alert is generated. The default is **30**.
10. **Save** and **Restart Server** to save and apply your changes.

Solace Event Module Caches and Alerts

The Syslog events from the Solace Event Module are stored in the SolEventModuleEvents cache and displayed in the **Solace PubSub+ Monitor/Syslog Events** display.

This cache keeps history and can optionally be stored to the history database by the Historian. You can adjust the history settings in the RTView Configuration Application using the following fields in the **Solace>DATA-STORAGE** tab:

Size>History Rows – sets the maximum number of rows to keep in memory for this cache

Duration>Expire Time For Solace Event Module Events – the time (in seconds) between updates to expire rows in this cache

Duration>Delete Time For Solace Event Module Events – the time (in seconds) between updates to delete rows in this cache

History Storage>Syslog Events – toggle to true to have the Historian store this cache to the History database

The SolEventModuleAlerts Cache

The Solace Event Module generates alerts based on incoming Syslog events. The definitions of which Syslog events generate which alerts were provided by Solace. Events and alerts are scoped to SYSTEM, VPN and CLIENT. Some alerts are clearable. In this case, a syslog message generates an alert and another syslog message clears the alert.

Other alerts are not clearable. In this case, a syslog message generates the alert, but there is no corresponding syslog message to clear it. In this case, the alert automatically clears in RTView after 24 hours.

The

SolacePubSubMonitor\rtvapm\solmon\soleventmodule\config\events\event_details.json file lists all events that generate alerts. The **SolacePubSubMonitor\solmon\soleventmodule\config\events\event_correlation.json** file lists the raising and clearing events for all clearable alerts. These files must not be modified, but used for reference only.

Alert events from the Solace Event Module are stored in the SolEventModuleAlerts cache.

This cache is not visible in displays, nor does it store history. It is used solely to generate the three alerts described below.

Alert events are deleted from this cache within 2 minutes of the alert being cleared. These alert events are cleared in 2 ways:

- Clearable alerts are cleared when the clearing event is received by the Solace Event Module.
- Non-clearable alerts are cleared after 24 hours. This time can be adjusted in the Configuration Application under **Solace>DATA-COLLECTION>Solace Event Module Alerts>Clear Time**. The value is in seconds.

The following RTView alerts are generated from the SolEventModuleAlerts cache:

SolEventModuleBrokerAlert – This alert is generated for rows in the SolEventModuleAlerts where Scope=SYSTEM. In Enterprise Monitor, this alert is mapped to the SOLACE-MSGROUTER CType.

SolEventModuleVpnAlert - This alert is generated for rows in the SolEventModuleAlerts where Scope=VPN. In Enterprise Monitor, this alert is mapped to the SOLACE-VPN CType.

SolEventModuleClientAlert - This alert is generated for rows in the SolEventModuleAlerts where Scope=CLIENT. In Enterprise Monitor, this alert is mapped to the SOLACE-CLIENT CType.

When notifying on alerts using the Java Command option, you can get additional information about the SolEventModule alerts as follows:

1. Edit **projects\custom\src\com\sl\rtvapm\custom\RtvApmCommandHandler.java** to uncomment the if statement that calls `getEventModuleInfo` at the end of the `outputAlertNotification` method and also uncomment the `getEventModuleInfo` method.
2. Edit **projects\custom\src\make_all.bat** or **make_all.sh** to add **RTVAPM_HOME/rtvapm/solmon/lib/rtvapm_solmon.jar** to the CP.
3. Run **make_all.bat** or **make_all.sh** to rebuild the jar.
4. In the RTView Configuration Application, configure your alert notifications to execute a Java command (which will generate a message in the data server log file for each alert

notification). For SolEventModule alerts, there will be a second message containing the information from the corresponding row in the SolEventModuleAlerts cache.

Solace Event Module Logging

The Solace Event Module generates a separate log file from the data server under **logs\soleventmodule.log**. You can adjust the logging for the solace event module by modifying the **projects/rtview-server/soleventmod.log4j2.properties** file.

High Availability

High Availability (HA) mitigates single point of failure within the Solace PubSub+ Monitor system by providing a means of defining redundant system components, together with failover capability, for users of those components.

When using HA, components are designated **PRIMARY** and **BACKUP**. If the **PRIMARY** component fails, failover occurs to the **BACKUP** component. If the **PRIMARY** component is subsequently restarted, the **BACKUP** component allows the newly restarted component to take the primary role and return to its backup role.

This section contains the following:

- [“HA Architecture”](#)
- [“Requirements”](#)
- [“Configure HA”](#)
- [“Verify HA Setup”](#)

HA Architecture

Data Server HA

The primary and backup data servers connect to each other via socket. If the primary data server stops, then the backup server takes over. If the primary then comes back online, then the primary takes over again and the backup returns to standby mode. The data client connections will move between the two servers accordingly.

Display Server HA (Classic UI -RTView Manager Only)

In display server deployments, the primary display server and backup display server do not connect to each other. The rtvdisplay servlet is configured to connect first to the primary and, if that fails, it tries to connect to the backup. At any point, if the one it is connected to becomes unavailable, then it will try to connect to the other. You can configure whether to have the rtvdisplay server connect back to the primary server when it comes back online or stay connected to the backup server until it goes offline.

HTML UI HA (Solace PubSub+ Monitor UI)

The HTML UI client connects to the data server via an HA configured rtvquery servlet.

Historian HA

The primary and backup historian connect to each other via socket. If the primary historian stops, then the backup takes over. If the primary historian comes back online, then the primary takes over again and the backup returns to standby mode. Only the active historian writes to the database.

The historian is a data client of the data server and connects to it via a fault tolerant URL (socket only), which means that the data servers and historians can fail over separately or together.

Requirements

The following are minimum requirements for High Availability:

- Two host machines, one for the primary host and one for the backup host.
- Both hosts must be configured such that the RTView processes on each host can connect to each other via socket.
- Both hosts must be able to access:
 - the same data connections
 - the same historian database
 - the alert threshold database
- The RTView processes on both hosts must be able to run against identical properties files. In the case where drivers or other third party jars are located in different directories on the two hosts, create a directory in the same location in each host, copy the jar files into and reference that directory in your properties.
- Tomcat or other Application Server that can access both the primary host and backup host.

Configure HA

To configure high availability:

1. On both the primary and backup hosts, define the following environment variables:
 - **PRIMARYHOST** - the IP Address or hostname of the host running the primary servers (for example, **set PRIMARYHOST=MyHost**).
 - **BACKUPHOST** - the IP Address or hostname of the host running the backup servers (for example, **set BACKUPHOST=OtherHost**).
2. Install Solace PubSub+ Monitor on both the primary and backup host.
3. Configure your Solace PubSub+ Monitor servlets to be HA and deploy them to your application server:
 - **cd projects\rtview-server**
 - In a text editor, open **update_wars (.bat or .sh)** and fill in the values for **HOST** and **HA_HOST** as described in the script.
 - Run the **update_wars(.sh or .bat)** script.
 - Copy the generated war files to the **webapps** directory of your application server.

4. Configure your RTView Manager servlets to be HA and deploy them to your application server:

- **cd projects\rtview-manager**
- In a text editor, open **update_wars** (.bat or .sh) and fill in the values for **HOST**, **HA_HOST**, **HA_DISPLAYHOST**, and **HA_FAILBACK** as described in the script.
- Run the **update_wars** (.sh or .bat) script.
- Copy the generated war files to the **webapps** directory of your application server.

5. To run high availability, you must run from the command line:

Windows:

- From the command line on the primary host, type **bin\start_servers -haprimary**.
- From the command line on the backup host, type **bin\start_servers -habackup**.

UNIX:

- From the command line on the primary host, type **bin/start_servers.sh -haprimary**.
- From the command line on the backup host, type **bin/start_servers.sh -habackup**.

Verify HA Setup

Verify failover and failback configurations by looking for the following in the log files:

- ["Primary Data Server Log File"](#)
- ["Backup Data Server Log File"](#)
- ["Primary Historian Log File"](#)
- ["Backup Historian Log File"](#)
- ["Primary Display Server Log File"](#)
- ["Backup Display Server Log File"](#)

Note: If the PRIMARYHOST and/or BACKUPHOST environment variable(s) is/are not set, you will get the following error in the log files and HA will be disabled:

```
ERROR: Disabling HA because the PRIMARYHOST and/or BACKUPHOST environment variable is not set.
```

Primary Data Server Log File

```
startup
[rtview] Starting as primary HA data server accessible via //primaryhostname:4178, //
backuphostname:4178
[rtview] DataServerHA: connected to backuphostname:4178
[rtview] DataServerHA: run as primary server, backuphostname:4178 has lower priority than
this server
[rtview] leaving standby mode
```

Backup Data Server Log File

```
startup
[rtview] Starting as backup HA data server accessible via //primaryhostname:4178, //
backuphostname:4178
```

```

rtview] entering standby mode
after failover (primary data server exits)
[rtview] DataServerHA: error receiving message: java.net.SocketException: Connection
reset (primaryhostname:4178)
[rtview] DataServerHA: becoming primary server, lost connection to primary server
primaryhostname:4178
[rtview] leaving standby mode
after failback (primary data server comes back up)
[rtview] DataServerHA: resigning as primary server, got standby directive from other
server primaryhostname:4178
[rtview] connected to primaryhostname:4178
[rtview] entering standby mode

```

Primary Historian Log File

```

[rtview] Starting as primary HA historian paired with backup historian at
<backuphostname>:4122
[rtview] ServerGroup: status of member <backuphostname>:4122 : primary, priority= 1,
started=Wed Nov 14 12:56:01 PST 2018
[rtview] ServerGroup: primary server = local
[rtview] ServerGroup: becoming primary server

```

Backup Historian Log File

```

[rtview] Starting as backup HA historian paired with primary historian at
<primaryhostname>:4122
[rtview] ServerGroup: status of member <primaryhostname>:4122 : primary, priority= ,
started=Wed Nov 14 12:56:01 PST 2018
[rtview] ServerGroup: primary server = <primaryhostname>:4122
after failover (primary historian exits):
[rtview] error receiving message: java.io.EOFException (primaryhostname:4122 )
[rtview] ServerGroup: disconnected from primaryhostname:4122
[rtview] ServerGroup: primary server = local
after failback (primary historian starts back up):
[rtview] ServerGroup: status of member primaryhostname:4122 : primary, priority= 2,
started= Tue Nov 20 09:12:43 PST 2018
[rtview] ServerGroup: connected to primaryhostname:4122
[rtview] ServerGroup: primary server = primaryhostname:4122

```

Primary Display Server Log File

```

2018-11-19 14:08:09,366 INFO main - [rtview] Starting as primary HA display server paired
with backup display server on <backuphostname>

```

Backup Display Server Log File

```

2018-11-19 14:08:09,366 INFO main - [rtview] Starting as backup HA display server paired
with primary display server on <primaryhostname>

```

Property Editor REST API

This section describes the Monitor REST API you can use to add, edit and delete properties on a running data server. This means that you can update connection properties without restarting the data server.

Note: Changes to Solace connections that are not to Cloud Brokers require restart. They are not applied when the server properties are updated. Changes to Cloud Broker connection properties do not require restart.

To complete these instructions you need the abbreviated name for the Monitor--also called the **PackageName**. The **PackageName** for Solace PubSub+ Monitor and the Solution Package for Solace is **solmon**. Where indicated, you:

replace **<PackageName>** with **solmon**

For example, change:

```
node main.js -action=getPropertyDescriptions -sp=<PackageName>
```

to:

```
node main.js -action=getPropertyDescriptions -sp=solmon
```

A sample node.js-based application is available in the **rtvadm/sampleapps/propeditor** directory which you can use to edit properties via the same rtvadmin servlet that is used by the RTView Configuration Application. This sample application also serves as an example of how to post to the rtvadmin servlet from your own application. For instructions about how to setup and run the sample application see the **README.txt** file in the same directory.

Two use cases are supported:

- [“Import Initial Properties & Connections into Configuration Application”](#): Rather than manually entering each connection, you can use the REST API to import initial connections into the Configuration Application. You can subsequently edit those connections using the Configuration Application.
- [“Automate Connection Updates”](#): Rather than using the Configuration Application to manage your connection properties, you can use the REST API to add, edit and delete connections. This is useful when you have an automated system for provisioning and want to automatically add monitoring as part of the provisioning process. These connections will not be included in the Configuration Application and will only be edited via the REST API.

Also see [“Design Notes”](#) for details about [“Supported API Actions”](#), [“FileNames”](#), [“Sample json”](#), [“Adding, Editing, Deleting JsonPrimitive Properties”](#), [“Adding and Editing JsonObject Properties”](#), [“Deleting JsonObject Properties”](#), [“Updating vs. Restarting Data Servers”](#) and [“High Availability”](#).

This section also contains:

- [“Import Initial Properties & Connections into Configuration Application”](#)
- [“Automate Connection Updates”](#)
- [“Encrypt Property Text”](#)
- [“Design Notes”](#)

Import Initial Properties & Connections into Configuration Application

Replace **<PackageName>** with the **PackageName** for the solution package you are configuring.

To Import Properties:

1. Install and start the Monitor.
2. Open a command prompt and navigate to the **rtvapm/sampleapps/propeditor** directory. Follow the instructions in the **README.txt** file to configure the node application to connect to the Monitor.
3. By default, all properties (including passwords) are sent to the rtvadmin servlet and on to the Data Server in plain text. You can optionally encrypt that text. See ["Encrypt Property Text"](#) for details.
4. Use the sample application to retrieve a list of solution packages in your data server as follows:
node main.js -action=getSPs
5. Use the sample application to get a list of available properties for your solution package as follows:
node main.js -action=getPropertyDescriptions -sp=<PackageName>
where **<PackageName>** is the abbreviated name for a solution package on the retrieved list.
6. Create a json file containing the connections and other properties you would like to add. Note that the file contents must be valid json. See ["Sample json"](#) for details about json properties.
7. Confirm that the Configuration Application is NOT in use.
8. Use the sample application to add the properties as follows:
node main.js -action=editProperties -filename=project -propstoadd=jsonfile.json
Note that the file name must be **project** in this use case. Otherwise, the properties will not be applied. See ["Adding, Editing, Deleting JsonPrimitive Properties"](#) for additional information.
9. Use the sample application to update or restart the data server. An update will apply connection properties. A restart is required to apply non-connection properties:
Node main.js -action=updatePropertiesOnServer
Or
Node main.js -action=restartServers
10. Now that the initial properties are imported you can use the RTView Configuration Application to edit your configuration.

Automate Connection Updates

Replace **<PackageName>** with the **PackageName** for the solution package you are configuring.

To Auto-update Connections:

1. Install and start the Monitor.
2. In a text editor, open **projects\rtview-server\rtvservers.dat** and add -
properties:autoconnections at the end of the dataserver line.
3. Open a command prompt and navigate to the **rtvapm/sampleapps/propeditor** directory. Follow the instructions in the **README.txt** file to configure the node application to connect to the Monitor.
4. By default, all properties (including passwords) are sent to the rtvadmin servlet and on to Data Server in plain text. You can optionally encrypt that text. See ["Encrypt Property Text"](#) for details.
5. Use the sample application to get a list of solution packages in your Data Server as follows:
node main.js -action=getSPs
6. Use the sample application to get the list of available properties for a solution package as follows:
node main.js -action=getPropertyDescriptions -sp=<PackageName>
where **<PackageName>** is the abbreviated name for a solution package on the retrieved list.
7. Create a json file containing the connections and other properties you would like to add. Note that the file contents must be valid json. See ["Design Notes"](#) below for details about json properties.
8. Use the sample application to add the properties as follows:
node main.js -action=editProperties -filename=autoconnections -propstoadd=jsonadd.json
Note that the file name must match the **-properties** command line argument that you entered in **rtvservers.dat**. See ["Filenames"](#) for more information.
9. Use the sample application to update or restart the data server. An update will apply connection properties. A restart is required to apply non-connection properties:
Node main.js -action=updatePropertiesOnServer
Or
Node main.js -action=restartServers
10. Now that the initial connections have been added, you can delete or modify those connections as follows:
node main.js -action=editProperties -filename=autoconnections -propstoadd=jsonadd.json -propstoremove=jsondelete.json -merge=true
See ["Design Notes"](#) for more information.

Note: In this scenario it is possible that the automated property updates occur at the same time as someone is editing other properties in the Configuration Application. Since all properties files are re-read when you execute the **updatePropertiesOnServer** post, the properties saved by the Configuration Application are re-read as well. The Configuration Application might say that you need to restart servers when it isn't necessary.

To encrypt property text, proceed to ["Encrypt Property Text"](#).

Encrypt Property Text

By default, properties (including passwords) are sent in plain text from the client application to the servlet. To use AES encryption on the text, do the following:

1. In the sample node.js-based application (in the **rtvapm\sampleapps\propeditor** directory), set the **cryptKey** variable to the key you want to use for the AES encryption. The application might clip or pad this key as needed in order to generate a 16 element byte array that can be used by AES encryption.

2. In the data server's **rtvservers.dat** file, pass the value you used for **cryptKey** into the command line using the **-propkey** command line argument on the data server line.

You can either enter the key in plain text or you can scramble it using the **encode_string** command line utility.

For example, you could pass in **-propkey:propertyKeyValue**. Or you could scramble the key as follows on the command line: **encode_string propertyKeyValue**

which returns this value:

```
01343013550134901335013330134801335013500134601331013490134901353013450
134801334.
```

You can then use that value on the command line instead: -

```
propkey:01343013550134901335013330134801335013500134601331013490
134901353013450134801334
```

Design Notes

This section contains:

- ["Supported API Actions"](#)
- ["Filenames"](#)
- ["Sample json"](#)
- ["Adding, Editing, Deleting JsonPrimitive Properties"](#)
- ["Adding and Editing JsonObject Properties"](#)
- ["Deleting JsonObject Properties"](#)
- ["Updating vs. Restarting Data Servers"](#)
- ["High Availability"](#)

Supported API Actions

The REST API supports several actions. To get the list of actions, go to the sample application as described above and execute the following on the command line:

```
node main.js -action=getActions
```

To get the description of a single action:

```
node main.js -action=getActions -name=actionName
```

You can also execute any action that start with get in a browser as follows (where **host**, **port** and **rtvadmin** are the values you specified in the sample application):

```
http://host:port/rtvadmin/api?action=getActions&name=actionName
```

Filenames

When using the REST API to import initial properties into the Configuration Application, the filename must be **project**. This is because the Configuration Application reads and writes the project properties files and all RTView projects automatically read them. When using the REST API to automatically update properties that are not included in the Configuration application, the filename must match the **-properties** argument in the **rtvservers.dat** file and must NOT be **project**.

Sample json

You can optionally use the Configuration Application to generate sample json to get you started. Properties saved from the Configuration Application are in **projects\rtview-server\project.properties.json**.

Adding, Editing, Deleting JsonPrimitive Properties

All primitive json values must be enclosed in quotes, even boolean and number values. The top level solution package element must be included.

The following example uses **solmon** properties to illustrate. See the generating sample json properties for details about generating properties for your solution package.

Example:

```
{
  "solmon": {
    "expiretime": "10000"
  }
}
```

Adding and Editing JsonObject Properties

Solution package connections are arrays of JsonObject. The property descriptions indicate which fields in the json object are required and which are indexes. When adding a new connection (or other JsonObject), you must include all of the required and index fields or the property will not be saved. The top level solution package element must be included.

The following example uses **solmon** properties to illustrate. See the generating sample json properties for details about generating properties for your solution package.

Example:

```

{
  "solmon": {
    "conn": [{
      "iscloudvmr": "true",
      "__name": "conn2",
      "uri": "http://host2:8080/SEMP",
      "version": "7.4VMR",
      "vpnnamelist": "vpn1;vpn2"
    },
    {
      "iscloudvmr": "true",
      "__name": "conn3",
      "uri": "http://host3:8080/SEMP"
    }
  ]
}

```

When adding connections to an existing file, you can either merge the new connections into the existing connection list or you can replace the whole list with the connections. This is controlled by the merge parameter. When merge is true, the indexes are used to control whether a new connection is added or an existing connection is modified.

Deleting JsonObject Properties

Solution package connections are arrays of JsonObjects. The property descriptions indicate which fields in the json object are indexes. When deleting a connection (or other JsonObject), only the index fields are required. The top level solution package element must be included.

The following example uses **solmon** properties to illustrate. See the generating sample json properties for details about generating properties for your solution package.

Example:

```

{
  "solmon": {
    "conn": [{
      "__name": "conn2"
    },
    {
      "__name": "conn3",
    }
  ]
}

```

Updating vs. Restarting Data Servers

All connection properties support updates. Once you have added, edited or deleted connections using the REST API, you can apply those changes with the `updatePropertiesOnServer` action. Restart is not required. Note that when connections are removed from your configuration, they are not immediately removed from the monitor. They stay in the caches (and display) but do not receive further updates. They will expire and be removed based on the settings in the DATA STORAGE tab of the Configuration Application. All non-connections properties are applied on restart, so they must be applied with the `restartServers` action. Restarting your servers will also cause any deleted connections to be immediately removed from the caches and displays.

High Availability

To edit properties for HA-configured servers, first follow the instructions in the **High Availability** section of this document to configure the `rtvadmin` servlet for High Availability.

CHAPTER 5 Configure Alert Notification

This section describes how to configure alerts to execute an automated action (such as sending an email alert). These instructions are for Solace PubSub+ Monitor and RTView Manager.

To setup alert notification you select the event you want to notify on and then select the action to execute.

You set alerts to execute notifications based on the following events:

- when a new alert is created
- the first time the **Severity** level on an alert changes
- when an alert is cleared
- periodically renotify unacknowledged alerts

By default, a **.bat** script is executed for new alerts and on the first severity change for an alert. The script, by default, is not configured to execute an automated action. However, you can uncomment a line in the script that prints alert data to standard output. Or, you can modify the script to execute an automated action (such as sending an email alert). The following is a sample output from the alert command script:

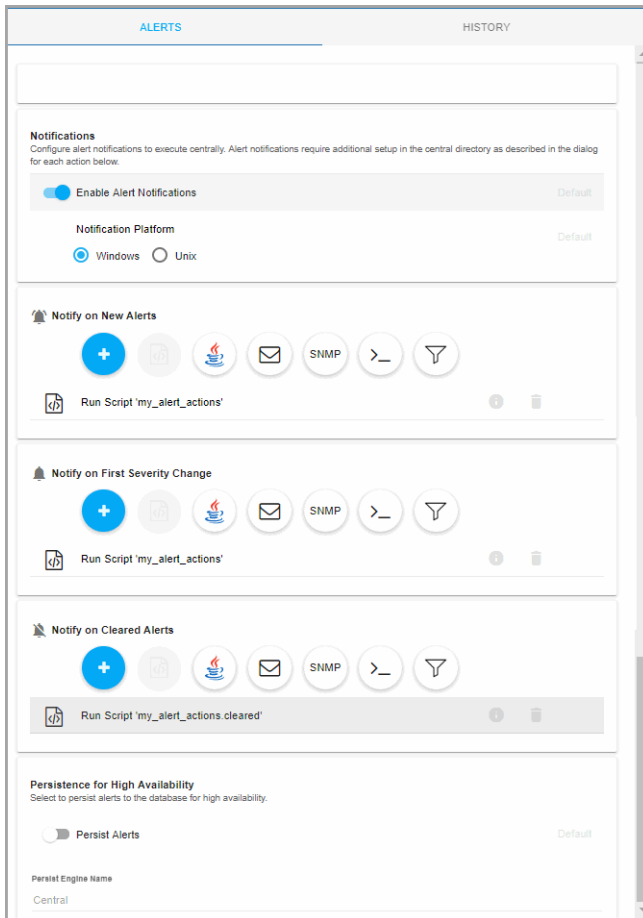
```
----- Alert command script executed: DOMAINNAME=MYMON-1, ALERTNAME=someAlert,
ALERTINDEX=alertIndex1~alertIndex2, ALERTID=1075, ALERTSEVERITY=2,
ALERTTEXT=High Alert Limit exceeded current value: 100.0 limit: 80.0 #####
```


To configure Alert Notification:

1. If you are:
 - configuring alert notification for Solace PubSub+ Monitor, open the RTView Configuration Application for Solace PubSub+ Monitor, select **Alerts** (in the navigation tree) and then the **Alerts** tab.

Configure Alert Notification

- configuring alert notification for RTView Manager, open the RTView Configuration Application for RTView Manager, select **Alerts** (in the navigation tree) and then the **Alerts** tab.

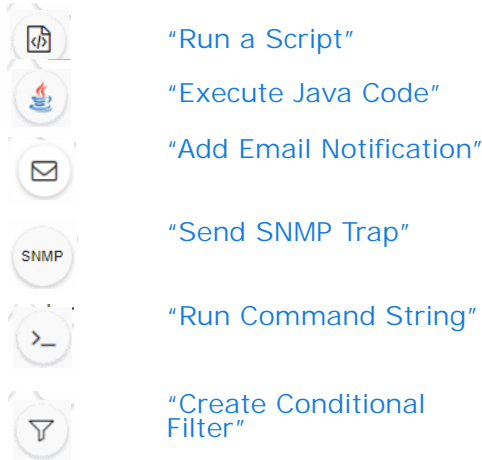


2. Toggle on **Enable Alert Notifications** and select the **Notification Platform** type (**Windows** or **Unix**).
3. Select an alert event that you want to notify on by clicking  next to the option.

Alert Event Options

- **Notify on New Alerts:** A notification is executed every time a new alert is created.
 - **Notify on First Severity Change:** A notification is executed the first time the **Severity** changes for each alert.
 - **Notify on Cleared Alerts:** A notification is executed every time an alert is cleared.
 - **Periodically Renotify on Unacknowledged Alerts:** Enter the **Renotification Interval** (number of seconds). A notification is executed for each unacknowledged alert per the interval you specify here. If the Renotification Interval is greater than **0** and no actions are defined, the **New Alerts** action will be used for renotifications.
4. Select the alert action(s) you want to execute.

Alert Action Options



You can choose multiple actions.

5. Click **SAVE** to close the dialog and **SAVE** (in title bar) to save your changes.
6. Some alert notification actions require additional setup as described in the dialog for each action. See the descriptions of each action below for details on the dialogs and additional setup for each action.
7. Click **RESTART SERVERS** to apply changes.

Run a Script

This alert notification action executes the following script in the **projects/rtview-server** directory for Solace PubSub+ Monitor and in the **projects/rtview-manager** directory for RTView Manager:

- **my_alert_actions.bat/sh** – New and First Severity Change
- **my_alert_actions.cleared.bat/sh** – Cleared
- **my_alert_actions.renotify.bat/sh** – Periodically Renotify

This action can only be added once per notification type. In addition to selecting this action in the Configuration Application, you must also modify the appropriate script to execute the actions for your notification. This script has access to the following fields from the alert: **Alert Name**, **Alert Index**, **ID**, **Alert Text** and **Severity**.

Return to [“Alert Event Options”](#).

Execute Java Code

This alert notification action allows you to implement your alert notification actions using Java code. It executes the **my_alert_notification.\$domainName.\$alertNotifyType.\$alertNotifyCol** command in your Custom Command Handler and passes the row from the alert table that corresponds to the alert.

This action can only be added once per notification type. In addition to selecting this action the Configuration Application you must also modify the custom command handler to execute the actions for your notification. A sample custom command handler is included under **projects/custom**. It prints the alert notification to the console. You will modify this command handler to implement your own notification actions.

Make the following entries:

- **Custom Command Handler Class Name:** Enter the fully qualified name of the Custom Command Handler class. This defaults to the sample Custom Command Handler in the **projects/custom** directory.
- **Custom Command Handler Jar:** Enter the path and name of the jar containing the Custom Command Handler class. The path may be absolute or relative to the location of data server. This defaults to the sample Custom Command Handler in the **projects/custom** directory.

Note that if you can only have one custom command handler per Data Server, so changing these settings for one notification event will change them for the rest of the notification events.

Customize the Custom Command Handler

The source for the Custom Command handler is provided in the **RtvApmCommandHandler.java** file, located in the **RTViewEnterpriseMonitor\projects\custom\src\com\sl\rtvapm\custom** directory. By default, the handler prints the alert data to standard output. To change this behavior perform the following steps:

1. Open the **RtvApmCommandHandler.java** file.
2. Modify the **OutputAlertString** method as needed. You can replace this method with your own if you modify the **invokeCommand** method to call it, and your method accepts the same arguments as **OutputAlertString**.
3. Save the **RtvApmCommandHandler.java** file.
4. Compile **RtvApmCommandHandler.java** and rebuild **rtvapm_custom.jar** using the supplied script (**make_all.bat** or **make_all.sh**) in **projects\custom\src** directory.

Return to [“Alert Event Options”](#).

Add Email Notification

This alert notification action sends an email. This action can be added multiple times per notification type. No additional setup is required beyond filling in the **Add Email Notification** dialog in the Configuration Application.

Make the following entries:

- **SMTP Host:** The SMTP host address. This is required. Consult your administrator.
- **SMTP Port:** The SMTP port number. This is required. Consult your administrator.
- **From:** The email address from which to send the email. This is required.
- **To:** The email address to which to send the email. This is required and may contain multiple entries.
- **Subject:** The subject for the email. This is required. You can include the value from any column in the alert table in your subject. Click **Insert \$alert<Value>** and select one or more applicable alert value(s).
- **Body:** The body of the email. This is optional. Click **Insert \$alert<Value>** and select one or more applicable alert value(s).
- **User:** The user name for the account from which you are sending the email. This is optional.
- **Password:** The password for the account from which you are sending the email. This is optional.

Return to [“Alert Event Options”](#).

Send SNMP Trap

This alert notification action sends an SNMP Trap as described in **rtvapm/rtview/lib/SL-RTVIEW-MIB.txt**. This action can be added multiple times per notification type. No additional setup is required beyond filling in the **Add SNMP Trap Notification** dialog in the Configuration Application

Make the following entries:

- **Trap Type:** Select the SNMP version of the trap. This is required.
- **Destination Address:** The system name or IP address of the receiving system. This is required.
- **Destination Port:** The UDP port on the receiving system. This is required.
- **Community Name:** (This field is visible when **Trap Type v2/v3** is selected.) The SNMP v2 Community Name string. This is required.

Return to [“Alert Event Options”](#).

Run Command String

This alert notification action executes a specified command. This action can be added multiple times per notification type. Make the following entry:

Command String: Enter the command string for any command supported by RTView. To enter a command string, you must know the correct syntax for the command. Contact Technical Support for assistance on syntax. You can include the value from any column in the alert table using the syntax in the Show More link at the bottom of the dialog.

Return to [“Alert Event Options”](#).

Create Conditional Filter

This alert notification action alert allows you to execute different actions for different alerts based on information in the alert. For example, you can configure EMS alerts to send emails to your EMS team and Solace alerts to send emails to your Solace team. This action can be added multiple times per notification type.

To create a condition, make the following entries:

- **Alert Field:** Select an alert field: **Alert Name**, **Alert Index**, **Category**, **CI Name**, **Owner**, **Package**, **Primary Service** or **Severity**. This is required.
- **Operator:** Select one - **EQUALS**, **DOES NOT EQUAL**, **STARTS WITH**, **ENDS WITH** or **CONTAINS**. This is required.
- **Value:** Enter the value to which to compare the Alert Field. Cannot contain wildcard characters. This is required.
- **Action(s):** Select one or more actions to execute when this condition is met - ["Run a Script"](#), ["Execute Java Code"](#), ["Send SNMP Trap"](#), ["Add Email Notification"](#), ["Run Command String"](#).

Return to ["Alert Event Options"](#).

CHAPTER 6 Using the Monitor

The Solace PubSub+ Monitor is an advanced messaging platform that allows customer applications to efficiently exchange messages over dedicated VPNs. The Solace PubSub+ Monitor provides pre-configured alerts and dashboards to monitor current status and manage history for the Solace broker. The Solace PubSub+ Monitor can help operators avoid or detect many problems relating to configuration, topology, and performance. This section describes Monitor features, graphs and functionality as well as Monitor displays.

This section contains:

- ["Login to Solace PubSub+ Monitor"](#): Describes how to access the Solace PubSub+ Monitor and ["User Permissions"](#).
- ["Overview"](#): Describes the Monitor ["Graphic Elements"](#) and functionality.
- ["Displays"](#): Describes Monitor displays under the ["Displays"](#) tab.
- ["Alerts"](#): Describes Monitor displays under the ["Alerts"](#) tab.
- ["Admin"](#): Describes Monitor displays under the ["Admin"](#) tab.

Login to Solace PubSub+ Monitor

To access Solace PubSub+ Monitor to monitor your Solace components, browse to:

http://IPAddress:8068/rtview-solmon if you are executing your browser on a different host than where the monitor is running.

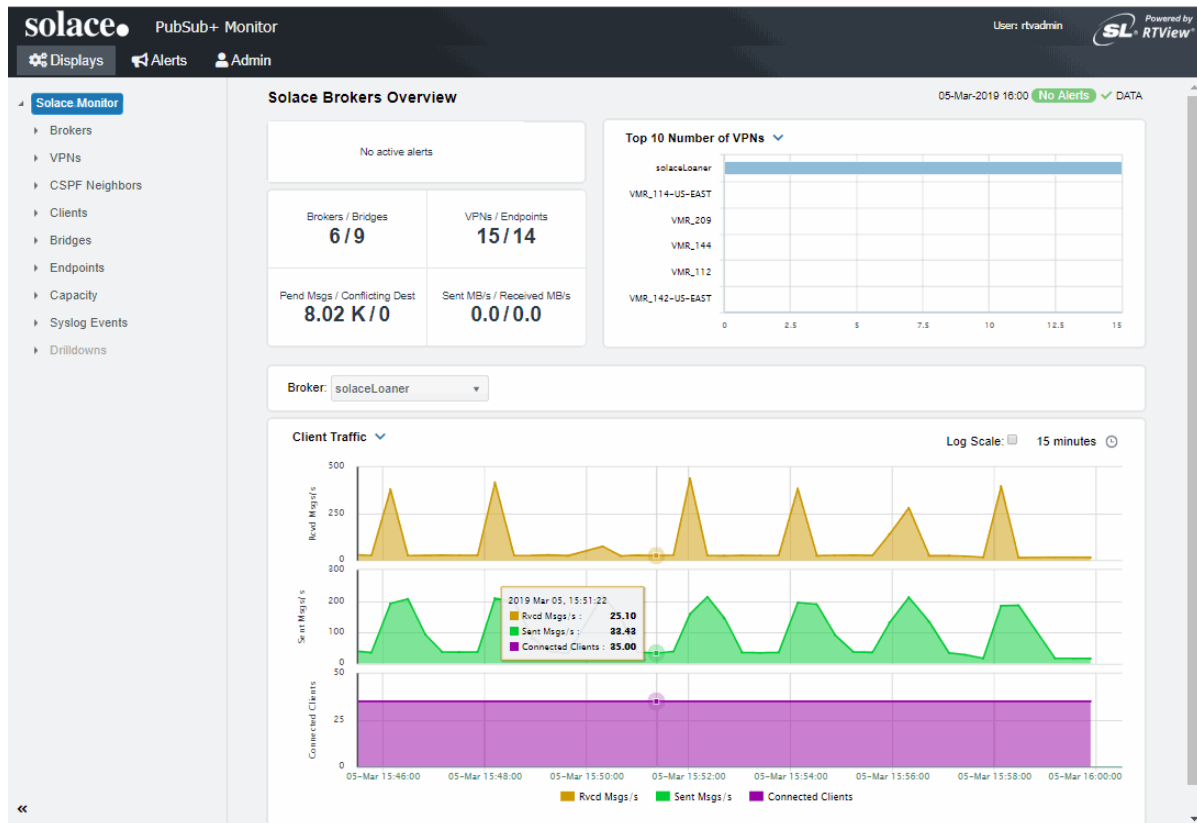
http://localhost:8068/rtview-solmon if you are executing your browser in the same host where the monitor is running.

User Permissions

There are three types of users:

- **End-users** use `rtvuser/rtvuser` as their username/password which permits read-only access to all displays except for **Admin** tab displays.
- **End-user with alert management privileges** use `rtvalertmgr/rtvalertmgr` as their username/password which permits the same access as the end-user. Additionally, you can use the **Own**, **Ack**, **Unack** and **Comment** functions in the **Alerts Table**.
- **Administrators** use `rtvadmin/rtvadmin` as their username/password which permits read-only access to all displays as well as **Admin** tab displays. You can also enable and administer alerts, view cache contents and use the **Own**, **Ack**, **Unack** and **Comment** functions in the **Alerts Table**.

The Solace PubSub+ Monitor Displays home page opens, which provides a health summary of all your Solace brokers (see the following figure).



On larger screens the page contains a horizontal menu bar with three tabs:

- **Displays** contains the screens for PubSub+ performance data which you select from the navigation tree in the left panel.
- **Alerts** is used for viewing and managing alerts.
- **Admin** is used for administering alerts and viewing cache contents directly. This tab is only accessible to users with administrator privileges (user accounts with the rtvadmin role). You can hide the navigation tree by clicking << (on the lower left).

Navigation through the displays is recorded in the browser history and you can use the browser's back and next buttons to traverse that history. You can hide the navigation tree in the **Displays** and **Admin** tabs by clicking << (on the lower left).

On smaller screens, the horizontal menu bar is replaced by a vertical menu whose visibility is toggled by clicking the menu icon in the upper right corner of the page.

Once a user is logged in, that user remains logged in until the browser window is closed. Closing just the browser tab that contains the user interface does not log out the user, the browser itself must be closed.

See ["Displays"](#) for details about displays for Solace PubSub+.

Overview

This section describes the general operation of the Solace PubSub+ Monitor, the user interface as well as “Graphic Elements” such as “Heatmaps”, “Tables”, “Trend Graphs” and “Icons and Buttons”.

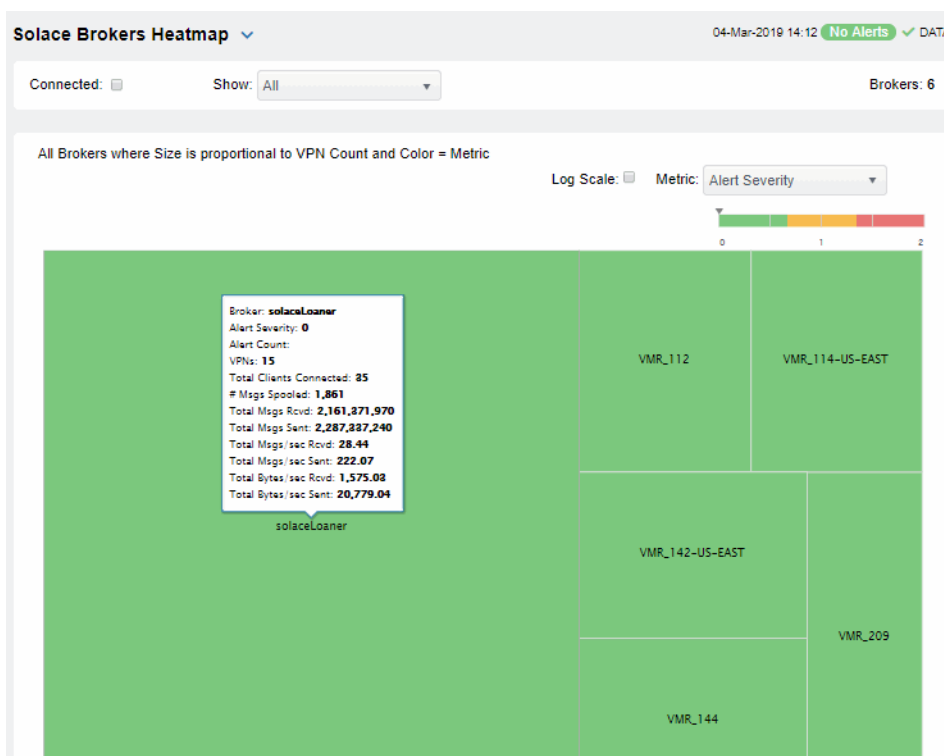
Graphic Elements


This section describes the graphic objects that are used in displays and their behavior:

- “Heatmaps”
- “Tables”
- “Trend Graphs”
- “Icons and Buttons”

Heatmaps

Heatmaps organize your Solace PubSub+ resources (brokers, VPNs, Clients, Bridges, Endpoints and so forth) into rectangles and use color to highlight the most critical value in each. Heatmaps enable you to view various alert metrics in the same heatmap using drop-down menus. Each metric has a color gradient bar that maps relative values to colors. In most heatmaps, the rectangle size represents the number of resources in the rectangle; a larger size is a larger value. Heatmaps include drop-down menus by which to filter data. The filtering options vary among heatmaps (the **Solace Brokers Heatmap** is shown below).



For example, the **Solace Brokers Heatmap** contains a **Metric** drop-down menu with options such as **Alert Severity** and **Alert Count**. Menu options vary according to the data populating the heatmap. **Alert Severity** is selected and its corresponding color gradient  bar is shown. Each rectangle represents a connection. A red rectangle in the heatmap indicates that one or more resources associated with that connection currently has an alert in an alarm state. The yellow rectangles in the heatmap indicate that one or more resources associated with that host currently have an alert in a warning state. A green rectangle would indicate that no alert is in a warning or alarm state.

In most heatmaps, you can also drill down to more detail by clicking a rectangle in the heatmap.

Note: Typically, it takes about 30 seconds after a server is started to appear in a Solace PubSub+ Monitor display. By default, data is collected every 15 seconds, and the display is refreshed 15 seconds afterward.

As previously mentioned, each Metric drop-down menu option has a color gradient bar that maps relative values to colors. The following summarizes the heatmap color code translation for typical heatmaps:

Alert Severity


The maximum alert level in the item (index) associated with the rectangle. Values range from **0** - **2**, as indicated in the color gradient bar, where **2** is the highest **Alert Severity**.

● Metrics that have exceeded their specified **ALARM LEVEL** threshold have an **Alert Severity** value of **2**. For a given rectangle, this indicates that one or more metrics have reached their alert thresholds.

● Metrics that have exceeded their specified **WARNING LEVEL** threshold have an **Alert Severity** value of **1**. For a given rectangle, this indicates that one or more metrics have reached their warning thresholds.

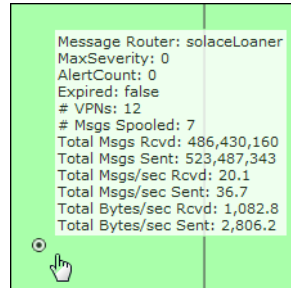
● Metrics that have not exceeded either specified threshold have an **Alert Severity** value of **0**. For a given rectangle, this indicates that no metrics have reached their warning or alert thresholds.

Alert Count

The total number of critical and warning alerts in a given item (index) associated with the rectangle. The color gradient bar  numerical values range from **0** to the maximum count of alerts currently in the heatmap. The middle value in the gradient bar indicates the average alert count.

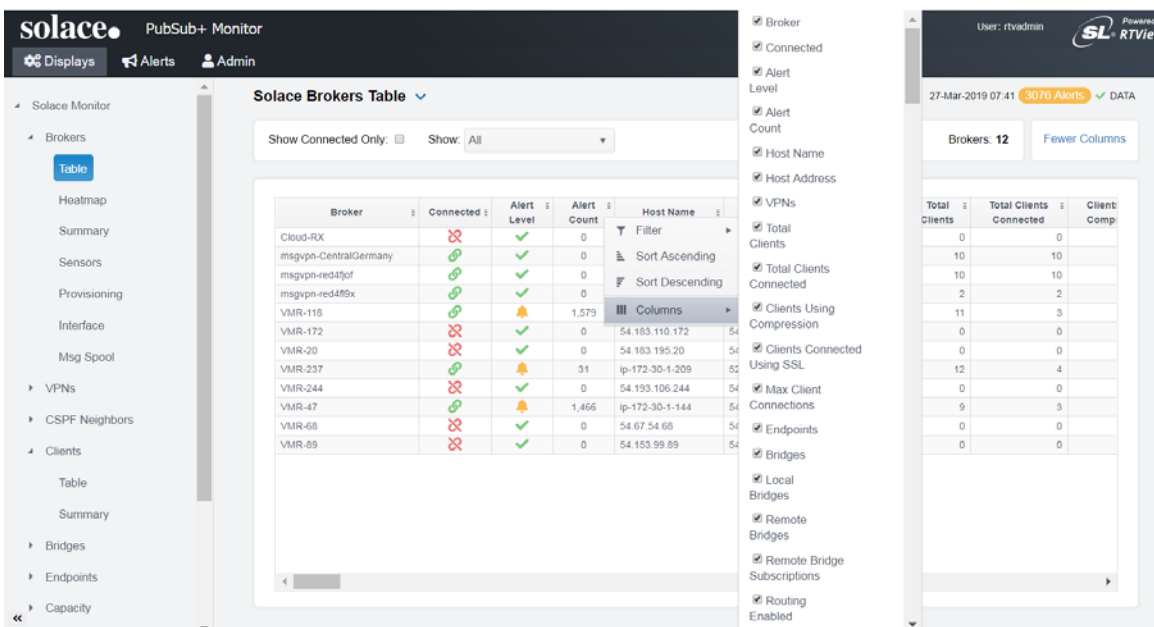
Mouse-over

The mouse-over functionality provides additional detailed data in a tool-tip when you mouse-over a heatmap. The following figure illustrates mouse-over functionality in a heatmap object. In this example, when you mouse-over a host, details are shown such as alert count, number of connections, and pending messages.



Tables

Solace PubSub+ Monitor tables contain the same data that is shown in the heatmap in the same View, and additional data not included in the heatmap. For example, the **Solace Brokers Table** display (shown below) shows the same data as the **Solace Brokers Heatmap** display. The following figure also illustrates the "Column Visibility" which allows you to select the columns you want in the table.



Tables support advanced HTML, interactive features: sorting on multiple columns, filtering on multiple columns, column resizing, column reordering, and hiding columns. Many of these features are accessed from the column menu, shown in the screen shot above, which you open by clicking on the menu icon in a column's header.

Additional features are:

- ["Multiple Column Sorting"](#)
- ["Column Visibility"](#)
- ["Column Filtering"](#)
- ["Column Reordering"](#)
- ["Row Paging"](#)

Multiple Column Sorting

Click on a column header to sort the table by that column. On the first click, the column is sorted in ascending order (smallest value at the top), on the second click the sort is in descending order, and on the third click, the column is returned to its original unsorted state. A sort on a string column is case-sensitive.

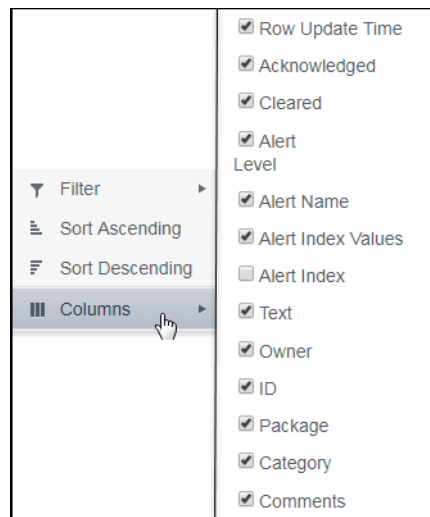
To sort multiple columns, click on the column header for each column you want to sort. The sorting is performed in the order that the column headers were clicked. Multiple column sorting is a very useful feature, but can also cause confusion if you intend to sort on a single column, but forget to "unsort" any previously selected sort columns first. You should check for the up/down sort icon in other column headers if a sort gives unexpected results.

The grid's row selection is cleared if the sort is changed or if columns are resized or reordered.

Column sorting is reflected in an export to HTML and Excel.

Column Visibility

You can hide or show columns in the table by clicking on any column's menu icon, and choosing **Columns** from the menu. This opens a submenu with a check box for each column that toggles the visibility of the column. All columns in the data table appear in the Columns menu, even those that are initially hidden.



Column visibility changes are NOT reflected in an export to HTML and Excel.

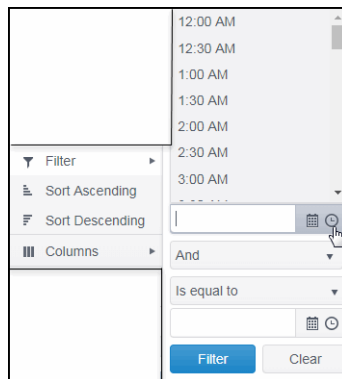
Column Filtering

You can create a filter on any column. If filters are created on multiple columns, then only the rows that pass all of the filters are displayed. That is, if there are multiple filters they are logically "ANDed" together to produce the final result.

You can configure a filter on any column by clicking on the column's menu icon and choosing **Filter** from the menu. This opens the **Column Filter** dialog:

Options in the **Column Filter** dialog vary according to the data type of the selected column:

- **String columns:** You can enter a filter string such as "abc" and, from the drop-down list, select the operator (equal to, not equal to, starts with, contains, etc) to be used when comparing the filter string to each string in the column. All of the filter comparisons on strings are case-insensitive. You can optionally enter a second filter string (e.g. "xyz") and specify if an AND or OR combination should be used to combine the first and second filter results on the column.
- **Numeric columns:** You can enter numeric filter values and select arithmetic comparison operators, ($=$, \neq , $>$, \geq , $<$, \leq). You can optionally enter a second filter value and comparison operator, and specify if an AND or OR combination should be used to combine the first and second filter results.
- **Boolean columns:** You simply select whether matching items should be true or false.
- **Date columns:** You can select a date and time and choose whether matching items should have a timestamp that is the same as, before, or after the filter time. The date is selected by clicking on the calendar icon and picking a date from a calendar dialog. The time is selected by clicking on the time icon and picking a time from a drop-down list:



Data updates to the grid are suspended while the filter menu is opened. The updates are applied when the menu is closed.

Column filtering is reflected in an export to HTML and Excel.

If the row header is enabled, at least one column must remain locked.

Column locking is NOT reflected in an export to HTML and Excel.

Column Reordering

You can reorder the grid columns by dragging and dropping a column's header into another position. Dragging a column into or out of the row header area (the leftmost columns) is equivalent to locking or unlocking the column.

Column reordering is NOT reflected in an export to HTML and Excel.

Row Paging

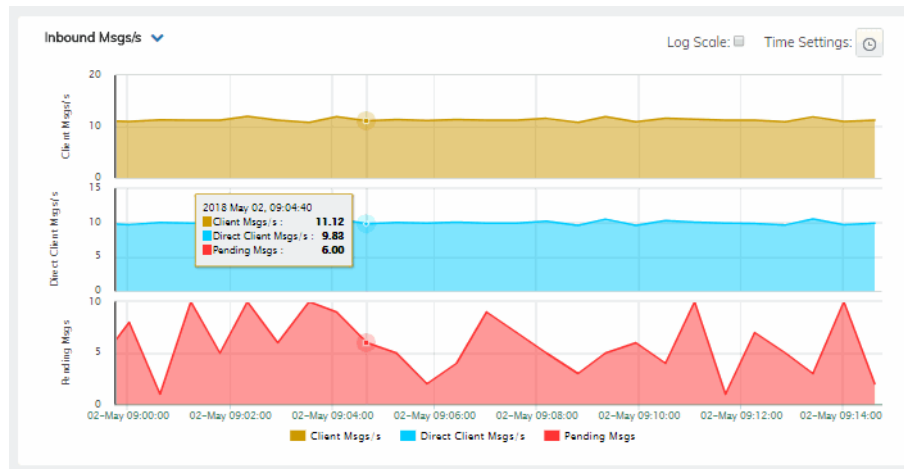
If the data table contains more than one 200 rows, page controls appear at the bottom of the grid.

217	emreference	sl.rtvew.sql.sqldb	sl.rtvew.sub	\$rtvConfigDataServer.CONFIG_SERVER
229	emreference	sl.rtvew.properties.queryTimeOut	10	
216	emreference	sl.rtvew.sql.sqldb	ALERTDEFS --- __none ---	

Page 1 of 2 1 - 200 of 235 items

Trend Graphs

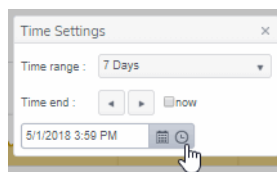
Solace PubSub+ Monitor trend graphs enable you to view and compare various important metrics over time, such as server memory and virtual memory utilization.



Time Settings

By default, the time range end point is the current time. To change the time range, click the **Time Settings** and either:

- choose a **Time range** from 5 Minutes to 7 Days in the drop-down menu.
- specify begin/end dates using the calendar ..
- specify begin/end time using the clock .



Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows .

Restore settings to current time by selecting **now** .

Mouse-over

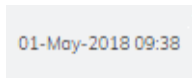
The mouse-over functionality provides additional detailed data in an over imposed pop-up window when you mouse-over trend graphs.

Log Scale

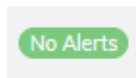
The Log Scale option enables visualization on a logarithmic scale. This option should be used when the range in your data is very broad. For example, if you have data that ranges from the tens to the thousands, then data in the range of tens will be neglected visually if you do not check this option. This option makes data on both extreme ranges visible by using the logarithmic of the values rather than the actual values.

Icons and Buttons

The following describes GUI icons and behavior in the title bar.



The current local date and time. If the time is incorrect, this might indicate that the monitor stopped running. When the date and time is correct and the **Data** indicator is green, this is a strong indication that the platform is receiving current and valid data.

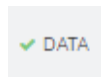
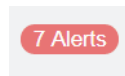
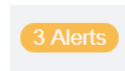


ALERTS: Opens the **Alerts Table**, shows the total number of alerts associated with items currently in the display as well as the maximum alert severity of these, where:

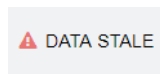
● Green indicates that no metrics have exceeded their alert thresholds.

● Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold.

● Red indicates that one or more metrics exceeded their ALARM LEVEL threshold.



DATA: The data source is currently connected. When the date and time is correct and the **DATA** indicator is green, this is a strong indication that the platform is receiving current and valid data.



DATA STALE: The data source is currently disconnected. There has been no response from the Data Server for 31+ seconds.

Log Scale

Select to enable a logarithmic scale. Use **Log Scale** to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. **Log Scale** makes data on both scales visible by applying logarithmic values rather than actual values to the data.



Drop-down menus filter the item/s you want to view. Options differ among displays.

Displays

The Solace PubSub+ Monitor organizes displays under the following Views:

- **"Brokers"**: The displays in this View present broker-level metrics, which reflect configuration settings, total throughput, current status, errors, and value-added calculations that summarize metrics across all of the VPNs.
- **"CSPF Neighbors"**: The displays in this View present a topology and metrics of your brokers, PubSub+ and servers as well as and their configuration settings.
- **"VPNs"**: The displays in this View present VPN-level metrics.
- **"Clients"**: The displays in this View present metrics for all clients of the broker. These views can be filtered to limit the displays to clients for a single VPN.
- **"Bridges"**: The displays in this View present a topology and metrics of your bridges and VPNs. These views can be filtered to limit the displays to bridges for a single VPN.
- **"Endpoints"**: The displays in this View present metrics for topics and queues on the broker, which can be filtered to limit the displays to topics and queues for a single VPN.
- **"Capacity"**: The displays in this View present current metrics, alert count and severity at the broker level.
- **"Syslog Events"**: View details about Syslog events.
- **"Drill Down Displays"**: These displays are accessed via other displays (with the exception of **"Alerts History Table - HTML"**).

Brokers

These displays provide detailed metrics for brokers and their connected brokers. Displays in this View are:

- **"Brokers Overview"**: Health snapshot of top 10 most utilized VPNs, trend graphs trace key performance metrics such as messages sent/received and connected clients.
- **"Brokers Heatmap"**: A color-coded heatmap view of the current status of each of your brokers.
- **"Brokers Table"**: A tabular view of all available broker performance data.
- **"Broker Summary"**: Current and historical metrics for a single broker.
- **"Broker Sensors"**: Provides value and status information for all sensors on a single broker or for all sensors for all brokers.
- **"Broker Provisioning"**: Provides broker details such as host, chassis, redundancy, memory, and fabric data for a particular broker.
- **"Broker Interface"**: Provides detailed data and status information for the interfaces associated with one or all broker(s). You can also view current and historical amounts of incoming and outgoing packets and bytes for a selected interface in a trend graph.
- **"Brokers Message Spool"**: Provides status and usage data for message spools associated with one or all broker(s).

Brokers Overview

The **Brokers Overview** is the top-level display, which provides a good starting point for immediately getting the status of all your brokers on your Data Server.

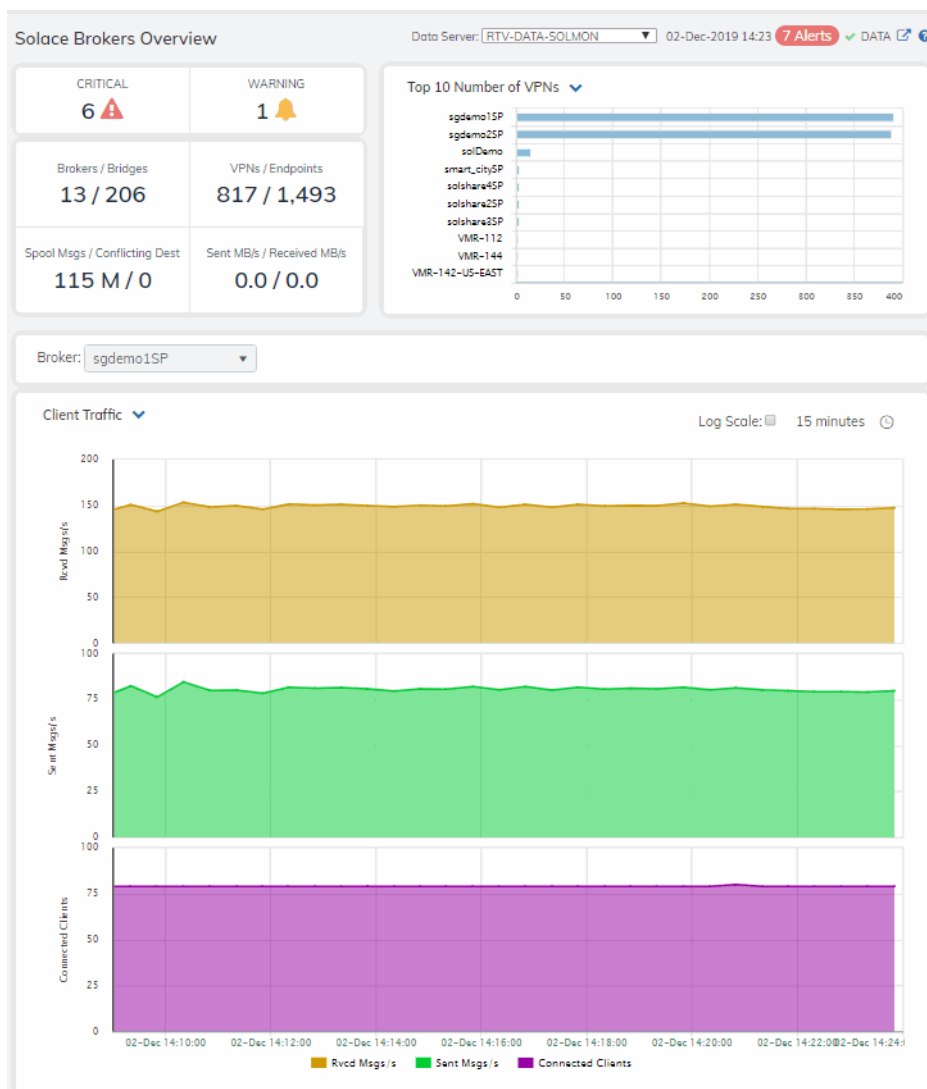
Select a data server, broker and metric from the drop-down menus. Consider keeping this display open for monitoring at a glance. You can easily view the current data for that Data Server including:

- **Top 10** most utilized **VPNs / Endpoints**, **Clients Connected** and **Spooled Messages**.
- The number of **Brokers / Bridges**.
- The number of **Spooled Messages / Conflicting Destinations**.
- The number of **Sent MBs per second / Received MB per second**.

You can hover over each area in the upper half of the Overview to see more detail. You can also drill down to see even more detail by clicking on each metric card in the Overview.

The bottom half of the display provides a performance trend graph for queries for a selected broker. The trend graph traces the performance metric you select: **Client Traffic**, **Spool Msgs** or **Memory**.

You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.




CRITICAL	Total number of current critical alerts for brokers on the selected data server.
WARNING	Total number of current critical alerts for brokers on the selected data server.
Brokers/Bridges	Total number of brokers/bridges on the selected data server.
VPNs/Endpoints	Total number of VPNs/endpoints on the selected data server.
Spooled Msgs/Conflicting Dest	Total number of spooled messages/conflicting destinations on the selected data server.
Sent MBs/Received MBs	Total number of MBs sent/MBs received on the selected data server.
Top 10 Number of VPNs	Ten brokers with the greatest number of connected VPNs.
Broker	Select a broker to trace performance metrics in the trend graph, then choose a metric:



Client Traffic: Traces the number of messages received per second, messages sent per second and the number of connected clients.

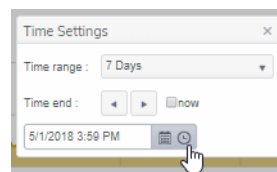
Spool Msgs: Traces the number of spooled messages and spool size (in megabytes.)



Time Settings




By default, the time range end point is the current time. To change the time range, click the **Time Settings**  and either:

- choose a **Time range** from 5 Minutes to 7 Days in the drop-down menu.
- specify begin/end dates using the calendar .
- specify begin/end time using the clock .



Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows  .


Restore settings to current time by selecting **now** .

Log Scale

Select to enable a logarithmic scale. Use **Log Scale** to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. **Log Scale** makes data on both scales visible by applying logarithmic values rather than actual values to the data.




Brokers Heatmap

View the current status and alerts in a heatmap of all brokers or a subset of brokers. Use the **Show** dropdown menu to choose **All** brokers, **Expired** brokers, **Unexpired** brokers or only brokers in **Standby** mode

Each rectangle in the heatmap is a single broker where the rectangle size represents the number of connections. The rectangle color maps where the current value is on its color gradient  bar. Select a broker from the drop-down menu. For example, by default, **Alert Severity** is shown:

Alert Severity

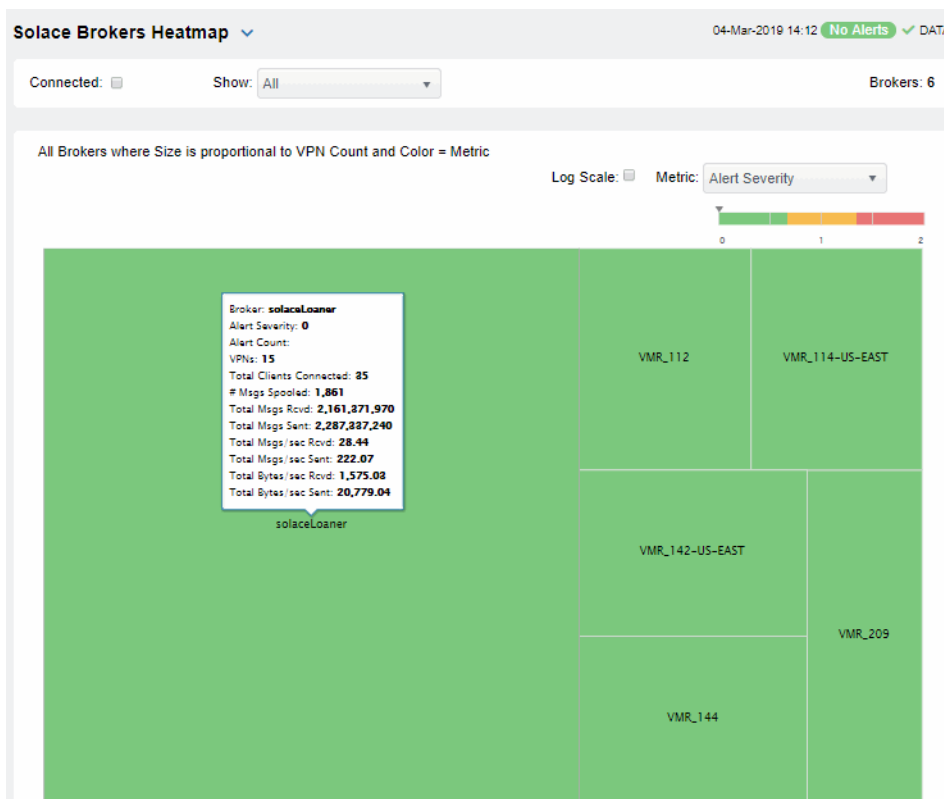
The current alert severity. Values range from **0** - **2**, as indicated in the color gradient  bar, where **2** is the highest Alert Severity:













-  Red indicates that one or more metrics exceeded their ALARM LEVEL threshold.
-  Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold.
-  Green indicates that no metrics have exceeded their alert thresholds.

Click a rectangle to drill down to details about a broker in the [“Broker Summary”](#) display.

Mouse over a rectangle to see additional details. Use the check-box ☒ to include / exclude **Connected** brokers and enable **Log Scale** mode.

Consider keeping this display open for monitoring your Solace brokers at a glance.



Alert Severity	<p>The current alert severity. Values range from 0 - 2, as indicated in the color gradient  bar, where 2 is the highest Alert Severity:</p> <ul style="list-style-type: none">  Red indicates that one or more metrics exceeded their ALARM LEVEL threshold.  Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold.  Green indicates that no metrics have exceeded their alert thresholds.
Alert Count	<p>The total number of critical and warning alerts. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the maximum count of alerts in the heatmap. The middle value in the gradient bar indicates the average alert count.</p>
# Msgs Spooled	<p>The total number of spooled messages. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolMsgRouterPendingMsgsHigh. The middle value in the gradient bar indicates the middle value of the range.</p>
Total Msgs Rcvd	<p>The total number of received messages. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the maximum count of total messages received in the heatmap. The middle value in the gradient bar indicates the average count.</p>
Total Msgs Sent	<p>The total number of sent messages. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the maximum count of total messages sent in the heatmap. The middle value in the gradient bar indicates the average count.</p>
Total Msgs/ sec Rcvd	<p>The number of messages received per second. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolMsgRouterInboundMsgRateHigh. The middle value in the gradient bar indicates the middle value of the range.</p>
Total Msgs/ sec Sent	<p>The total number of messages sent per second. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolMsgRouterOutboundMsgRateHigh. The middle value in the gradient bar indicates the middle value of the range.</p>
Total Bytes/ sec Rcvd	<p>The total number of bytes received per second in the broker. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolMsgRouterInboundByteRateHigh. The middle value in the gradient bar indicates the middle value of the range.</p>
Total Bytes/ sec Sent	<p>The total number of bytes sent per second in the broker. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolMsgRouterOutboundByteRateHigh. The middle value in the gradient bar indicates the middle value of the range.</p>

Brokers Table

Investigate detailed utilization metrics for all brokers. This display provides a tabular view of the performance metrics shown in the [“Brokers Heatmap”](#) (alert level, alert count, and so forth), but with additional metrics such as **Egress** and **Ingress** values.

Use the **Show:** dropdown menu to view the current status of **All** brokers, **Expired** brokers, **Unexpired** brokers or just brokers in **Standby** mode.

Each row in the table contains data for a particular broker. Click a column header to sort column data in ascending or descending order. Double-click on a table row to drill down to the [“Broker Summary”](#) display and view metrics for that particular broker. Toggle between the commonly accessed Table and Heatmap displays by clicking the drop down list on the display title.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:

The dialog box is titled 'Filter' and contains the following elements:

- A dropdown menu for 'Show items with value that:' with 'Contains' selected.
- A text input field for the search value.
- A dropdown menu for 'And' with 'And' selected.
- A second dropdown menu for 'Show items with value that:' with 'Contains' selected.
- A second text input field for the search value.
- A 'Filter' button and a 'Clear' button.

Brokers: (in the upper right portion) is the number of brokers in the display.

Use the check-boxes ☒ to include / exclude **Connected** and **Expired** brokers.

Export to Excel by right-clicking a column heading.

Toggle between **More Columns** / **Fewer Columns**

[More Columns](#)






Solace Brokers Table 11-Jul-2019 11:57 1 Alert DATA 🔗

Show Connected Only: ☐ Show Expired: All Show Standby: All Brokers: 23

[Fewer Columns](#)

Broker	Connected	Alert Level	Alert Count	Host Name	Host Address	VPNs	Total Clients	Total Clien Connecti
Sol_Mule_Azure			0	solhcdemo0.francecen		0	0	
Sol_Mule_GCP			0	35.234.63.231	35.234.63.231	0	0	
Sol_Mule_SC			0	vmr-mr8v6yiwawhm	34.227.76.129	1	0	
solDemo			0	solace	192.168.220.5	15	40	
Team-2-Ali-cloud			0	47.74.235.254	47.74.235.254	0	0	
Team-2-AWS			0	ec2-35-177-122-45.e	35.177.122.45	0	0	
Team-2-Azure			0	demotion-team20.sov		0	0	
Team-2-Google-cloud			0	35.187.64.112	35.187.64.112	0	0	
Team-2-lab-appliance			0	london.solace.com	217.196.247.77	1	0	
Team-2-Solace-cloud			0	mr-xy4p45t57.messag		0	0	
Team-4-PCF-demo			0	shared-vmr-1.system	35.201.65.176	0	0	
Team-6-Alibaba			0	47.74.235.254	47.74.235.254	0	0	
Team-6-AnalyticsVMR			0	54.179.163.185	54.179.163.185	0	0	
Team-6-OnPremVMR-backup			0	54.191.207.187	54.191.207.187	0	0	
Team-6-OnPremVMR-primar			0	34.214.62.219	34.214.62.219	0	0	
Team-6-PCF			0	shared-vmr-1.system	35.201.65.176	0	0	
Team-6-SolaceCloud			0	mr-91b692durd.mess		0	0	
VMR-112			0	ip-172-30-1-112	172.30.1.112	2	11	

Column Values

Broker	The name of the broker.
Connected	<p>The broker state:</p> <ul style="list-style-type: none">  Red indicates that the broker is NOT connected.  Green indicates that the broker is connected.
Alert Severity	<p>The current alert severity:</p> <ul style="list-style-type: none">  Red indicates that one or more metrics exceeded their ALARM LEVEL threshold.  Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold.  Green indicates that no metrics have exceeded their alert thresholds..
Alert Count	The total number of alerts.
Expired	When checked, performance data about the sensor has not been received within the time specified.
Host Name	The name of the host.
Platform	The name of the platform.
OS Version	The version of the operating system.
Up Time	The amount of time that the broker has been up and running.
VPNs	The total number of VPNs configured on the broker.
Total Clients	The total number of clients associated with the broker.
Total Clients Connected	The total number of clients that are currently connected to the broker.
Clients Using Compression	The number of clients who send/receive compressed messages.
Clients Using SSL	The number of clients using SSL for encrypted communications.
Max Client Connections	The maximum number of available client connections.
Endpoints	The total number of endpoints configured on the broker.
Bridges	The total number of bridges configured on the broker.
Local Bridges	The total number of local bridges configured on the broker.
Remote Bridges	The total number of remote bridges configured on the broker.
Remote Bridge Subscriptions	The total number of remote bridge subscriptions configured on the broker.
Routing Enabled	This check box is checked when the broker is configured to route messages to other brokers.
Routing Interface	The name of the interface configured to support message routing.

Total # Conflicting Destinations	The total number conflicting destinations.
SpooledSpooledMessages	The number of spooled messages on the broker.
Total Client Msgs Rcvd	The total number of client messages received on the broker.
Total Client Msgs Sent	The total number of client messages sent by the broker.
Total Client Msgs Rcvd/sec	The total number of client messages received per second by the broker.
Total Client Msgs Sent/ sec	The total number of client messages sent by the broker.
Total Client Bytes Rcvd	The total number of client bytes received by the broker.
Total Client Bytes Sent	The total number of client bytes sent by the broker.
Total Client Bytes Rcvd/sec	The total number of client bytes received per second by the broker.
Total Client Bytes Sent/sec	The total number of client bytes sent per second by the broker.
Total Client Direct Msgs Rcvd	The total number of direct client messages received by the broker.
Total Client Direct Msgs Sent	The total number of direct client messages sent from the broker.
Total Client Direct Msgs Rcvd/sec	The total number of direct client messages received per second by the broker.
Total Client Direct Msgs Sent/sec	The total number of direct client messages sent per second by the broker.
Total Client Direct Bytes Rcvd	The total number of direct client bytes received by the broker.
Total Client Direct Bytes Sent	The total number of direct client bytes sent by the broker.
Total Client Direct Bytes Rcvd/sec	The total number of direct client bytes received per second by the broker.
Total Client Direct Bytes Sent/sec	The total number of direct client bytes sent per second by the broker.
Total Client Non-Persistent Msgs Rcvd	The total number of non-persistent client messages received by the broker.
Total Client Non-Persistent Msgs Sent	The total number of non-persistent client messages sent by the broker.
Total Client Non-Persistent Msgs Rcvd/sec	The total number of non-persistent client messages received per second by the broker.
Total Client Non-Persistent Msgs Sent/ sec	The total number of non-persistent client messages sent per second by the broker.
Total Client Non-Persistent Bytes Rcvd	The total number of non-persistent client bytes received by the broker.
Total Client Non-Persistent Bytes Sent	The total number of non-persistent client bytes sent by the broker.
Total Client Non-Persistent Bytes Rcvd/sec	The total number of non-persistent client bytes received per second by the broker.
Total Client Non-Persistent Bytes Sent/sec	The total number of non-persistent client bytes sent per second by the broker.

Total Client Persistent Msgs Rcvd	The total number of persistent client messages received by the broker.
Total Client Persistent Msgs Sent	The total number of persistent client messages sent by the broker.
Total Client Persistent Msgs Rcvd/sec	The total number of persistent client messages received per second by the broker.
Total Client Persistent Msgs Sent/ sec	The total number of persistent client messages sent per second by the broker.
Total Client Persistent Bytes Rcvd	The total number of persistent client bytes received by the broker.
Total Client Persistent Bytes Sent	The total number of persistent client bytes sent by the broker.
Total Client Persistent Bytes Rcvd/sec	The total number of persistent client bytes received per second by the broker.
Total Client Persistent Bytes Sent/ sec	The total number of persistent client bytes sent per second by the broker.
Avg Egress Bytes/min	The average number of outgoing bytes per minute.
Avg Egress Compressed Msgs/min	The average number of outgoing compressed messages per minute.
Avg Egress Msgs/min	The average number of outgoing messages per minute.
Avg Egress SSL Msgs/min	The average number of outgoing messages per minute being sent via SSL-encrypted connections.
Avg Egress Uncompressed Msgs/min	The average number of uncompressed outgoing messages per minute.
Avg Ingress Bytes/min	The average number of incoming bytes per minute.
Avg Ingress Compressed Msgs/min	The average number of compressed incoming message per minute.
Avg Ingress Msgs/min	The average number of incoming messages per minute.
Average Ingress SSL Msgs/min	The average number of incoming messages per minute being received via SSL-encrypted connections.
Avg Ingress Uncompressed Msgs/min	The average number of uncompressed messages per minute.
Current Egress Bytes/sec	The current number of outgoing bytes per second.
Current Egress Compressed Msgs/sec	The current number of outgoing compressed messages per second.
Current Egress Msgs/sec	The current number of outgoing messages per second.
Current Egress SSL Msgs/sec	The current number of outgoing messages per second sent via SSL-encrypted connections.
Current Egress Uncompressed Msgs/sec	The current number of outgoing uncompressed messages per second.
Current Ingress Bytes/sec	The current number of incoming bytes per second.
Current Ingress Compressed Msgs/sec	The current number of incoming compressed messages per second.

Current Ingress Msgs/sec	The current number of incoming messages per second.
Current Ingress SSL Msgs/sec	The current number of incoming messages per second received via SSL-encrypted connections.
Current Ingress Uncompressed Msgs/sec	The current number of incoming uncompressed messages per second.
Ingress Comp Ratio	The percentage of incoming messages that are compressed.
Egress Comp Ratio	The percentage of outgoing messages that are compressed.
Egress Compressed Bytes	The number of outgoing compressed bytes.
Egress SSL Bytes	The number of outgoing compressed bytes being sent via SSL-encrypted connections.
Egress Uncompressed Bytes	The number of outgoing uncompressed bytes.
Ingress Compressed Bytes	The number of incoming compressed bytes.
Ingress SSL Bytes	The number of incoming bytes via SSL-encrypted connections.
Ingress Uncompressed Bytes	The number of incoming uncompressed bytes.
Total Egress Discards	The total number of outgoing messages that have been discarded by the broker.
Total Egress Discards/sec	The total number of outgoing messages per second that have been discarded by the broker.
Total Ingress Discards	The total number of incoming messages that have been discarded by the broker.
Total Ingress Discards/sec	The total number of incoming messages per second that have been discarded by the broker.
Client Authorization Failures	The number of failed authorization attempts
Client Connect Failures (ACL)	The number of client connection failures caused because the client was not included in the defined access list.
Subscribe Topic Failures	The number of failed attempts at subscribing to topics.
TCP Fast Retrans Sent	The total number of messages that were retransmitted as a result of TCP Fast Retransmission (one or more messages in a sequence of messages that were not received by their intended party that were sent again).
Memory (KB)	The total available memory (in kilobytes) on the broker.
Memory Free (KB)	The total amount of available memory (in kilobytes) on the broker.
Memory Used (KB)	The total amount of memory used (in kilobytes) on the broker.
Memory Used %	The percentage of total available memory that is currently being used.
Swap (KB)	The total available swap (in kilobytes) on the broker.

Swap Free (KB)	The total amount of available swap (in kilobytes) on the broker.
Swap Used (KB)	The total amount of swap used (in kilobytes) on the broker.
Swap Used %	The percentage of total available swap that is currently being used.
Subscription Mem Total (KB)	The total amount of available memory (in kilobytes) that can be used by queue/topic subscriptions.
Subscription Mem Free (KB)	The current amount of available memory (in kilobytes) that can be used by queue/topic subscriptions.
Subscription Mem Used (KB)	The current amount of memory (in kilobytes) being used by queue/topic subscriptions.
Subscription Mem Used %	The percentage of available memory being used by queue/topic subscriptions.
Chassis Product Number	The product number of the chassis in which the broker is contained.
Chassis Revision	The revision number of the chassis.
Chassis Serial	The serial number of the chassis.
BIOS Version	The basic input/output system used by the chassis.
CPU-1	The name of the central processing unit (CPU 1) used by the broker.
CPU-2	The name of the central processing unit (CPU 2) used by the broker.
Operational Power Supplies	The number of available power supplies that are operational on the chassis.
Power Redundancy Config	The configuration used by the backup broker.
Max # Bridges	The maximum number of bridges allowed on the broker.
Max # Local Bridges	The maximum number of local bridges allowed on the broker.
Max # Remote Bridges	The maximum number of remote bridges allowed on the broker.
Max # Remote Bridge Subscriptions	The maximum number of remote bridge subscriptions allowed on the broker.
Redundancy Config Status	The status of the redundancy configuration.
Redundancy Status	The status of the redundant broker.
Redundancy Mode	Refer to Solace documentation for more information.
Auto-revert	Refer to Solace documentation for more information.
Mate Router Name	If redundancy is configured, this field lists the redundant broker name (mate broker name).
ADB Link Up	This check box is checked if a broker is set up to use guaranteed messaging and an Assured Delivery Blade (ADB) is set up and working correctly.

ADB Hello Up	Refer to Solace documentation for more information.
Pair Primary Status	The primary status of the broker and its redundant (failover) mate.
Pair Backup Status	Refer to Solace documentation for more information.
Expired	When checked, performance data about the broker has not been received within the time specified.
Time Stamp	The date and time the row of data was last updated.

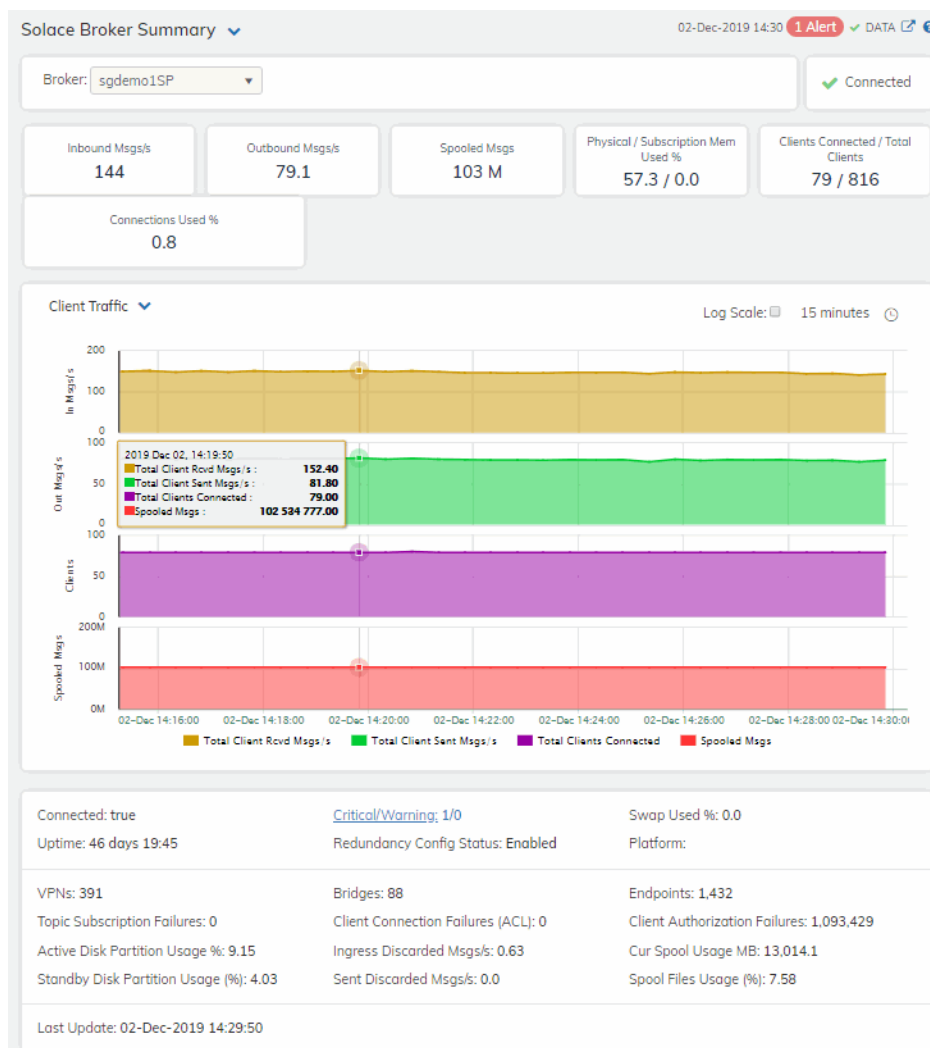
Broker Summary

View performance and processing details for a single broker, such as the total **Inbound / Outbound Messages per second**, **Spooled Messages** and **Clients Connected / Total Clients**.

Choose a broker from the **Broker** drop-down menu to view its total number of connected clients, number of incoming messages, **Up Time**, and additional information. You can also view alert statuses and **Spool Status** data for the broker. You can hover over each area in the upper half of the display to see more detail. You can also drill down to see even more detail by clicking on each metric card.

The bottom half of the display provides current and historical performance metrics for the selected broker. The trend graph traces the performance metric you select: **Client Traffic**, **Spool Msgs** or **Memory**.

You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.



The connection status (connected/disconnected).



Inbound Msgs/s

The number of messages received per second.

Outbound Msgs/s

The number of messages sent per second.

Spooled Msgs/s

The number of spooled messages.

Physical / Subscription Mem Used %

The total percentage of physical memory used / the total percentage of subscription memory used.

Clients Connected / Total Clients

The current number of clients connected / the total number of clients.

Connections Used %

Trend Graphs
Traces the selected broker.

Client Traffic

- **In Msgs/s** - Traces the total number of client messages received per second.
- **Out Msgs/s** - Traces the total number of client messages sent per second.
- **Clients** - Traces the total number of connected clients.
- **Spooled Msgs** - Traces the total number of spooled messages.

Spool Msgs

- **Spooled Msgs** - Traces the total number of spooled pool messages.
- **Spool Usage MB** - Traces the total amount of space used by spool messages, in megabytes.

Memory


- **Memory Used %** - Traces the percent of memory used.



Log Scale

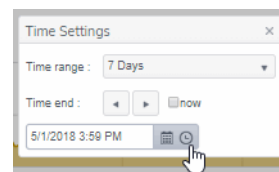
Subscription Mem Used % - Traces the percent of memory used by subscriptions.



Select to enable a logarithmic scale. Use **Log Scale** to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. **Log Scale** makes data on both scales visible by applying logarithmic values rather than actual values to the data.

Time Settings

By default, the time range end point is the current time. To change the time range, click the **Time Settings**  and either:

- choose a **Time range** from 5 Minutes to 7 Days in the drop-down menu.
- specify begin/end dates using the calendar .
- specify begin/end time using the clock .



Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows  .

Restore settings to current time by selecting **now**

 now

Broker Sensors

This tabular display contains environmental sensor metrics for a selected broker. Use this display to find out the type, name, value, and status of the sensors. This display only applies to Hardware (HW) Brokers. Note that the drop down menu does not show connection strings to PubSub+ Software Brokers.

Select a HW broker from the drop-down menu. Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:

The dialog shows the 'Filter' tab selected. It includes a search bar with the text 'Show items with value that:' and two dropdown menus, both set to 'Contains'. There are 'Filter' and 'Clear' buttons at the bottom.

Solace Broker Environmental Sensors							04-Mar-2019 14:38	Alerts	DATA
Broker: solaceLoaner									
Sensor Readings									
Type	Sensor Name	Value	Units	Status	Expired	Time Stamp			
Voltage	BB +1.5V	1.469	volts	OK		04-Mar-2019 14:37:52			
Voltage	BB +1.5V AUX	1.490	volts	OK		04-Mar-2019 14:37:52			
Voltage	BB +1.5V ESB	1.482	volts	OK		04-Mar-2019 14:37:52			
Voltage	BB +1.8V	1.803	volts	OK		04-Mar-2019 14:37:52			
Voltage	BB +12V AUX	12.090	volts	OK		04-Mar-2019 14:37:52			
Voltage	BB +3.3V	3.337	volts	OK		04-Mar-2019 14:37:52			
Voltage	BB +3.3V STB	3.337	volts	OK		04-Mar-2019 14:37:52			
Voltage	BB +5V	5.070	volts	OK		04-Mar-2019 14:37:52			
ThermalMargin	CPU1 Therm Margin	-67.000	degrees C			04-Mar-2019 14:37:52			
ThermalMargin	CPU2 Therm Margin	-59.000	degrees C			04-Mar-2019 14:37:52			
Temperature	Chassis Temp.	23.000	degrees C			04-Mar-2019 14:37:52			
Fan speed	Chassis Fan 1	7714	RPM			04-Mar-2019 14:37:52			
Fan speed	Chassis Fan 2	8057	RPM			04-Mar-2019 14:37:52			
Fan speed	Chassis Fan 3	7714	RPM			04-Mar-2019 14:37:52			
Fan speed	Chassis Fan 4	7543	RPM			04-Mar-2019 14:37:52			
Fan speed	Chassis Fan 5	7371	RPM			04-Mar-2019 14:37:52			
Fan speed	Chassis Fan 6	7286	RPM			04-Mar-2019 14:37:52			
Power system status	Power Redundancy	yes				04-Mar-2019 14:37:52			

Sensor Readings

Each row in the table is a different sensor on the broker.

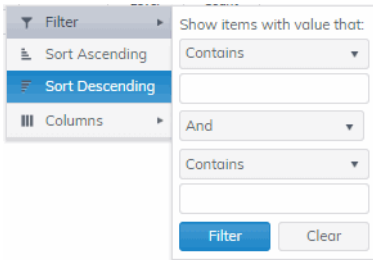
Type	See vendor documentation for details.
Sensor Name	The name of the sensor.
Value	Lists the value of the sensor.
Units	Lists the unit of measure for the sensor.
Status	The current status of the sensor.

Expired	When checked, performance data about the broker has not been received within the time specified.
Time Stamp	The date and time the row of data was last updated.

Broker Provisioning

This display shows provisioning metrics for a single broker. Use this to see the host, platform, chassis, memory, redundancy and fabric data for a specific broker.

Select a broker from the drop-down menus. Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:



Broker Provisioning
04-Mar-2019 14:39
No Alerts
DATA

Broker: solaceLoaner

Host Name: **solace**
 CPU-1: **Intel(R) Xeon(R) CPU E5450 @ 3.00GHz**

CPU-2: **Intel(R) Xeon(R) CPU E5450 @ 3.00GHz**
 Platform: **Solace 3260**

Chassis Product Number: **CHS-3260AC-01-B**
 BIOS Version: **S5000.86B.10.00.0094.101320081858**

Chassis Revision: **1.4**
 Chassis Serial: **S009000226**
 Power Redundancy Config: **2+2**

Total Memory (KB): **15,965,652**
 Memory Used (KB): **9,332,304**
 Memory Used %: **32.89**

Swap (KB): **2,007,992**
 Swap Used (KB): **0**
 Swap Used %: **0.0**

Operational Power Supplies: **4**
 Mate Router Name:
 Redundancy Config Status: **Shutdown**

Redundancy Status: **Down**
 Redundancy Mode: **N/A**
 Pair Primary Status: **Local Active**

Pair Backup Status: **Shutdown**
 Auto Revert: **false**
 ADB Link To Mate Up: **false**

ADB Hello To Mate Up: **false**

Last Update: **04-Mar-2019 14:39:28**

Fabric

Product	Fw-Version	Card Type	Slot	Serial #
NAB-0801ET-01-A	6.2.0.495	Network Acceleration Blade	1/1	S003000275
		in use by slot 1/1	1/2	
TRB-000000-02-A		Topic Routing Blade	1/3	P004045787
HBA-0204FC-02-A		Host Bus Adapter Blade	1/4	LFC0848B99469
ADB-000000-01-A		Assured Delivery Blade	1/5	S003000844
		empty	2/1	
		empty	2/2	
		empty	2/3	

Host Name	The name of the host.
Platform	The platform on which the broker is running.
Chassis Product #	The product number of the chassis in which the broker is contained.

Chassis Revision #	The revision number of the chassis.
Chassis Serial #	The serial number of the chassis.
Power Configuration	The power configuration used by the chassis.
Operational Power Supplies	The number of available power supplies that are operational on the chassis.
CPU 1	The name of the central processing unit (CPU 1) used by the broker.
CPU 2	The name of the central processing unit (CPU 2) used by the broker.
BIOS	The basic input/output system used by the chassis.
Memory (KB)	
Physical	Lists the Total amount, the Free amount, the Used amount, and the Used % of physical memory.
Swap	Lists the Total amount, the Free amount, the Used amount, and the Used % of swap memory.

Redundancy

These fields describe a fault tolerant pair of brokers.

Mate Router Name	If redundancy is configured, this field lists the redundant broker name (mate broker name).
Configuration Status	The status of the configuration for the backup broker.
Redundancy Status	The status of the redundant broker.
Redundancy Mode	Refer to Solace documentation for more information.
Primary Status	The status of the primary broker.
Backup Status	Refer to Solace documentation for more information.
Auto-Revert	Refer to Solace documentation for more information.
ADB Link Up	This check box is checked if a broker is set up to use guaranteed messaging and an Assured Delivery Blade (ADB) is set up and working correctly.
ADB Hello Up	Refer to Solace documentation for more information.

Fabric

Slot	Displays the slot number on the network switch.
Card Type	The type of card connected to the particular slot.
Product	The product associated with the particular slot.
Serial #	The serial number of the product.
Fw-Version	The firmware version of the product.

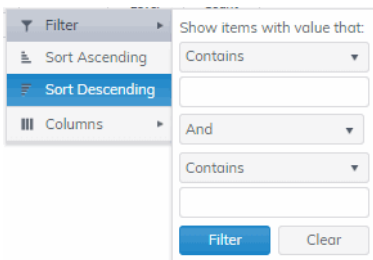
Broker Interface

This display lists all network interfaces on a selected broker, and shows network interface status, in/out throughput per second and additional detailed metrics.

Select a broker and interface from the drop-down menus. Each row in the table is a different network interface. Double-click a row to trace its current and historical performance data in the trend graph (bytes in/out and packets in/out per second).

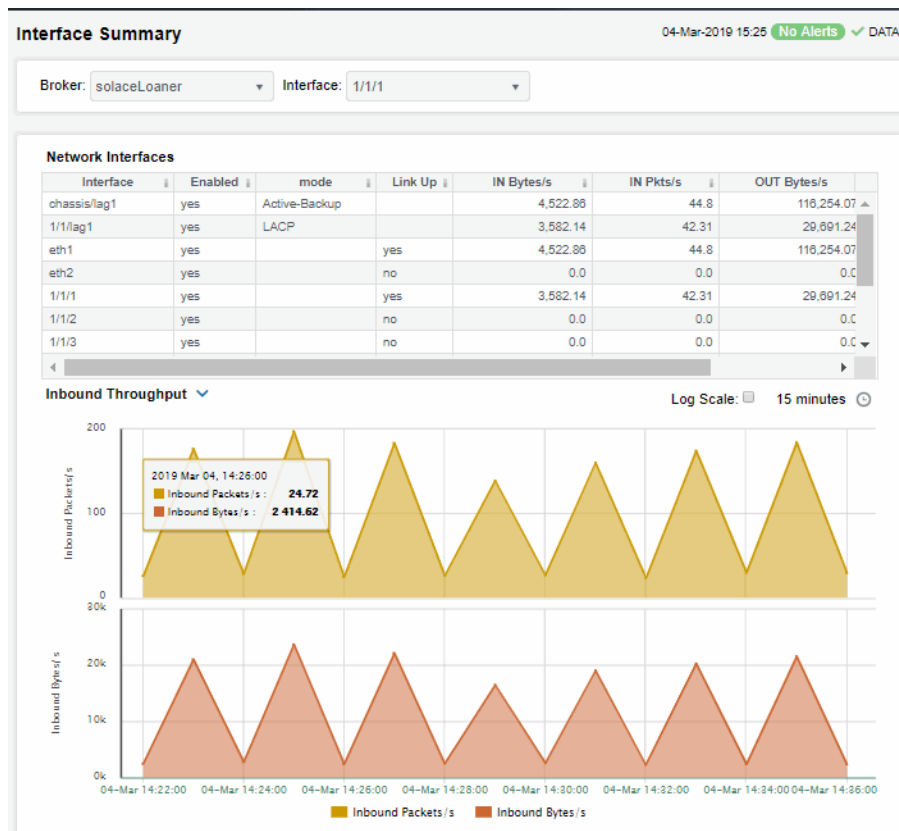
You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:






The dialog box is titled 'Filter' and contains the following elements:

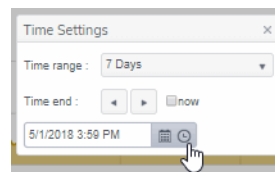
- A dropdown menu for 'Filter' with a right-pointing arrow.
- A section 'Show items with value that:' containing a dropdown menu set to 'Contains' and an empty text input field.
- A section 'And' containing a dropdown menu set to 'And' and another empty text input field.
- Buttons for 'Filter' (in blue) and 'Clear' (in grey).
- On the left side, there are three menu items: 'Sort Ascending' (with a small icon), 'Sort Descending' (highlighted in blue), and 'Columns' (with a small icon).






Interface	The name of the network interface.
Enabled	Displays whether or not the network interface is enabled.
mode	Describes how the interface is configured to support networking operations.
Link Up	Indicates whether the interface is electrically signaling on the transmission medium.
IN Bytes/sec	The number of bytes per second contained in incoming messages.
IN Pkts/sec	The number of incoming packets per second.
OUT Bytes/ sec	The number of bytes per second contained in the outgoing messages.
OUT Pkts/sec	The number of outgoing packets per second.

Trend Graphs

Inbound Pkts/ sec	Traces the number of incoming packets per second.
Outbound Bytes/sec	Traces the number of bytes per second contained in the incoming messages.
Log Scale	Select to enable a logarithmic scale. Use Log Scale to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. Log Scale makes data on both scales visible by applying logarithmic values rather than actual values to the data.
Time Settings	<p>By default, the time range end point is the current time. To change the time range, click the Time Settings  and either:</p> <ul style="list-style-type: none"> choose a Time range from 5 Minutes to 7 Days in the drop-down menu. specify begin/end dates using the calendar . specify begin/end time using the clock .



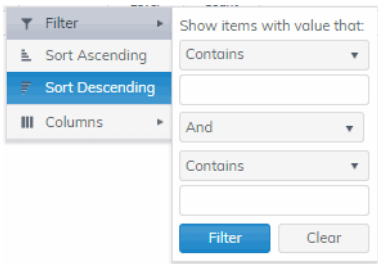
Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows   .

Restore settings to current time by selecting **now**  .

Brokers Message Spool

Select a broker from the drop-down menu or select **All**. This display shows operational status and spooling performance metrics (if spooling is enabled on the broker) for one or all brokers.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:



Refer to Solace documentation for details about data in this display.

Solace Broker Spool Table

04-Mar-2019 15:35 No Alerts DATA

Broker:

- All -

Count: 1

ool	Msg Spool Used By Queue	Msg Spool Used By DTE	Message Count % Usage	Delivered UnAcked Msgs % Usage	Ingress Flow Count	Ingress Flows Allowed
0.0	13	1	0.0	0.0	18	

Count	The number of brokers that are using spooling in the table.
Connection	The connection string associated with the broker.
Config Status	The message spool configuration status.
Operational Status	The operational status of the message spool.
Current Spool Usage (MB)	The current amount of spool used in megabytes on the broker (calculated by summing spool used for each endpoint).
Msg Spool Used By Queue	The amount of spool used by queue.
Msg Spool Used By DTE	The amount of spool used by DTE.
Message Count % Utilization	The percentage messages that use the message spool.
Delivered UnAcked Msgs % Utilization	The percentage of unacknowledged messages delivered from the message spool.
Ingress Flow Count	The current incoming flow count.
Ingress Flows Allowed	The number of incoming flows allowed.

Queue/Topic Subscriptions Used	The number of queue/topic subscriptions used.
Max Queue/Topic Subscriptions	The maximum number of queue/topic subscriptions available.
Sequenced Topics Used	The number of sequenced topics used.
Max Sequenced Topics	The maximum number of sequenced topics available.
Spool Files Used	The number of spool files used.
Spool Files Available	The maximum number of spool files available.
Spool Files % Utilization	The percentage of available spool files that have been used.
Active Disk Partition % Usage	The percentage of active disk partition that has been used.
Standby Disk Partition % Usage	The percentage of standby disk partition that has been used.
Disk Usage Current (MB)	The current amount of spool disk usage in megabytes.
Disk Usage Max (MB)	The maximum amount of spool disk usage in megabytes.
Transacted Sessions Used	The current number of transacted sessions.
Transacted Sessions Max	The maximum number of transacted sessions .
Transacted Session Count % Utilization	The percentage of transacted sessions that have been used.
Transacted Session Resource % Utilization	The percentage of transacted session resources that have been used.
Expired	When checked, performance data about the broker has not been received within the time specified.

CSPF Neighbors

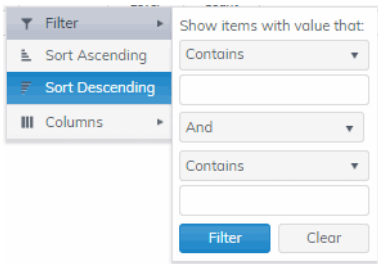
These displays provide detailed data and statuses for CSPF neighbor brokers. You can check trends on network traffic among CSPF neighbors. Note that these displays are empty if you are only monitoring Solace Cloud PubSub+ Brokers. Displays in this View are:

- **"Neighbors Table"**: View metrics for Solace neighbor brokers that use the Content Shortest Path First (CSPF) routing protocol to determine the shortest path in which to send messages from one broker to another broker in the Solace network.
- **"Neighbors Diagram"**: Topological view of CSPF Neighbors that shows broker connections and status of servers (Active/Inactive).
- **"Neighbors Summary"**: View detailed performance metrics for a single Solace neighbor broker that uses the CSPF routing protocol.

Neighbors Table

This tabular display shows Content Shortest Path First (CSPF) "neighbor" metrics for a broker. Select a broker from the drop-down menu. View metrics for a Solace neighbor broker that uses the CSPF routing protocol to determine the least cost path in which to send messages from one broker to another broker in the Solace network.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:



By default, a subset of available metrics is shown. Use **More Columns/Less Columns** to toggle to the complete set of metrics available (and back to the subset).

Solace CSPF Neighbors Table

14-Aug-2018 16:16 No Alerts DATA

Msg Router: - All -

More Columns

Show Ok Only: ☐

Show: All

Neighbors: 4

Message Router	Name	Expired	State	Sent Msgs/s	Sent Bytes/s	Connections
VMR-112	ip-172-30-1-144		Ok	0.15	24.38	4
VMR-144	ip-172-30-1-112		Ok	0.2	0.0	4
VMR-144	ip-172-30-1-209		Ok	0.2	0.0	4
VMR-209	ip-172-30-1-144		Ok	0.17	29.41	4

- Neighbor Count:

The number of neighbor brokers connected to the selected Broker.
- Show:

OK

Select to *only* show neighbor brokers that are connected (**State** is **OK**). By default, this option is not selected (**all neighbor brokers are shown**).

Expired

Select to show *both* expired and non-expired neighbor brokers. By default, this option is not selected (only non-expired neighbor brokers are shown).

Table:
Each table row is a different neighbor broker.

- Broker

The name of the neighbor broker.
- State

The current state of the broker.
- Up Time

The amount of time the broker has been up and running.
- Connections

The number of connections.
- Link Cost Actual





Refer to Solace documentation for more information.

Link Cost Configured	Refer to Solace documentation for more information.
Data Port	Refer to Solace documentation for more information.
Expired	When checked, performance data about the broker has not been received within the time specified.
Timestamp	The date and time the row of data was last updated.

Neighbors Diagram

Use this topology display to monitor the health of network components: Solace brokers, VMRs and servers. Quickly identify broker neighbors, servers that are inactive and which resources their performance impacts. Drag and drop objects to arrange them on the screen (doing so does not logically impact the Solace brokers, PubSub+ Software and servers).

Each object is a Solace broker, VMR or server. Each are labeled with their name and color coded as follows:

-  Red indicates that the object has one or more alerts in a critical state.
-  Yellow indicates that the object has one or more alerts in a warning state.
-  Green indicates that there are no alerts on the object.
-  Gray indicates that the object is off-line.

Mouse-over objects to see their host IP address.

Right-click on VMR objects and select **Open VMR UI** to open the Solace VMR login web page.

Save: Saves the arrangement of the objects.

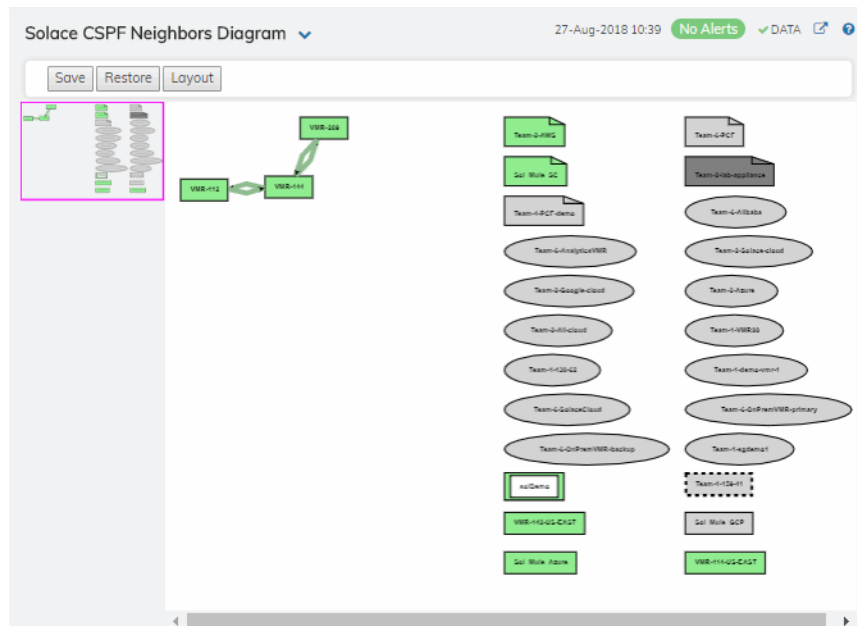
Restore: Returns objects to their previous positions.

Layout: Toggles between two types of layouts. One layout positions objects to the right so you might scroll in that direction to see them. The other layout pulls the objects close together to the left, vertically and in hierarchical order.

Look at the miniature view in (upper left) to see all objects in either layout. Zoom in on an area in the topology by clicking it in the miniature view.

Drill down to investigate in the ["Neighbors Table"](#).

To monitor network bridges and VPNs, see the [“Bridges Diagram”](#).



Neighbors Summary

View neighbor broker current configuration details and message throughput rates.

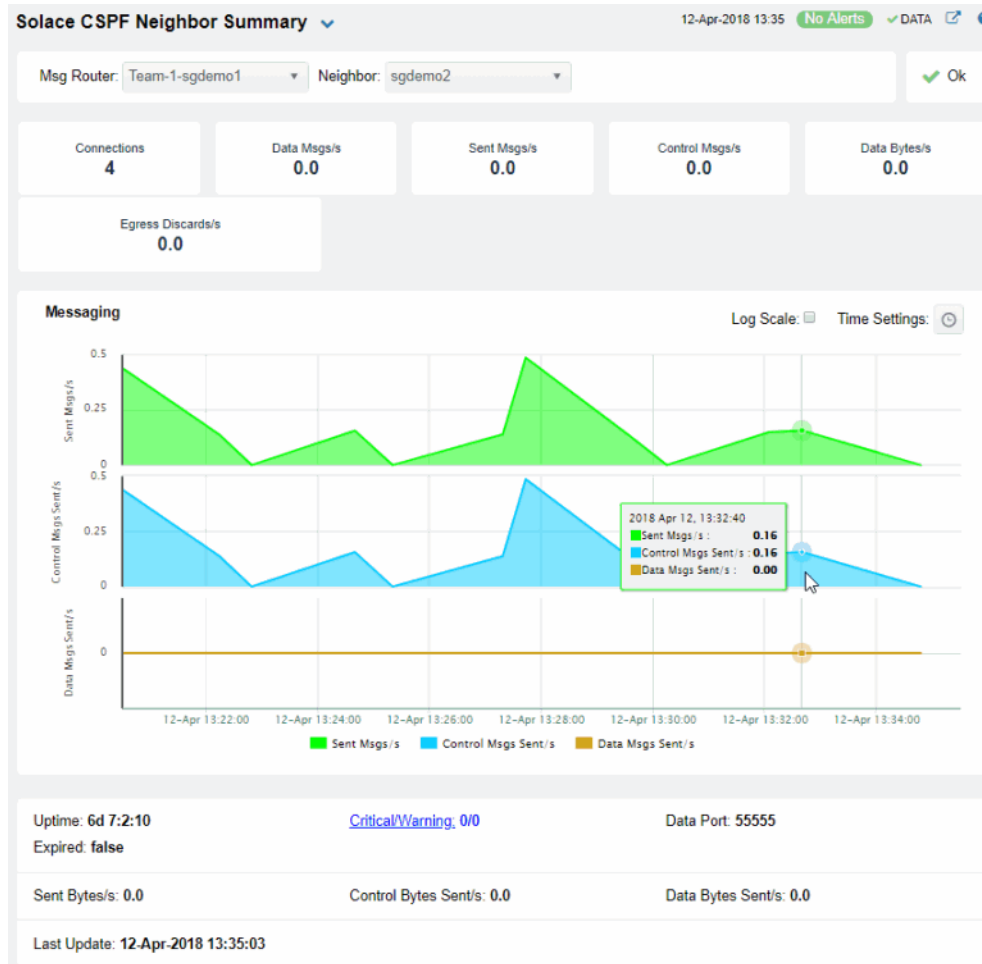
Select a broker and a neighbor broker from the drop down menus. Check message throughput rates to the neighbor broker, as well as neighbor **Up Time**, **State**, **Data Port**, number of connections and link costs.

You can hover over the metric cards to see more performance metrics and also drill down to see even more detail by clicking on them.

The bottom half of the display provides current and historical performance metrics for the selected broker. The trend graph traces the performance metric you select: **Message Flow** or **Throughput**.

You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.

The trend graph traces the current and historical message throughput (**Data**, **Control**, **Discards** and **Total**).



Neighbor: Select the neighbor broker for which you want to show data in the display.

Connections The current number of connections.

Data Msgs/s Refer to Solace documentation for more information.

Sent Msgs/s Refer to Solace documentation for more information.

Control Msgs/s Refer to Solace documentation for more information.

Data Bytes/s Refer to Solace documentation for more information.




Egress Discards/s The total number of discarded messages sent from the selected **Broker** to the selected **Neighbor** broker since the broker was last started.

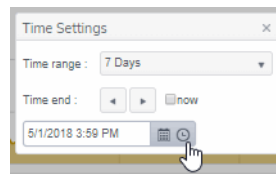
Trend Graphs



Traces the rates of messages sent from the selected **Broker** to the selected **Neighbor** broker.


Sent Msgs/s Refer to Solace documentation for more information.

Control Msgs/s Refer to Solace documentation for more information.

- Discards/s** Traces the number of discarded messages sent, per second, from the selected **Broker** to the selected **Neighbor** broker.
- Log Scale** Select to enable a logarithmic scale. Use **Log Scale** to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. **Log Scale** makes data on both scales visible by applying logarithmic values rather than actual values to the data.
- Time Settings** By default, the time range end point is the current time. To change the time range, click the **Time Settings**  and either:
- choose a **Time range** from 5 Minutes to 7 Days in the drop-down menu.
 - specify begin/end dates using the calendar .
 - specify begin/end time using the clock .



Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows  .

Restore settings to current time by selecting **now** .

VPNs

You can view data for all VPNs configured on a specific broker in heatmap, table, or grid formats, or you can view data for a single VPN. Displays in this View are:

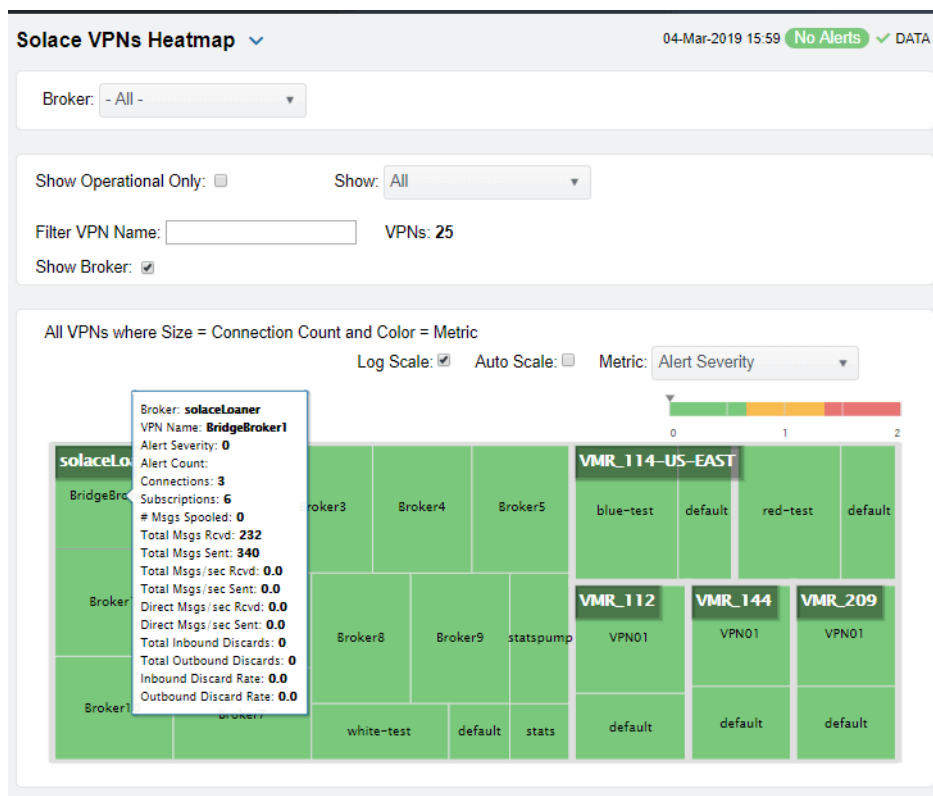
- [“VPNs Heatmap” on page 92](#): A color-coded heatmap view of the current status of all VPNs configured on a specific broker.
- [“VPNs Table” on page 96](#): A tabular view of all available data for all VPNs configured on a specific broker.
- [“VPNs Summary” on page 99](#): Current and historical metrics for a single VPN.

VPNs Heatmap

View the status of all VPNs configured on a specific broker in a heatmap format, which allows you to quickly identify VPNs with critical alerts. Each rectangle in the heatmap represents a VPN. The rectangle color indicates the alert state and rectangle size represents the number of connections.

Select a broker from the **Broker** drop-down menu, or enter a search string in the **Filter VPN Name** field, and select a metric from the **Metric** drop-down menu. Use the **Show Operational Only** check-box ☒ to include or exclude non-operational VPNs in the heatmap. Use the **Log Scale** and **Auto Scale** check-boxes ☒ to apply log or auto scale. Use the **Show Broker** check-box ☒ to include or exclude broker names in the heatmap.

By default, this display shows **Alert Severity**, but you can mouse over a rectangle to see additional metrics. Drill down and investigate by clicking a rectangle in the heatmap to view details for the selected application in the “[VPNs Summary](#)” display.



Operational

When checked, only shows operational brokers.

Filter VPN Name

Enter a string to show only VPNs with this string in their name.

Metric

Choose a metric to view in the display.

Alert Severity


Visually displays the level at which the VPN has or has not exceeded its alarm level threshold. Values range from 0 - 2, as indicated in the color gradient bar, where 2 is the highest Alert Severity:

- Red indicates that one or more metrics exceeded their ALARM LEVEL threshold.
- Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold.
- Green indicates that no metrics have exceeded their alert thresholds.

Alert Count


The total number of critical and warning alerts. The color gradient bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the maximum count of alerts in the heatmap. The middle value in the gradient bar indicates the average alert count.

Connections

The total number of connections. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of **SolVpnConnectionCountHigh**. The middle value in the gradient bar indicates the middle value of the range.

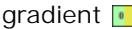
When **Auto** is checked, the numeric values in the color gradient bar show the range of the data being displayed rather than the default values. The middle value changes accordingly to indicate the color of the middle value of the range.

Subscriptions

The total number of subscriptions. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of **SolVpnSubscriptionCountHigh**. The middle value in the gradient bar indicates the middle value of the range.

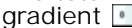
When **Auto** is checked, the numeric values in the color gradient bar show the range of the data being displayed rather than the default values. The middle value changes accordingly to indicate the color of the middle value of the range.

Msgs Spooled

The total number of spooled messages. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of **SolMsgRouterPendingMsgsHigh**. The middle value in the gradient bar indicates the middle value of the range.


When **Auto** is checked, the numeric values in the color gradient bar show the range of the data being displayed rather than the default values. The middle value changes accordingly to indicate the color of the middle value of the range.

Total Msgs Rcvd

The total number of received messages. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the maximum count of messages received in the heatmap. The middle value in the gradient bar indicates the average count.

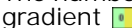
The **Auto** flag does not impact this metric.

Total Msgs Sent

The total number of sent messages. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the maximum count of messages sent in the heatmap. The middle value in the gradient bar indicates the average count.




The **Auto** flag does not impact this metric.

Total Msgs/ sec Rcvd

The number of messages received per second. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of **SolVpnInboundMsgRateHigh**. The middle value in the gradient bar indicates the middle value of the range.

When **Auto** is checked, the numeric values in the color gradient bar show the range of the data being displayed rather than the default values. The middle value changes accordingly to indicate the color of the middle value of the range.

Total Msgs/ sec Sent	<p>The number of messages sent per second. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolVpnOutboundMsgRateHigh. The middle value in the gradient bar indicates the middle value of the range.</p> <p>When Auto is checked, the numeric values in the color gradient bar show the range of the data being displayed rather than the default values. The middle value changes accordingly to indicate the color of the middle value of the range.</p>
Total Bytes/ sec Rcvd	<p>The number of bytes contained in messages received per second. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolVpnInboundByteRateHigh. The middle value in the gradient bar indicates the middle value of the range.</p> <p>When Auto is checked, the numeric values in the color gradient bar show the range of the data being displayed rather than the default values. The middle value changes accordingly to indicate the color of the middle value of the range.</p>
Total Bytes/ sec Sent	<p>The number of bytes contained in direct messages sent per second. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolMsgRouterOutboundByteRateHigh. The middle value in the gradient bar indicates the middle value of the range.</p> <p>When Auto is checked, the numeric values in the color gradient bar show the range of the data being displayed rather than the default values. The middle value changes accordingly to indicate the color of the middle value of the range.</p>
Direct Msgs/sec Rcvd	<p>The number of direct messages received per second. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the average number of direct messages received per second in the heatmap. The middle value in the gradient bar indicates the average count.</p> <p>The Auto flag does not impact this metric.</p>
Direct Msgs/sec Sent	<p>The number of direct messages sent per second in the heatmap rectangle. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the average number of direct messages sent per second in the heatmap. The middle value in the gradient bar indicates the average count.</p> <p>The Auto flag does not impact this metric.</p>
Total Inbound Discards	<p>The total number of discarded inbound messages in the heatmap rectangle. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the maximum count of discarded inbound messages in the heatmap. The middle value in the gradient bar indicates the average count.</p> <p>The Auto flag does not impact this metric.</p>

Total Outbound Discards	<p>The total number of discarded outbound messages in the heatmap rectangle. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the maximum count of discarded outbound messages in the heatmap. The middle value in the gradient bar indicates the average count.</p> <p>The Auto flag does not impact this metric.</p>
Inbound Discard Rate	<p>The number of discarded inbound messages per second in the heatmap rectangle. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolVpnInboundDiscardRateHigh. The middle value in the gradient bar indicates the middle value of the range.</p> <p>When Auto is checked, the numeric values in the color gradient bar show the range of the data being displayed rather than the default values. The middle value changes accordingly to indicate the color of the middle value of the range.</p>
Outbound Discard Rate	<p>The number of discarded outbound messages per second in the heatmap rectangle. The color gradient  bar, populated by the current heatmap, shows the value/color mapping. The numerical values in the gradient bar range from 0 to the defined alert threshold of SolVpnOutboundDiscardRateHigh. The middle value in the gradient bar indicates the middle value of the range.</p> <p>When Auto is checked, the numeric values in the color gradient bar show the range of the data being displayed rather than the default values. The middle value changes accordingly to indicate the color of the middle value of the range.</p>

VPNs Table

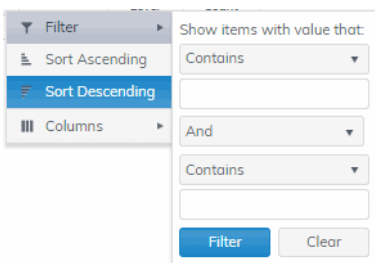
View data shown in the “[VPNs Heatmap](#)” display, as well as additional details, in a tabular format. Use this display to view all available data for each VPN associated with a specific broker.

By default, a subset of available metrics is shown. Use **More Columns/Less Columns** to toggle to the complete set of metrics available (and back to the subset).

Select a broker from the **Broker** drop-down menu. Each table row is a different VPN associated with the broker. Click a column header to sort column data in numerical or alphabetical order.

Sort data in numerical or alphabetical order on column headers. Use the check-box ☒ to include / exclude non-operational VPNs. Use the **Show** drop-down to see **All** VPNs, **Expired Only** or **Unexpired Only**. Enter a string in the **Filter VPN Name** field to show only VPNs with this string in their name.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:



Double-click a row to drill down and investigate in the "VPNs Summary" display.

Solace VPNs Table 04-Mar-2019 16:05 No Alerts DATA

Broker: - All - Less Columns

Show Operational Only: ☐ Show: All

Filter VPN Name: **VPNs: 25**

Broker	VPN Name	Alert Level	Alert Count	Connections	Operational
solaceLoaner	BridgeBroker1	✓		3	✓
solaceLoaner	Broker1	✓		3	✓
solaceLoaner	Broker10	✓		3	✓
solaceLoaner	Broker2	✓		3	✓
solaceLoaner	Broker3	✓		3	✓
solaceLoaner	Broker4	✓		3	✓
solaceLoaner	Broker5	✓		3	✓
solaceLoaner	Broker6	✓		3	✓
solaceLoaner	Broker7	✓		3	✓
solaceLoaner	Broker8	✓		3	✓
solaceLoaner	Broker9	✓		3	✓
solaceLoaner	default	✓		0	
solaceLoaner	stats	✓		0	
solaceLoaner	statspump	✓		1	✓
solaceLoaner	white-test	✓		1	✓

Broker

The name of the broker.

VPN Name

The name of the VPN.

Alert Level

The maximum level of alerts in the row:

● Red indicates that one or more metrics exceeded their ALARM LEVEL threshold.

● Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold.

● Green indicates that no metrics have exceeded their alert thresholds.

Alert Count

The total number of active alerts for the VPN.

Connections

The total number of connections for the VPN.

Operational	When checked, this status indicates that the VPN is enabled and is operating normally.
Total Unique Subscriptions	The total number of unique subscriptions to the VPN.
Total Client Messages Rcvd	The total number of messages received from clients connected to the VPN.
Total Client Messages Sent	The total number of messages sent to clients connected to the VPN.
Total Client Bytes Rcvd	The total number of bytes contained in messages received from clients connected to the VPN.
Total Client Bytes Sent	The total number of bytes contained in messages sent to clients connected to the VPN.
Total Client Msgs/sec Rcvd	The total number of messages received per second from clients connected to the VPN.
Total Client Msgs /sec Sent	The total number of messages sent per second to clients connected to the VPN.
Total Client Bytes/sec Rcvd	The total number of bytes contained in messages received per second from clients connected to the VPN.
Total Client Bytes/sec Sent	The total number of bytes contained in messages sent per second to clients connected to the VPN.
Client Direct Msgs Rcvd	The total number of direct messages received from clients connected to the VPN.
Client Direct Msgs Sent	The total number of direct messages sent to clients connected to the VPN.
Client Direct Bytes Rcvd	The total number of bytes contained in direct messages received from clients connected to the VPN.
Client Direct Bytes Sent	The total number of bytes contained in direct messages sent to clients connected to the VPN.
Client Direct Msgs/sec Rcvd	The total number of direct messages received per second from clients connected to the VPN.
Client Direct Msgs/sec Sent	The total number of direct messages sent per second to clients connected to the VPN.
Client Direct Bytes/sec Rcvd	The total number of bytes contained in the direct messages received per second from clients connected to the VPN.
Client Direct Bytes/sec Sent	The total number of bytes contained in the direct messages sent per second to clients connected to the VPN.
Client NonPersistent Msgs Rcvd	The total number of non-persistent messages received from clients connected to the VPN.
Client NonPersistent Msgs Sent	The total number of non-persistent messages sent to clients connected to the VPN.
Client NonPersistent Bytes Rcvd	The total number of bytes contained in the non-persistent messages received from clients connected to the VPN.
Client NonPersistent Bytes Sent	The total number of bytes contained in the non-persistent messages sent per second to clients connected to the VPN.
Client NonPersistent Msgs/sec Rcvd	The total number of non-persistent messages received per second from clients connected to the VPN.
Client NonPersistent Msgs/sec Sent	The total number of non-persistent messages sent per second to clients connected to the VPN.

Client NonPersistent Bytes/sec Rcvd	The total number of bytes contained in the non-persistent messages received per second from clients connected to the VPN.
Client NonPersistent Bytes/sec Sent	The total number of bytes contained in the non-persistent messages sent per second to clients connected to the VPN.
Client Persistent Msgs Rcvd	The total number of persistent messages received from clients connected to the VPN.
Client Persistent Msgs Sent	The total number of persistent messages sent to clients connected to the VPN.
Client Persistent Bytes Rcvd	The total number of bytes contained in persistent messages received from clients connected to the VPN.
Client Persistent Bytes Sent	The total number of bytes contained in persistent messages sent to clients connected to the VPN.
Client Persistent Msgs/sec Rcvd	The total number of persistent messages received per second from clients connected to the VPN.
Client Persistent Msgs/sec Sent	The total number of persistent messages sent per second to clients connected to the VPN.
Client Persistent Bytes/sec Rcvd	The total number of bytes contained in the persistent messages received per second from clients connected to the VPN.
Client Persistent Bytes/sec Sent	The total number of bytes contained in the persistent messages sent per second to clients connected to the VPN.
Total In Discards	The total number of discarded incoming messages.
Total In Discards/sec	The number of discarded incoming messages per second.
Total Out Discards	The total number of discarded outgoing messages.
Total Out Discards/sec	The number of discarded outgoing messages per second.
Max Spool Usage (MB)	The maximum amount of disk storage (in megabytes) that can be consumed by all spooled message on the VPN.
Authentication Type	The defined authentication type on the VPN.
Expired	When checked, performance data about the broker has not been received within the time specified.
Time Stamp	The date and time the row data was last updated.

VPNs Summary

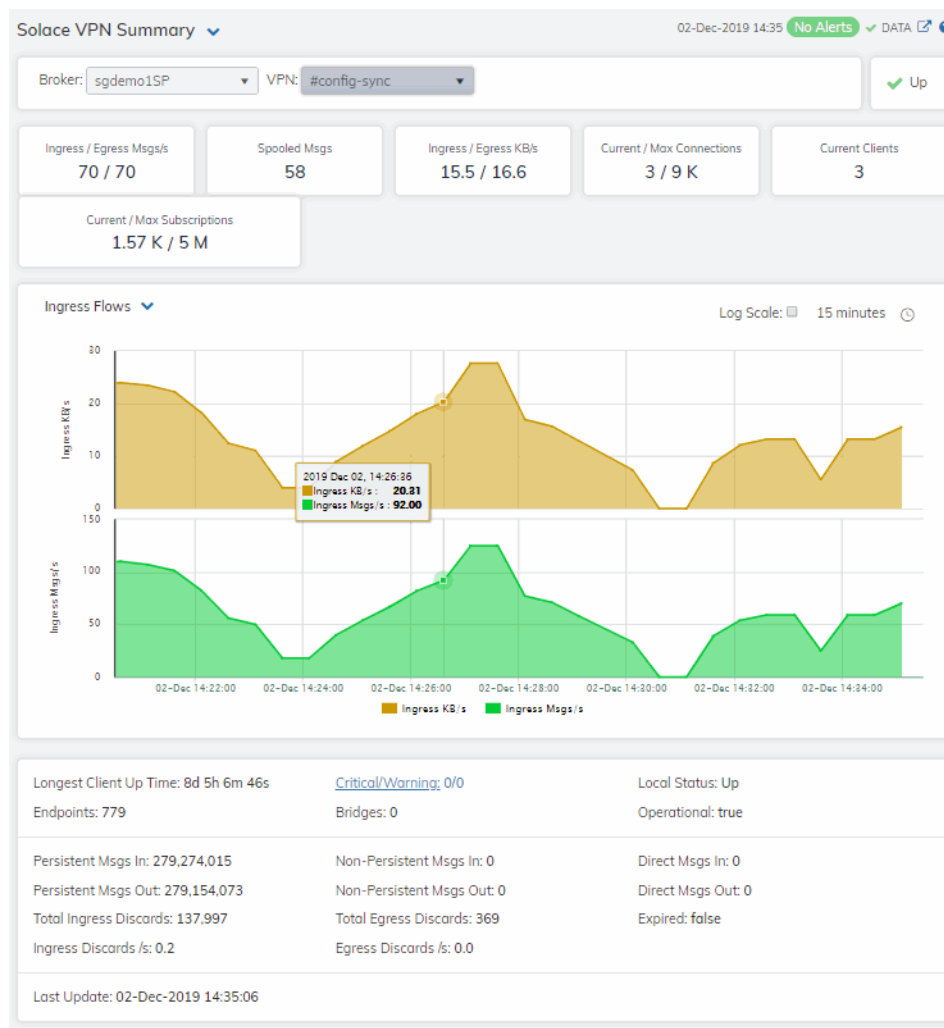
View neighbor broker current configuration details and message throughput rates.

Select a broker and a neighbor broker from the drop down menus. Check message throughput rates to the neighbor broker, as well as neighbor **Up Time**, **State**, **Data Port**, number of connections and link costs.

You can hover over the metric cards to see more performance metrics and also drill down to see even more detail by clicking on them.

The bottom half of the display provides current and historical performance metrics for the selected broker. The trend graph traces the performance metric you select: **Ingress Flows**, **Egress Flows** or **Spool Msgs**.

You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.



Alerts

- Red indicates that one or more metrics exceeded their **ALARM LEVEL** threshold.
- Yellow indicates that one or more metrics exceeded their **WARNING LEVEL** threshold.
- Green indicates that no metrics have exceeded their alert thresholds.

Up

Inbound/Outbound Msgs/s	The number of inbound/outbound messages per second.
Spooled Msgs	The number of spooled messages.
Inbound/Outbound KB/s	The number of inbound/outbound messages in KBs per second.
Current/Max Connections	The total number of current connections / maximum number of supported connections for the VPN.
Current Clients	The number of connected clients.

Current/Max Subscriptions The total number of current subscribers and maximum number of supported subscribers for the VPN.

Inbound Msgs/s Trend Graphs

Traces the sum of inbound message processing for the selected VPN.



- **Spooled Msgs:** The number of spooled messages for the VPN.
- **Client Msgs/sec:** The rate of incoming messages (per second) from client.
- **Direct Client Msgs/sec:** The rate of direct incoming messages (per second) from the direct client.

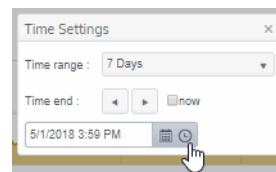
Log Scale



Select to enable a logarithmic scale. Use **Log Scale** to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. **Log Scale** makes data on both scales visible by applying logarithmic values rather than actual values to the data.


Time Settings

By default, the time range end point is the current time. To change the time range, click the **Time Settings**  and either:

- choose a **Time range** from 5 Minutes to 7 Days in the drop-down menu.
- specify begin/end dates using the calendar .
- specify begin/end time using the clock .



Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows  .

Restore settings to current time by selecting **now** .

Longest Client Up Time

The number of days, hours and minutes for the longest, currently active, client connection.

Endpoints

The number of endpoints.

Persistent Msgs In

The total number of incoming persistent messages.

Persistent In Msgs/s

The number of incoming persistent messages per second.

Persistent Msgs Out

The total number of outgoing persistent messages.

Persistent Out Msgs/s

The number of outgoing persistent messages per second.

Total In Discards

The total number of incoming messages that were discarded.

Total In Discards/sec

The total number of incoming messages that were discarded, per second.

Critical/Warning

The number of critical alerts / warning alerts which also opens the **Alerts Table**.

Bridges

The number of bridges.

Non-Persistent Msgs In

The total number of incoming non-persistent messages.

Non-Persistent In Msgs/s	The number of incoming non-persistent messages per second.
Non-Persistent Msgs Out	The total number of outgoing non-persistent messages.
Non-Persistent Out Msgs/s	The number of outgoing non-existent messages per second.
Total Out Discards	The total number of outgoing messages that were discarded.
Total Out Discards/sec	The total number of outgoing messages that were discarded, per second.
Direct Msgs In	The total number of incoming direct messages.
Direct In Msgs/s	The number of incoming direct messages per second.
Direct Msgs Out	The total number of outgoing direct messages.
Direct Out Msgs/s	The number of outgoing direct messages per second.
Expired	When true , performance data about the VPN has not been received within the time specified.
Last Update	The date and time of the last data update.

Clients

These displays allow you to view the current and historical metrics for clients configured on a VPN. Displays in this View are:

- **"Clients Table"**: A tabular view of data for all clients configured on a VPN.
- **"Client Summary"**: Current and historical metrics for a single client configured on a VPN.

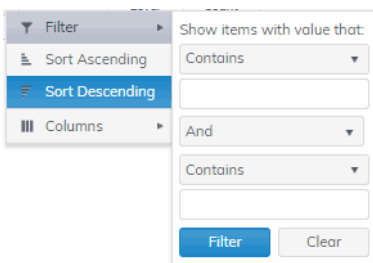
Clients Table

View VPN clients configured on all brokers, a single broker, all VPNs or a single VPN. Each table row is a different VPN client connection. Use the drop-down menus to show **All**, **Expired** or **Unexpired** clients as well as **All**, **Internal** or **Primary** clients (processes that run on the broker under the Solace OS). Enter a string for **Filter Client Name** to show only clients with this string in their name.

By default, a subset of available metrics is shown. Use **More Columns/Less Columns** to toggle to the complete set of metrics available (and back to the subset).

This display is populated by two caches, SolClientsStats and SolClients. SolClientsStats provides most of the data. SolClients provides the static data. If the SolClients cache encounters an issue the static fields in this display are blank.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:



Double-click a row to drill down and investigate in the “Client Summary” display.

Solace Broker Clients Table 05-Mar-2019 08:38 No Alerts DATA

Broker: - All - VPN: - All - [Less Columns](#)

Show Type: All Show: All Filter Client Name:

Clients: 101

Broker	VPN	Client Name	Alert Level	Alert Count	Slow Subscriber
solaceLoaner	BridgeBroker1	#bridge/local/B114toSolDemo/solace/8798/16	✓		
solaceLoaner	BridgeBroker1	#bridge/local/B142toSolDemo/solace/8798/15	✓		
solaceLoaner	BridgeBroker1	#client	✓		
solaceLoaner	Broker1	#bridge/local/testBridgeToNoWhere/solace/8798/9	✓		
solaceLoaner	Broker1	#bridge/remote/B1_to_B2/v/solace/8796/0	✓		
solaceLoaner	Broker1	#client	✓		
solaceLoaner	Broker1	S-HOST10/5236/#00010001	✓		
solaceLoaner	Broker10	#bridge/local/B112toSolDemo/solace/8798/14	✓		
solaceLoaner	Broker10	#bridge/local/B144toSolDemo/solace/8798/12	✓		
solaceLoaner	Broker10	#bridge/local/B209toSolDemo/solace/8798/13	✓		
solaceLoaner	Broker10	#client	✓		
solaceLoaner	Broker10	S-HOST10/5152/#00010001	✓		
solaceLoaner	Broker10	S-HOST10/5448/#00010001	✓		
solaceLoaner	Broker2	#bridge/local/B1_to_B2/solace/8798/10	✓		
solaceLoaner	Broker2	#client	✓		
solaceLoaner	Broker2	S-HOST10/5212/#00010001	✓		
solaceLoaner	Broker3	#bridge/local/Bridge_loanerToVMR144/solace/879	✓		

Page 1 of 3 1 - 40 of 101 items

Broker

Lists the name of the selected broker.

VPN

Lists the name of the selected VPN.

Client Name

The name of the client.

Alert Level

The maximum level of alerts in the row:



Red indicates that one or more metrics exceeded their ALARM LEVEL threshold.



Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold.



Green indicates that no metrics have exceeded their alert thresholds.

Alert Count

Total number of alerts for the client.

Slow Subscriber

This check box will be checked if the client consistently fails to consume their messages at the offered rate (which causes their egress queues to fill up).

Total Egress Flows

The total number of outgoing flows.

Total Ingress Flows

The total number of incoming flows.

Subscriptions

The total number of subscriptions.

Subscription Msgs Rcvd

The total number of messages received from subscriptions.

Subscription Msgs Sent	The total number of messages sent from subscriptions.
Type	Lists the type of alert.
Uptime	Lists the amount of time the client has been up and running.
Client ID	Lists the client ID.
Client UserName	Lists the user name for the client.
Client Address	The IP Address of the client.
Profile	The client profile that is assigned to the client.
ACL Profile	The access control list profile to which the client is assigned.
Description	Lists a description of the client.
Platform	Lists the platform of the client.
Software Version	The version of the platform.
Total Flows Out	The total number of outbound message flows for the client.
Total Flows In	The total number of inbound message flows for the client.
# Subscriptions	The number of subscribers connected to the client.
Add Sub Msgs Rcvd	The number of Add Subscription messages received.
Add Sub Msgs Sent	The number of Add Subscription Messages sent.
Already Exists Msgs Sent	Refer to Solace documentation for more information.
Assured Ctrl Msgs Rcvd	Refer to Solace documentation for more information.
Assured Ctrl Msgs Sent	Refer to Solace documentation for more information.
Total Client Msgs Rcvd	The total number of messages received by the client.
Total Client Msgs Sent	The total number of messages sent by the client.
Total Client Bytes Rcvd	The total number of bytes contained within the messages received by the client.
Total Client Bytes Sent	The total number of bytes contained within the messages sent by the client.
Total Client Msgs Rcvd/sec	The total number of messages received per second by the client.
Total Client Msgs Sent/sec	The total number of messages sent per second by the client.
Total Client Bytes Rcvd/sec	The total number of bytes contained within the messages received per second by the client.
Total Client Bytes Sent/sec	The total number of bytes contained within the messages sent per second by the client.
Ctl Bytes Rcvd	The number of control data bytes received by the client.
CTL Bytes Sent	The number of control data bytes sent by the client.

Ctl Msgs Rcvd	The number of control data messages received by the client.
Ctl Msgs Sent	The number of control data messages sent by the client.
Client Data Bytes Rcvd	The number of bytes contained within the data messages received by the client.
Client Data Bytes Sent	The number of bytes contained within the data messages sent by the client.
Client Data Msgs Rcvd	The number of data messages received by the client.
Client Data Msgs Sent	The number of data messages sent by the client.
Client Direct Msgs Rcvd	The number of direct messages received by the client.
Client Direct Msgs Sent	The number of direct messages sent by the client.
Client Direct Bytes Rcvd	The number of bytes contained within direct messages received by the client.
Client Direct Bytes Sent	The number of bytes contained within direct messages sent by the client.
Client Direct Msgs Rcvd/sec	The number of direct messages received per second by the client.
Client Direct Msgs Sent/sec	The number of direct messages sent per second by the client.
Client Direct Bytes Rcvd/sec	The number of bytes contained within the messages received per second by the client.
Client Direct Bytes Sent/sec	The number of bytes contained within the messages sent per second by the client.
Client NonPersistent Msgs Rcvd	The number of non-persistent messages received by the client.
Client NonPersistent Msgs Sent	The number of non-persistent messages sent by the client.
Client NonPersistent Bytes Rcvd	The number of bytes contained within the non-persistent messages received by the client.
Client NonPersistent Bytes Sent	The number of bytes contained within the non-persistent messages sent by the client.
Client NonPersistent Msgs Rcvd/sec	The number of non-persistent messages received per second by the client.
Client NonPersistent Msgs Sent/sec	The number of non-persistent messages sent per second by the client.
Client NonPersistent Bytes Rcvd/sec	The number of bytes contained within the non-persistent messages received per second by the client
Client NonPersistent Bytes Sent/sec	The number of bytes contained within the non-persistent messages sent per second by the client
Client Persistent Msgs Rcvd	The number of persistent messages received by the client.
Client Persistent Msgs Sent	The number of persistent messages sent by the client.
Client Persistent Bytes Rcvd	The number of bytes contained within the persistent messages received by the client.
Client Persistent Bytes Sent	The number of bytes contained within the persistent messages sent by the client.
Client Persistent Msgs Rcvd/sec	The number of persistent messages received per second by the client.

Client Persistent Msgs Sent/sec	The number of persistent messages sent per second by the client.
Client Persistent Bytes Rcvd/sec	The number of bytes contained within the persistent messages received per second by the client.
Client Persistent Bytes Sent/sec	The number of bytes contained within the persistent messages sent per second by the client.
Denied Dup Clients	Refer to Solace documentation for more information.
Denied Subscribe Permission	The number of denied subscription requests due to improper permissions.
Denied Subscribe Topic-ACL	The number of denied subscriptions to topics due to the fact that the client requesting was not on the Access Control List.
Denied Unsubscribe Permission	The number of denied unsubscribe requests due to improper permissions.
Denied Unsubscribe Topic-ACL	The number of denied unsubscribe requests to topics due to the fact that the client requesting was not on the Access Control List.
DTO Msgs Rcvd	The number of Deliver-To-One messages received by the client.
Egress Compressed Bytes	The number of compressed bytes contained within outgoing messages.
Ingress Compressed Bytes	The number of compressed bytes contained within incoming messages.
Total Ingress Discards	The total number of discarded incoming messages.
Total Egress Discards	The total number of discarded outgoing messages.
Total Ingress Discards/sec	The total number of discarded incoming messages per second.
Total Egress Discards/sec	The total number of discarded outgoing messages per second.
Keepalive Msgs Rcvd	The number of Keepalive messages received by the client.
Keepalive Msgs Sent	The number of Keepalive messages sent by the client.
Large Msgs Rcvd	The number of large messages received by the client.
Login Msgs Rcvd	The number of login message received by the client.
Max Exceeded Msgs Sent	The number of responses sent by the client informing the connected broker(s) that the number of the message(s) sent exceeded the maximum allowed.
Not Enough Space Msgs Sent	The number of responses sent by the client informing the connected broker(s) that the size of the message(s) sent exceeded the maximum allowable size, or that the message caused the client's Local Spool Quota to exceed the maximum amount of space.
Not Found Msgs Sent	Refer to Solace documentation for more information.
Parse Error on Add Msgs Sent	Refer to Solace documentation for more information.
Parse Error on Remove Msgs Sent	Refer to Solace documentation for more information.
Remove Subscription Msgs Rcvd	The number of remove subscription requests received by the client.

Remove Subscription Msgs Sent	The number of remove subscription requests sent by the client.
Subscribe Client Not Found	The number of subscription requests for clients that were not found.
Unsubscribe Client Not Found	The number of unsubscribe requests for clients that were not found.
Update Msgs Rcvd	Refer to Solace documentation for more information.
Update Msgs Sent	Refer to Solace documentation for more information.
Expired	When checked, performance data about the client has not been received within the time specified.
Timestamp	The date and time the row of data was last updated.

Client Summary

View current and historical performance and utilization metrics for a single VPN client.

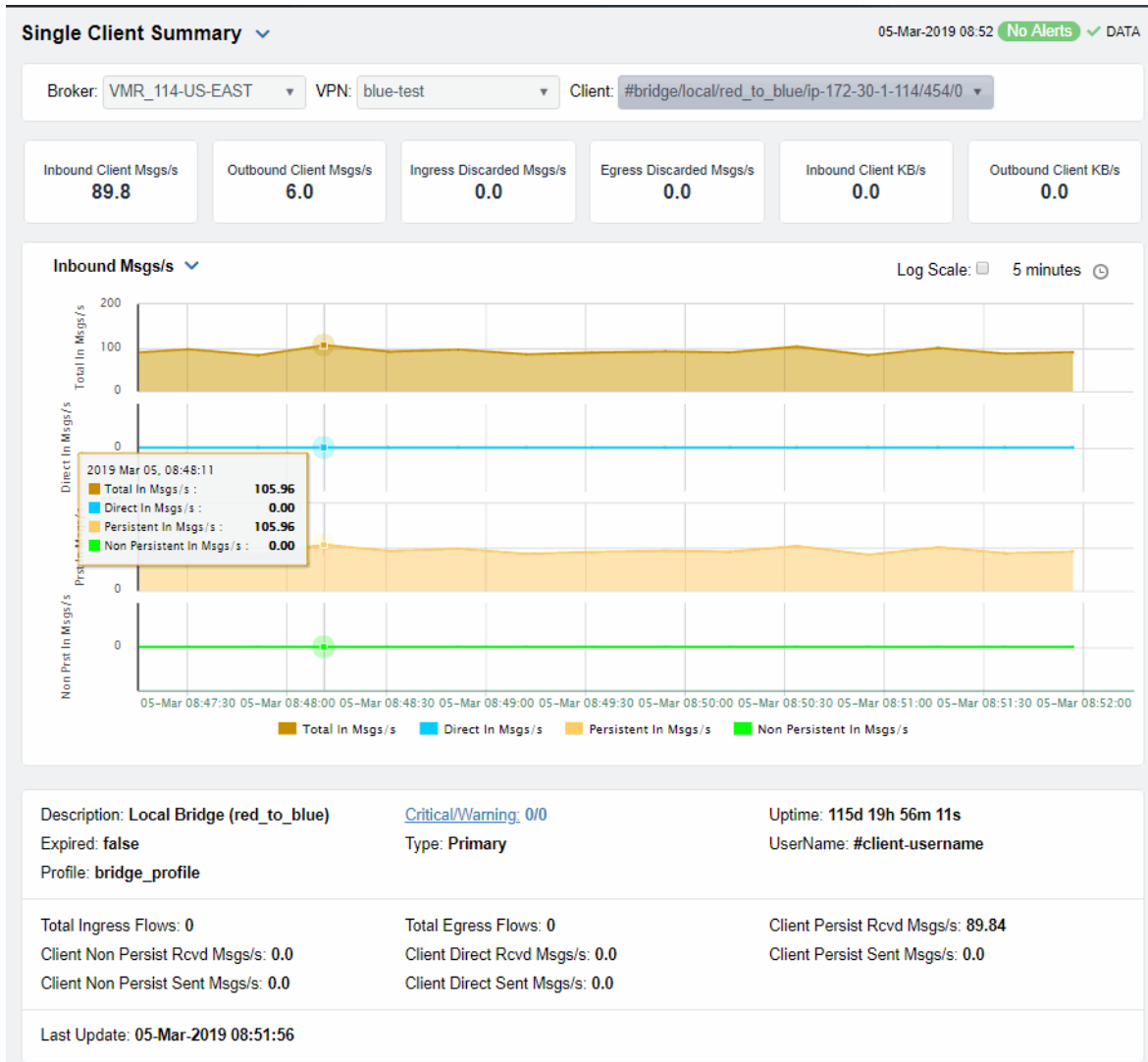
Select a broker, VPN and client from the drop-down menus. You can view the **Client Type**, the **User Name**, the **Client ID**, the associated **Platform**, the current **Up Time**, and additional information specific to the client. You can also view the total number of incoming and outgoing messages, as well as the number of incoming and outgoing persistent, non-persistent, direct, and discarded messages.

You can hover over the metric cards to see more performance metrics and also drill down to see even more detail by clicking on them.

The bottom half of the display provides current and historical performance metrics for the selected broker. The trend graph traces the performance metric you select: **Ingress Flows** or **Egress Flows**.

You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.

This display is populated by two caches, SolClientsStats and SolClients. SolClientsStats provides most of the data. SolClients provides the static data. If the SolClients cache encounters an issue the graphic elements that have no data are replaced with **N/A**.



Inbound Client Msgs /sec

The number of incoming client messages per second.

Outbound Client Msgs /sec

The number of outgoing client messages per second.

Ingress Discarded Msgs /sec

The number of discarded ingress messages per second.

Egress Discarded Msgs /sec

The number of discarded egress messages per second.

Inbound Client KB/sec

The amount of incoming data from the client in KBs per second.

Outbound Client KB/sec

The amount of outgoing data for the client in KBs per second.

Trend Graphs

Traces the sum of message processing for the selected client.



- **Total In Msgs/sec**: The number of incoming messages (per second) for the client.
- **Dir-In Msgs/sec**: The number of incoming direct messages (per second) for the client.
- **Persistent In Msgs/sec**: The number of incoming persistent messages (per second) for the client.
- **Non Persistent In Msgs/sec**: The number of incoming non-persistent messages (per second) for the client.

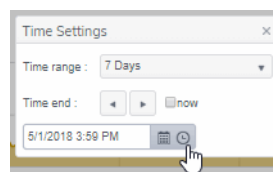
Log Scale



Select to enable a logarithmic scale. Use **Log Scale** to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. **Log Scale** makes data on both scales visible by applying logarithmic values rather than actual values to the data.

Time Settings

By default, the time range end point is the current time. To change the time range, click the **Time Settings**  and either:

- choose a **Time range** from 5 Minutes to 7 Days in the drop-down menu.
- specify begin/end dates using the calendar .
- specify begin/end time using the clock .



Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows  .

Restore settings to current time by selecting **now** .

Description

The description of the client.

Expired

When checked, performance data about the broker has not been received within the time specified.

Profile

The client's profile.

Total Ingress Flows

The number of inflows coming to the client.

Persistent Msgs In/sec

The number of persistent incoming messages per second.

Persistent Msgs Out/sec

The number of persistent outgoing messages per second.

Last Update

The date and time of the last data update.

Critical/Warning

The number of critical alerts / warning alerts which also opens the **Alerts Table**.

Non Persistent Msgs In/sec

The number of non-persistent incoming messages per second.

NonPersistent Msgs Out/sec

The number of non-persistent outgoing messages per second.

Uptime

If the VPN's **Local Status** is **Up**, this field displays the length of time that the VPN has been up and running.

Username	The client's user name.
Direct In Msgs /sec	The number of non-persistent incoming messages per second.
Direct Out Msgs /sec	The number of non-persistent outgoing messages per second.

Bridges

These displays provide process data for bridges configured on a VPN. Displays in this View are:

- **"Bridges Table"**: A tabular view of all available process performance data for all bridges configured on a VPN.
- **"Bridges Diagram"**: Topological view of Solace network bridges that shows bridge broker connections and health status and allows you to open the Solace PubSub+ Manager.
- **"Bridge Summary"**: Current and historical metrics for a single bridge.

Bridges Table

This display allows you to view data for all bridges configured for a VPN.

By default, a subset of available metrics is shown. Use **More Columns/Less Columns** to toggle to the complete set of metrics available (and back to the subset).

Select a broker and VPN from the drop-down menus. Use the check-boxes ☒ to include / exclude **Enabled** and **Expired** bridges. Each table row is a different bridge.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:

Rows listing bridges that are disabled or expired display with a shaded background. Double-click a row to drill down and investigate in the “[Bridge Summary](#)” display.

Solace Bridges Table 05-Mar-2019 09:01 No Alerts DATA

Broker: - All - VPN: blue-test [Less Columns](#)

Show Enabled Only: ☐ Show: All Filter Bridge Name: Bridges: 2

Broker	Local VPN	Bridge Name	Remote VPN	Remote Router
VMR_114-US-EAST	blue-test	#bridge/v:solace/BridgeBroker1/15	BridgeBroker1	v:solace
VMR_114-US-EAST	blue-test	red_to_blue	red-test	v:ip-172-30-1-1

Broker

Displays the name of the broker

Local VPN

The name of the local VPN.

Bridge Name

The name of the bridge.

Alert Level

The current level of alerts in the row.

● Red indicates that one or more metrics exceeded their ALARM LEVEL threshold.

● Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold.

● Green indicates that no metrics have exceeded their alert thresholds.

Alert Count

The total number of active alerts for the process.

Remote VPN

The name of the remote VPN that is connected to the local VPN via the bridge.

Remote Router

The name of the remote broker.

Admin State

Indicates whether the bridge has been administratively enabled (via SolAdmin or the command line interface).

Inbound Operational State

The current inbound operational status of the bridge. (The administrator can turn off a bridge's input or output for maintenance or other reasons.)

Outbound Operational State

The current outbound operational status of the bridge. (The administrator can turn off a bridge's input or output for maintenance or other reasons.)

Queue Operational State

The current operational status of the queue.

Connection Establisher	Indicates whether the administrator created and configured the bridge directly on the broker using SolAdmin or the command line interface, or indirectly from another broker.
Redundancy	Displays whether the bridge is the primary bridge, the backup bridge, the static bridge (default bridge used when no other bridge is available), or whether it is the only bridge available (none).
Uptime	The current amount of time in which the bridge has been up and running.
Client Name	The name of the client.
Connected Via Addr	The local IP address and port used for the bridge.
Connected Via Interface	The name of the network interface used for the bridge.
Client Direct Bytes Rcvd	The number of bytes contained within direct messages received by the client via the bridge.
Client Direct Bytes/sec Rcvd	The number of bytes contained within direct messages received per second by the client via the bridge.
Client Direct Bytes Sent	The number of bytes contained within direct messages sent by the client via the bridge.
Client Direct Bytes/sec Sent	The number of bytes contained within direct messages sent per second by the client via the bridge.
Client Direct Msgs/sec Rcvd	The number of bytes contained within direct messages received per second by the client via the bridge.
Client Direct Msgs Sent	The number of direct messages sent by the client via the bridge.
Client Direct Msgs/sec Sent	The number of direct messages sent per second by the client via the bridge.
Client NonPersistent Bytes Rcvd	The number of bytes contained within non-persistent messages received by the client via the bridge.
Client NonPersistent Bytes/sec Rcvd	The number of bytes contained within non-persistent messages received per second by the client via the bridge.
Client NonPersistent Bytes Sent	The number of bytes contained within non-persistent messages sent by the client via the bridge.
Client NonPersistent Bytes/sec Sent	The number of bytes contained within non-persistent messages sent per second by the client via the bridge.
Client NonPersistent Msgs Rcvd	The number of non-persistent messages received by the client via the bridge.
Client NonPersistent Msgs/sec Rcvd	The number of non-persistent messages received per second by the client via the bridge.
Client NonPersistent Msgs Sent	The number of non-persistent messages sent by the client via the bridge.
Client NonPersistent Msgs/sec Sent	The number of non-persistent messages sent per second by the client via the bridge.
Client Persistent Bytes Rcvd	The number of bytes contained within persistent messages received by the client via the bridge.
Client Persistent Bytes/sec Rcvd	The number of bytes contained within persistent messages received per second by the client via the bridge.
Client Persistent Bytes Sent	The number of bytes contained within persistent messages sent by the client via the bridge.

Client Persistent Bytes/sec Sent	The number of bytes contained within persistent messages sent per second by the client via the bridge.
Client Persistent Msgs Rcvd	The number of persistent messages received by the client via the bridge.
Client Persistent Msgs /sec Rcvd	The number of persistent messages received per second by the client via the bridge.
Client Persistent Msgs Sent	The number of persistent messages sent by the client via the bridge.
Client Persistent Msgs/sec Sent	The number of persistent messages sent per second by the client via the bridge.
Total Client Bytes Rcvd	The number of bytes contained within all messages received by the client via the bridge.
Total Client Bytes/sec Rcvd	The number of bytes contained within all messages received per second by the client via the bridge.
Total Client Bytes Sent	The number of bytes contained within all messages sent by the client via the bridge.
Total Client Bytes/sec Sent	The number of bytes contained within all messages sent per second by the client via the bridge.
Total Client Msgs Rcvd	The total number of all messages received by the client via the bridge.
Total Client Msgs/sec Rcvd	The total number of all messages received per second by the client via the bridge.
Total Client Msgs Sent	The total number of all messages sent by the client via the bridge.
Total Client Msgs/sec Sent	The total number of all messages sent per second by the client via the bridge.
Total Out Discards	The total number of discarded outgoing messages sent by the client via the bridge.
Total Out Discards/sec	The total number of discarded outgoing messages sent per second by the client via the bridge.
Total In Discards	The total number of discarded incoming messages received by the client via the bridge.
Total In Discards/sec	The total number of discarded incoming messages received per second by the client via the bridge.
Expired	When checked, performance data about the broker has not been received within the time specified.
Timestamp	The date and time the row of data was last updated.

Bridges Diagram

Use this topology view to monitor the health of your network bridges and VPNs. Quickly identify bridge and VPN connections, their health status and which resources their performance impacts. Open the Solace PubSub+ Manager by right-clicking on a router and selecting **Launch PubSub+ Manager**.

Drag and drop objects to arrange them on the screen (doing so does not logically impact the network bridges and VPNs). Arrows show the connections between VPNs and bridges.

Each object is a network bridge or VPN. Each is labeled with their name and color coded as follows:

- Red indicates that the object has one or more alerts in a critical state.
- Yellow indicates that the object has one or more alerts in a warning state.

● Green indicates that there are no alerts on the object.

● Gray indicates that the object is off-line.

Save: Saves the arrangement of the objects.

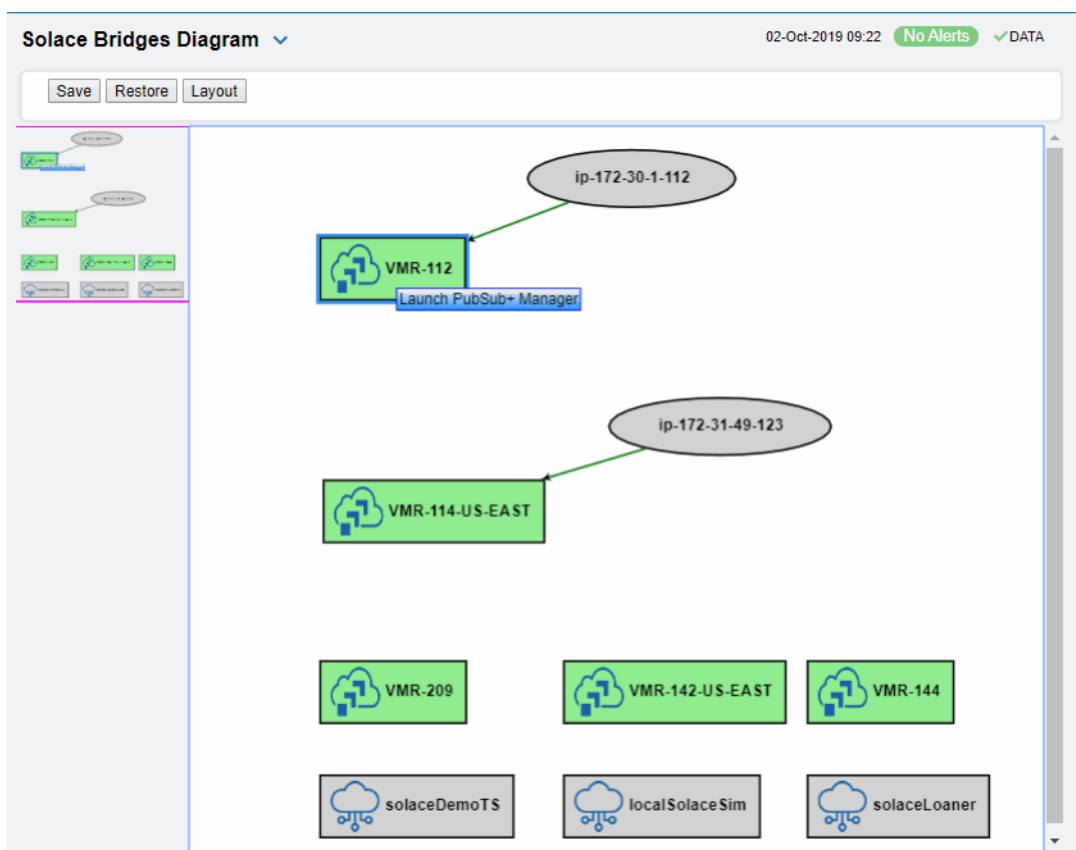
Restore: Returns objects to their previous positions.

Layout: Toggles between two types of layouts. One layout positions objects to the right so you might scroll in that direction to see them. The other layout pulls all the objects close together to the left, vertically, in hierarchical order.

Look at the miniature view in (upper left) to see all objects in either layout. Or zoom into the display using **Ctrl**+/- or **Ctrl**+ mouse wheel.

Drill down to investigate in the [“Bridges Table”](#).

To monitor network brokers, VMRs and servers, see the [“Neighbors Diagram”](#).



Bridge Summary

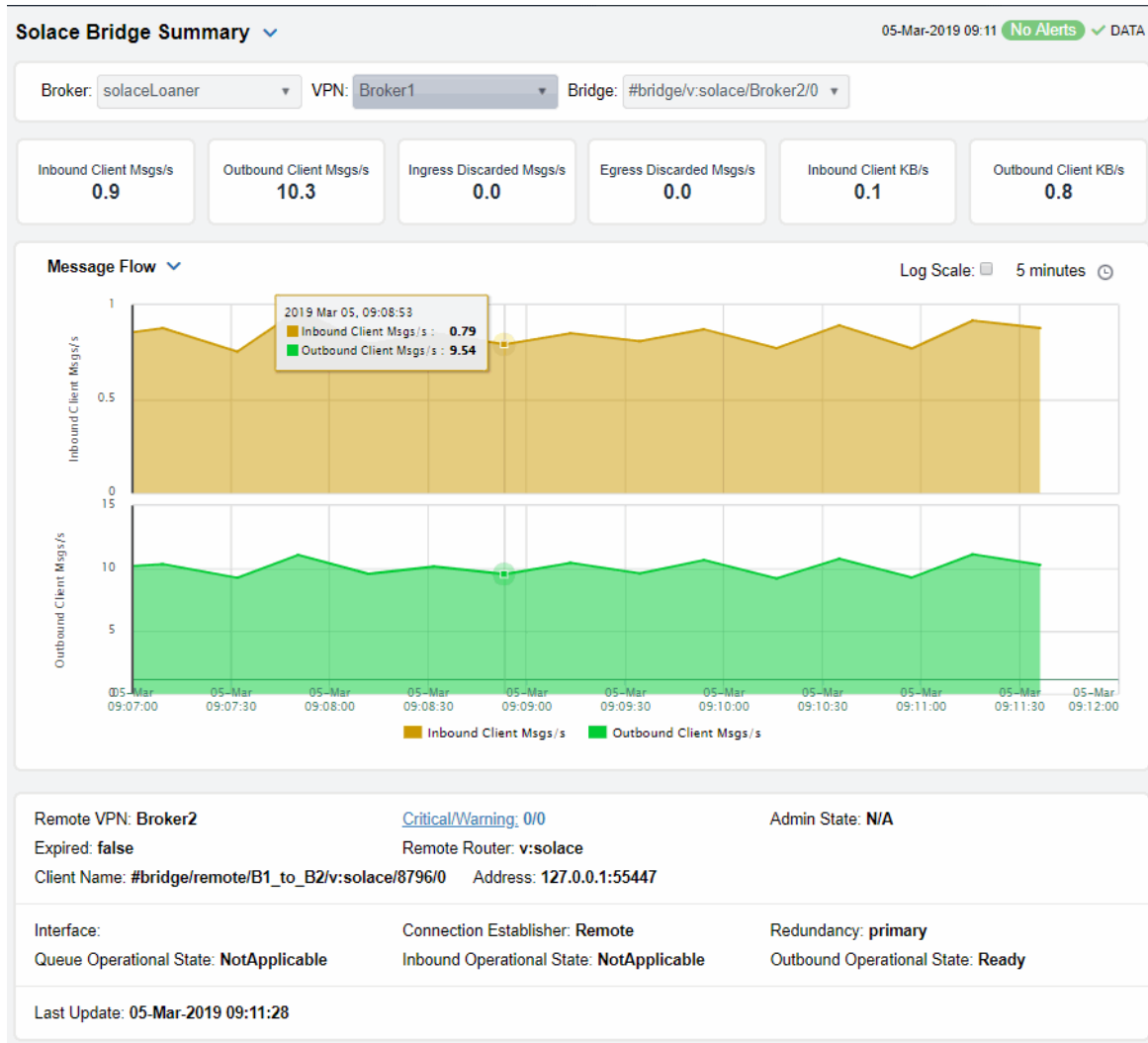
View current and historical performance and utilization metrics for a particular bridge on a VPN.

Select a broker, a VPN, and a bridge from the drop-down menus. Metric cards at the top of the displays show **Inbound and Outbound Client Messages per second**, **Ingress and Egress Discarded Messages**, and **Ingress and Egress KBs per second**.

You can hover over the metric cards to see more performance metrics and also drill down to see even more detail by clicking on them.

The trend graph traces current and historical performance metrics for the selected broker. The trend graph traces the performance metric you select: **Message Flow** or **Throughput**.

You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.



Inbound Client Msgs/s

The number of client messages received per second.

Outbound Client Msgs/s

The number of client messages sent per second.

Ingress Discarded Client Msgs/s

The number of discarded ingress messages per second.

Egress Discarded Msgs/s

The number of discarded egress messages per second.

Inbound Client KB/s

The amount of incoming client data, in KB per second.

Outbound Client KB/s

The amount of outgoing client data, in KB per second.

Messages Flow Trend Graphs

Traces the sum for the selected client.



- **Inbound Client Msgs/s**: The number of client messages received per second.
- **Outbound Client Msgs/s**: The number of client messages sent per second.

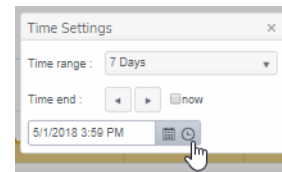
Log Scale



Select to enable a logarithmic scale. Use **Log Scale** to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. **Log Scale** makes data on both scales visible by applying logarithmic values rather than actual values to the data.


Time Settings

By default, the time range end point is the current time. To change the time range, click the **Time Settings**  and either:

- choose a **Time range** from 5 Minutes to 7 Days in the drop-down menu.
- specify begin/end dates using the calendar .
- specify begin/end time using the clock .



Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows  .

Restore settings to current time by selecting **now** .

Remote VPN

The name of the remote VPN that is connected to the local VPN via the bridge.

Expired

When true, performance data about the bridge has not been received within the time specified.

Address

The IP address.

Interface

The interface ID.

Queue Operational State

Refer to Solace documentation for more information.

Last Update

The date and time of the last data update.

Critical/Warning

The number of critical alerts / warning alerts which also opens the **Alerts Table**.

Remote Router

The remote broker.

Conn Establisher

Refer to Solace documentation for more information.

Inbound Operational State

The current inbound operational status of the bridge. (The administrator can turn off a bridge's input or output for maintenance or other reasons.)

Admin State

Indicates whether the bridge has been administratively enabled (via SolAdmin or the command line interface).

Client Name

The name of the client.

Redundancy

Indicates whether the bridge is the **primary** bridge, the **backup** bridge, the **static** bridge (default bridge used when no other bridge is available), or whether it is the only bridge available (**none**).

Outbound Op State

The current outbound operational status of the bridge. (The administrator can turn off a bridge's input or output for maintenance or other reasons.)

Endpoints

These displays list data for one or more endpoints configured on a VPN. Displays in this View are:

- ["Endpoints Table"](#)
- ["Endpoint Summary"](#)

Endpoints Table

View all endpoints configured on a VPN. Each row in the table lists the details for a specific endpoint.

By default, a subset of available metrics is shown. Use **More Columns/Less Columns** to toggle to the complete set of metrics available (and back to the subset).

Select a broker and VPN from the drop-down menus. Filter the table using the **Show Ingress Config Status Down Only** check-box ☒ and use the **Show** drop-down menus to include **All**, **Expired** or **Unexpired**.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:

You can click a column header to sort column data in numerical or alphabetical order, or double-click a row to drill down and investigate in the [“Endpoint Summary”](#) display.

Solace Endpoints Table 05-Mar-2019 09:13 No Alerts DATA

Broker: solaceLoaner VPN: Broker1 Less Columns

Show Ingress Config Status Down Only: ☐ Show: All Filter Endpoint Name: Endpoints: 2

Broker	VPN	Endpoint Name	Alert Level	Alert Count	Bind Count	Spooled Messages	Cur Spool Usage MB	High-Wa Mark M
solaceLoaner	Broker1	bridgeq	✓		1	2	0.0	
solaceLoaner	Broker1	q1	✓		0	0	0.0	

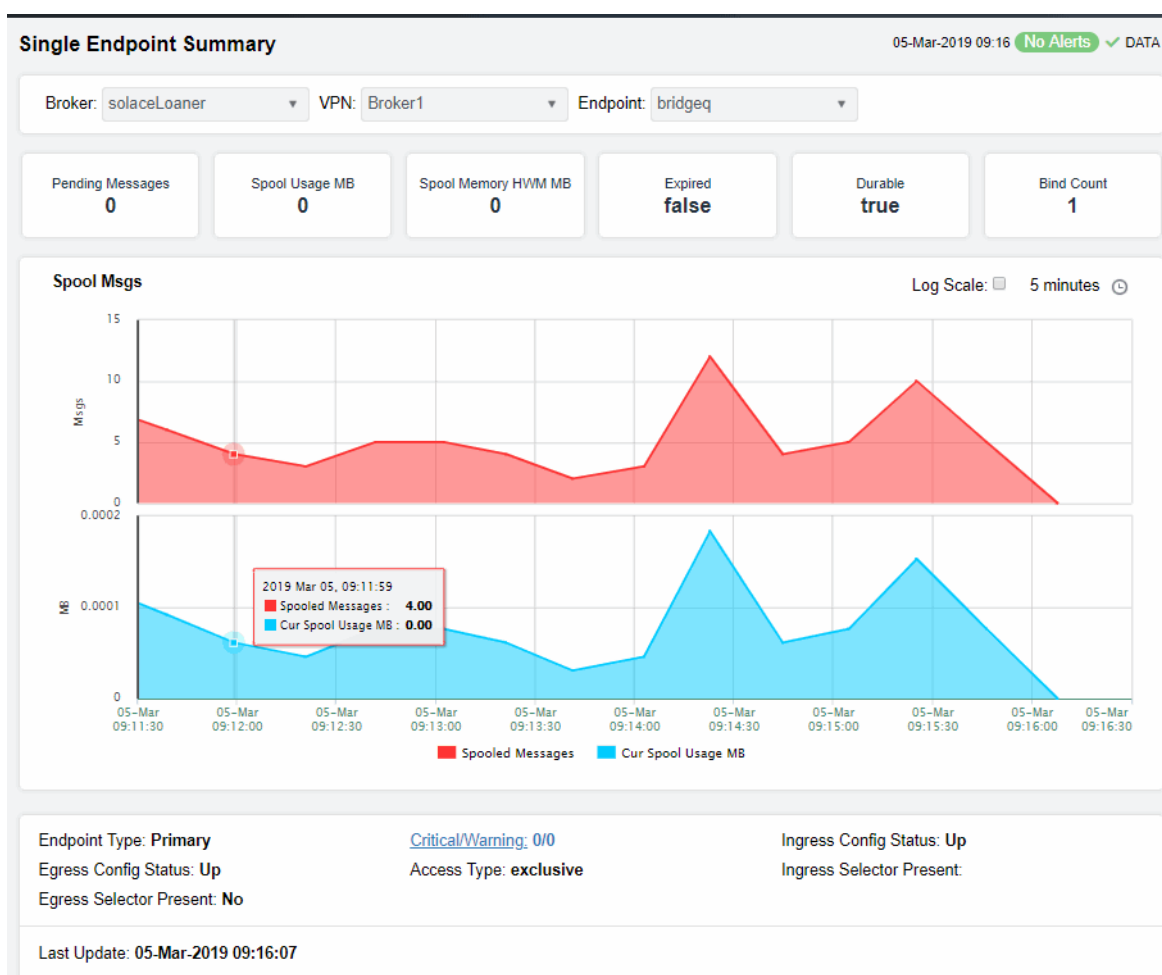
Broker	Displays the name of the broker
VPN	The name of the VPN.
Endpoint Name	The name of the endpoint.
Alert Level	<p>The current alert severity in the row.</p> <ul style="list-style-type: none"> Red indicates that one or more metrics exceeded their ALARM LEVEL threshold. Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold. Green indicates that no metrics have exceeded their alert thresholds.
Alert Count	The total number of active alerts for the endpoint.
Bind Count	The total number of binds connected to the endpoint.
Endpoint Type	The type of endpoint (either queue or topic).
Durable	Displays whether or not the endpoint is durable (checked) or non-durable (unchecked). Durable endpoints remain after an broker restart and are automatically restored as part of an broker's backup and restoration process.
In Config Status	Refer to Solace documentation for more information.
Out Config Status	Refer to Solace documentation for more information.
Type	Refer to Solace documentation for more information.
Access Type	Refer to Solace documentation for more information.

Spooled Messages	The total number of spooled messages on the endpoint.
Spool Usage (MB)	The total spool usage consumed on the endpoint (in megabytes).
High Water Mark (MB)	The highest level of spool usage on the endpoint (in megabytes).
In Selector	Refer to Solace documentation for more information.
Out Selector	Refer to Solace documentation for more information.
Expired	When checked, performance data about the endpoint has not been received within the time specified.
Time Stamp	The date and time the row of data was last updated.

Endpoint Summary

This display allows you to view endpoint information, message data, and a trend graph for spooled messages for a specific endpoint configured on a VPN. Choose a broker, a VPN, and an endpoint from the drop-down menus, and use the **Time Settings** to “zoom-in” or “zoom-out” on a specific time frame in the trend graph.

This display is provided by default and should be used if you do not want to collect message spool data for specific VPNs. However, if you do want to configure message spool monitoring for specific VPNs, then you should use the **Single Endpoint Summary Rates** display instead, which is not included in the navigation tree by default.



Spooled Messages

The total number of spooled messages on the endpoint.

Spool Usage (MB)

The current spool usage consumed on the endpoint (in megabytes).

Spool Memory HWM MB

Refer to Solace documentation for more information

Expired

When **true**, performance data about the endpoint has not been received within the time specified.

Durable

Displays whether or not the endpoint is durable (checked) or non-durable (unchecked). Durable endpoints remain after an broker restart and are automatically restored as part of an broker's backup and restoration process.

Bind Count

The total number of binds connected to the endpoint.

Trend Graphs

Traces the sum of metrics for the endpoint.

- **Spooled Msgs:** The amount of spooled messages, in megabytes.
- **Cur Spool Usage:** The amount of space used by spooled messages, in megabytes.


Log Scale



Select to enable a logarithmic scale. Use **Log Scale** to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. **Log Scale** makes data on both scales visible by applying logarithmic values rather than actual values to the data.

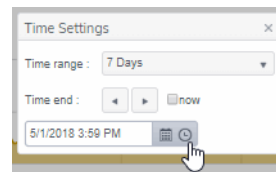
Base at Zero



Select to use zero (0) as the Y axis minimum for all graph traces.

Time Settings

By default, the time range end point is the current time. To change the time range, click the **Time Settings**  and either:

- choose a **Time range** from 5 Minutes to 7 Days in the drop-down menu.
- specify begin/end dates using the calendar .
- specify begin/end time using the clock .



Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows  .

Restore settings to current time by selecting **now** .

Endpoint Type

The type of endpoint.

Egress Config Status

Refer to Solace documentation for more information.

Egress Selector Present

Refer to Solace documentation for more information.

Last Update

The date and time of the last data update.

Critical/Warning

The number of critical alerts / warning alerts which also opens the **Alerts Table**.

Access Type

Refer to Solace documentation for more information.

Ingress Config Status

Refer to Solace documentation for more information.

Ingress Selector Present

Refer to Solace documentation for more information.

Capacity

These displays provide current broker capacity metrics, alert count and severity at the broker level. Displays in this View are:

- **"Capacity Table"**: View client, spool usage, incoming messages, outgoing messages, incoming bytes, and outgoing bytes data for all brokers.
- **"Capacity - Summary"**: View client, spool usage, incoming messages, outgoing messages, incoming bytes, and outgoing bytes data for a specific broker.
- **"Capacity Trends"**: View the broker capacity data for a specific broker in a trend graph format.

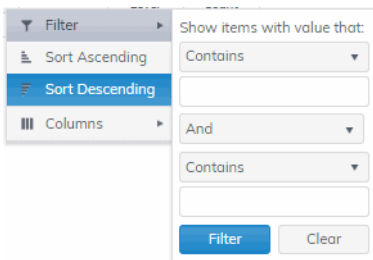
Capacity Table

View current and HWM (high water mark for the last 30 days) capacity utilization data for all brokers.

By default, a subset of available metrics is shown. Use **More Columns/Less Columns** to toggle to the complete set of metrics available (and back to the subset).




You can view client, spool usage, incoming message, outgoing message, incoming bytes, and outgoing bytes data for the broker. Each table row is a different broker.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:



Double-click a row to drill down and investigate in the **"Capacity - Summary"** display.

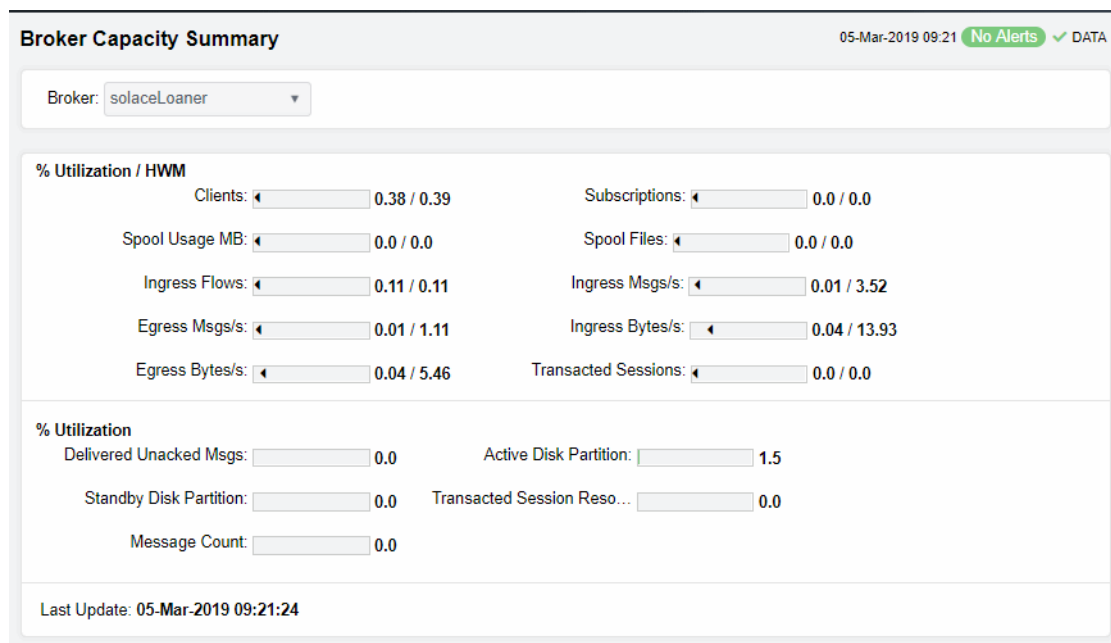
Broker Capacity Table								05-Mar-2019 09:19	No Alerts	DATA
Show: All				Brokers: 1		Less Columns				
Broker	Alert Level	Alert Count	Current Client Connections	Connections HWM	Connections Max	Connections Reserved	Connections Used %			
solaceLoaner	✓		35	35	9,000	135,000				

Broker	The name of the broker.
Alert Level	<p>The maximum level of alerts in the row:</p> <p> Red indicates that one or more metrics exceeded their ALARM LEVEL threshold.</p> <p> Yellow indicates that one or more metrics exceeded their WARNING LEVEL threshold.</p> <p> Green indicates that no metrics have exceeded their alert thresholds.</p>
Alert Count	The total number of active alerts.
Current Client Connections	The current number of clients connected.
Connections HWM	The greatest number of connections in the last 30 days.
Connections Max	The greatest number of connections since the broker last started.
Connections Reserved	The current number of reserved connections.
Connections Used %	The current amount of connections used, in percent.
Connections Used HWM %	The greatest amount of connections used, in percent, in the last 30 days.
Cur Spool Usage MB	The current amount of used spool disk, in megabytes.
Cur Spool Usage HWM	The greatest amount of spool disk used in the last 30 days.
Spool Disk Allocated	The amount of allocated spool disk.
Spool Reserved	The amount of reserved spool disk.
Current Spool Usage %	The current amount of used spool disk, in percent.
Current Spool Usage % HWM	The greatest amount of used spool disk in the last 30 days, in percent.
Delivered Unacked Msgs Util %	Refer to Solace documentation for more information.
Ingress Flow Count	The number of ingress flows.
Ingress Flow HWM	The greatest number of ingress flows in the last 30 days.
Ingress Flows Allowed	The maximum number of ingress flows allowed.
Ingress Flow Count %	The amount of ingress flows in percent.
Ingress Flow Count HWM %	The greatest amount of ingress flows in the last 30 days, in percent.
Ingress Msgs/s	The number of ingress messages per second.
Ingress Msgs/s HWM	The greatest number of ingress messages per second in the last 30 days.
Max Ingress Msgs/s	The maximum number of ingress flows per second allowed.
Ingress Msgs %	The amount of ingress messages in percent.
Ingress Msgs/s HWM %	The greatest amount of ingress messages in the last 30 days, in percent.

Cur Egress Msgs/s	The number of egress messages per second.
Egress Msgs/s HWM	The greatest number of egress messages per second in the last 30 days.
Max Egress Msgs/s	The maximum number of egress flows per second allowed.
Egress Msgs %	The amount of egress messages in percent.
Egress Msgs/s HWM %	The greatest amount of ingress messages in the last 30 days, in percent.
Cur Egress Bytes/s	The amount of egress in bytes per second.
Egress Bytes/s HWM	The greatest amount of egress, in bytes per second, in the last 30 days, in percent.
Expired	When checked, performance data about the VPN has not been received within the time specific.
Time Stamp	The date and time the row of data was last updated.

Capacity - Summary

This display, a pivoted view of the ["Capacity Table"](#), allows you to view current and HWM (high water mark for the last 30 days) capacity utilization data for a single broker. Select a broker from the drop-down menu to view client, spool usage, incoming message, outgoing message, incoming bytes, and outgoing bytes data for the broker.



% Utilization/HWM These values show high water marks (peak capacity utilization) for the last 30 days.

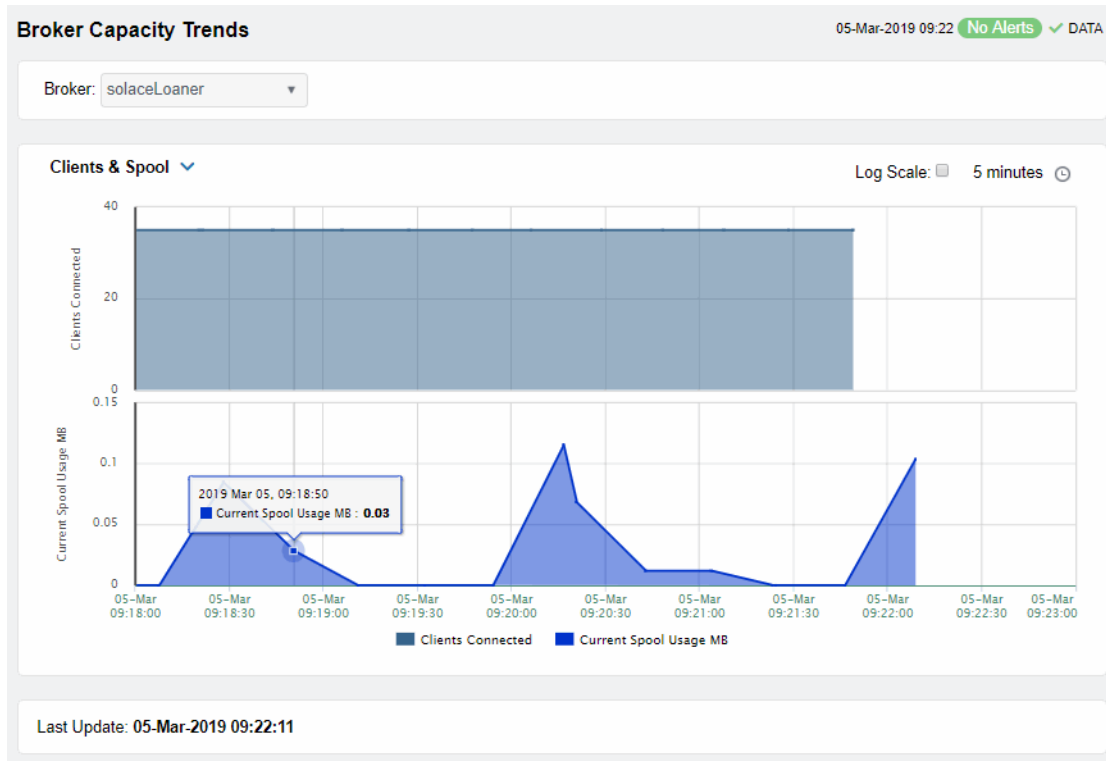
Clients The current number of clients connected to the broker.

Spool Files The highest number of spool files on the broker in the past 30 days.

	Egress Msgs/s	The highest number of outgoing messages per second on the broker in the past 30 days.
	Transacted Sessions	The highest number of transacted sessions on the broker in the last 30 days.
	Subscriptions	The highest number of subscriptions on the broker in the last 30 days.
	Ingress Flows	The highest number of inflows on the broker in the last 30 days.
	Ingress Bytes/s	The highest amount of inflows, in bytes per second, on the broker in the past 30 days.
	Spool Usage MB	The highest amount of spool utilization, in megabytes per second, on the broker in the past 30 days.
	Ingress Msgs/s	The highest number of incoming messages per second on the broker in the past 30 days.
	Egress Bytes/s	The highest number of outgoing messages per second on the broker in the past 30 days.
% Utilization	These values show current capacity utilization.	
	Delivered Unacked Msgs	The current number of delivered messages that were not acknowledged divided by the maximum number of delivered messages that were not acknowledged allowed on the broker.
	Transacted Sessions Reso...	The current number of transacted sessions that were resolved on the broker.
	Active Disk Partition	The percentage of available active disk partition that is used.
	Message Count	The current number of messages on the broker.
	Standby Disk Partition	The percentage of available standby disk partition that has been used.
	Last Update	The date and time of the last data update.

Capacity Trends

This display allows you to view a trend graph that traces broker performance data for clients & spool data, message flow and throughput. Select a broker and a performance metric from the drop-down menus.



Clients & Spool

The trend graph traces the following performance metrics:

Clients Connected: The current number of clients connected to the broker.

Current Spool Usage: The current spool usage, in megabytes, on the broker.

Message Flow

The trend graph traces the following:

Ingress Msgs/sec: The number of incoming messages per second on the broker.

Egress Msgs/sec: The number of outgoing messages per second on the broker.

Throughput

The trend graph traces the following:

Ingress KB/sec: The amount of incoming per second, in KB, on the broker.

Egress KB/sec: The number of outgoing data per second, in KB, on the broker.


Log Scale



Select to enable a logarithmic scale. Use **Log Scale** to see usage correlations for data with a wide range of values. For example, if a minority of your data is on a scale of tens, and a majority of your data is on a scale of thousands, the minority of your data is typically not visible in non-log scale graphs. **Log Scale** makes data on both scales visible by applying logarithmic values rather than actual values to the data.

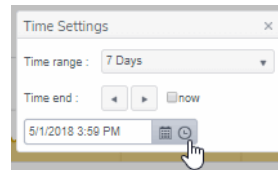
Base at Zero

Select to use zero (0) as the Y axis minimum for all graph traces.


Time Settings

By default, the time range end point is the current time. To change the time range, click the **Time Settings**  and either:

- choose a **Time range** from 5 Minutes to 7 Days in the drop-down menu.
- specify begin/end dates using the calendar .
- specify begin/end time using the clock .



Toggle forward/backward in the trend graph per the period you choose (from the **Time range** drop-down menu) using arrows  .

Restore settings to current time by selecting **now** .

Syslog Events

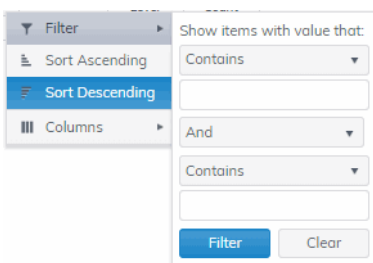
The Solace Syslog Events Table allows you to supervise the last Syslog event messages from the Solace Message Brokers that have been configured for syslog monitoring. See the Solace product documentation for an in depth description of Syslog monitoring in Solace products and how to configure the Message Brokers and the Syslog destination.

This display requires the Solace Event Module from the RTView Solace Monitor to be properly configured with a Syslog destination and running. See [" "](#) for additional information.

Syslog Events Table

This display lists all Syslog events collected from all Solace brokers. Each row in the table is a different message. Use the drop-down menus to filter the list by **Connection**, **Scope** and alert **Severity** level. Filter messages per single broker or all brokers. Click a column header to sort column data in numerical, alphabetical or chronological order.

Search by clicking the right side of a column heading/**Filter** to open the Search, Sort and Choose Columns dialog:



Provisioning

Interface

Msg Spool

VPNs

CSPF Neighbors

Clients

Table

Summary

Bridges

Endpoints

Capacity

Syslog Events

Drilldowns

Component Alerts Table

Component Alert Detail

Component Alert

Configuration

Solace Syslog Events Table

27-Mar-2019 12:33 ✓ DATA

Connection: - All -

More Columns

Scope: - All -

Severity: - All -

Show: All

Events: 3,194

time_stamp	Connection	Solace Scope	Host	Facility	Solace Event	Syslog Seve...	Type	Message	Additional Fl...	Cl
26-Mar-2019 12:	VMR-47	SYSTEM	ip-172-30-1-144	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-118	SYSTEM	ip-172-30-1-112	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-47	SYSTEM	ip-172-30-1-144	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-118	SYSTEM	ip-172-30-1-112	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-47	SYSTEM	ip-172-30-1-144	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-118	SYSTEM	ip-172-30-1-112	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-47	SYSTEM	ip-172-30-1-144	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-118	SYSTEM	ip-172-30-1-112	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-47	SYSTEM	ip-172-30-1-144	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-118	SYSTEM	ip-172-30-1-112	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-47	SYSTEM	ip-172-30-1-144	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-118	SYSTEM	ip-172-30-1-112	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-47	SYSTEM	ip-172-30-1-144	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	
26-Mar-2019 12:	VMR-118	SYSTEM	ip-172-30-1-112	19	SYSTEM_AUTH	notice	SYSLOG_MSG	Tue Mar 26 19:3	["sessionType":	

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1 - 40 of 3194 items

- Connection

Select the connection string assigned when the message brokers connection properties were added with the RTView Configuration Application.
- More/Fewer Columns

Switches to another syslog events table display containing the full set of columns coming from Syslog.
- Scope:

This drop down selects the type of the event. The SYSTEM events are coming from conditions related to the state of the message broker. VPN events are events with the state of the message brokers VPNs. CLIENT events refer to the state of clients executions in the messaging infrastructure.

Available options are:

• SYSTEM

• VPN

• CLIENT

• ALL shows messages from all sources.

Severity:	<p>Selects the severity level of the events that will be presented in the table. All options go from the less severe to the most important to the health of the systems unless one specifies one single type of severity. For instance, Warning will only show the events that are defined as Warning, filtering out events more damaging, whereas Warning or higher will show all Syslog events that are either Warning, Error, Alert or Emergency. To avoid missing any key event, selection of Warning or higher is recommended.</p> <p>Available options are:</p> <ul style="list-style-type: none">• INFO• NOTICE• NOTICE or higher• WARN• WARN or higher• ERROR• ERROR or higher• CRITICAL• ALERT• EMERGENCY• ALL shows messages regardless of severity level from all sources.
Show:	<p>Selects the Expiration flag of the event. Due to the large number of events that can exist, it is recommended to select Unexpired Only to see exclusively the events that are active.</p> <p>Available options are:</p> <ul style="list-style-type: none">• Expired Only• Unexpired Only• ALL shows expired and unexpired messages from all sources.
Events:	<p>The number of events currently shown in the table.</p>
Time Stamp	<p>The date and time the row of data was last updated.</p>

Drill Down Displays

The displays described in this section are only accessible from other displays. These displays are used for managing alerts at the component level.

This View includes the following displays:

- [“Alerts History Table - HTML”](#): Track historical alerts that have occurred in your monitoring system.
- [“Alerts Table by Component - HTML”](#): Track alerts associated with CIs shown in a display.
- [“Alert Detail for Component - HTML”](#): Investigate an alert instance and its history.
- [“Alert Configuration for Component - HTML”](#): Refine alert threshold settings.

Alerts History Table - HTML

Use this display to track the history of alerts, including cleared alerts, that have occurred in your monitoring system. There is one row in the table for each update to each alert.

Choose a Data Server from the drop down to filter alerts shown in the table. The **Alerts History Table** only shows alerts associated with the selected Data Server.

Select **Expand Alert Index** to separate each column in the **Alert Index** into different lines of text. When unselected, the **Alert Index** remains as a single line, with all index parts separated by semicolon (;).

Select **History Alerts** to show all historical alerts. When unselected, only current alerts are shown in the table.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Right-click on a table cell to **Export to Excel**.

Alerts History Table 07-Oct-2019 12:12 DATA



Data Server: RTV-DATA-SOLMON Expand Alert Index: ☐ History Alerts: ☒

Data Server URL: https://rtvdemos.sl.com/solmon_rtvquery/ 15 minutes

Alert Level	Ack	Cleared	Alert Name	Alert Index	Alert Text	Owner	Id	Source	Row Update Time
⚠			SolMsgRouterPendingMsgsHig	VMR-209	High Alert Limit exceeded		120917		2019-Oct-07 11:39:...
⚠			SolMsgRouterPendingMsgsHig	VMR-114-US-EAST	High Alert Limit exceeded		120918		2019-Oct-07 11:39:...
⚠		✓	SolMsgRouterPendingMsgsHig	solDemo	High Warning Limit exce		120916		2019-Oct-07 11:39:...
⚠			SolMsgRouterPendingMsgsHig	VMR-144	High Alert Limit exceeded		120919		2019-Oct-07 11:39:...
⚠			SolMsgRouterPendingMsgsHig	VMR-112	High Alert Limit exceeded		120920		2019-Oct-07 11:39:...
⚠		✓	SolMsgRouterPendingMsgsHig	VMR-209	High Alert Limit exceeded		120917		2019-Oct-07 11:39:...
⚠		✓	SolMsgRouterPendingMsgsHig	VMR-114-US-EAST	High Alert Limit exceeded		120918		2019-Oct-07 11:39:...
⚠		✓	SolMsgRouterPendingMsgsHig	VMR-144	High Alert Limit exceeded		120919		2019-Oct-07 11:40:...
⚠		✓	SolMsgRouterPendingMsgsHig	VMR-112	High Alert Limit exceeded		120920		2019-Oct-07 11:40:...
⚠			SolMsgRouterPendingMsgsHig	solDemo	High Alert Limit exceeded		120921		2019-Oct-07 11:40:...
⚠		✓	SolMsgRouterPendingMsgsHig	solDemo	High Alert Limit exceeded		120921		2019-Oct-07 11:49:...
⚠			SolMsgRouterPendingMsgsHig	VMR-209	High Alert Limit exceeded		120922		2019-Oct-07 11:50:...
⚠			SolMsgRouterPendingMsgsHig	VMR-114-US-EAST	High Alert Limit exceeded		120923		2019-Oct-07 11:50:...
⚠			SolMsgRouterPendingMsgsHig	VMR-144	High Alert Limit exceeded		120924		2019-Oct-07 11:50:...
⚠			SolMsgRouterPendingMsgsHig	VMR-112	High Alert Limit exceeded		120925		2019-Oct-07 11:50:...
⚠		✓	SolMsgRouterPendingMsgsHig	VMR-209	High Alert Limit exceeded		120922		2019-Oct-07 11:50:...
⚠		✓	SolMsgRouterPendingMsgsHig	VMR-114-US-EAST	High Alert Limit exceeded		120923		2019-Oct-07 11:50:...
⚠		✓	SolMsgRouterPendingMsgsHig	VMR-144	High Alert Limit exceeded		120924		2019-Oct-07 11:51:...
⚠		✓	SolMsgRouterPendingMsgsHig	VMR-112	High Alert Limit exceeded		120925		2019-Oct-07 11:51:...
⚠			SolMsgRouterPendingMsgsHig	solDemo	High Alert Limit exceeded		120926		2019-Oct-07 11:51:...

Alerts Table by Component - HTML

As an alternative to the **Alerts Table**, use the **Alerts Table by Component** to track and manage all alerts that are specifically associated with the CIs shown in a display.

You access the **Alerts Table by Component** by clicking  (the alert status icon) in the title bar of other displays. The display in which you click  is the source display.

Package provides the technology label associated with the alerts shown. For example, **Jvm**, **Tomcat** and **Host** are the technology labels for Java Virtual Machines, Tomcat applications and servers (respectively). These labels are also correlated with the RTView solution package names (for example, the Solution Package for Host Agent). **Category** lists all alert categories related to the source display.

Use the **ACK** and **Cleared** drop-downs to filter the table by **All**, **True** or **False**.

See the **Alert Level** column icon, where:




The alert reached its ALARM LEVEL threshold in the table row.




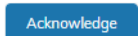

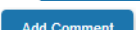
The alert reached its WARNING LEVEL threshold in the table row.

To investigate, click:

 to open the **Alert Detail for Component** where you can see the current and historical conditions that precipitated the alert being executed.

 to open the summary display for the CI associated with the alert where you can investigate utilization metrics for the CI leading up to the alert being executed.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Right-click on a table cell to **Export to Excel**. Use **Ctrl** + click or **Shift** + click to select multiple alerts.












With one or more alerts selected, click  to set the alert(s) owner field,  to acknowledge the alert(s),  to clear the acknowledgement on previously acknowledged alert(s),  to add a comment to the alert(s).

You must be logged in as `rtvalertmgr` or `rtvadmin` to perform the **Own**, **Ack**, **Unack**, or **Comment** actions. Otherwise, you get an error dialog.

Alerts Table by Component 02-May-2019 11:05:09 ✔ DATA OK [🔗](#) [🔔](#)

Package: Host Category: CPU;Network;Storage Cleared: False ACK: False

Alert Count: 16

Row	Update Time	Acknowledge	Cleared	Alert Level	Alert Name	Alert Index Values	
2018-Nov-09 23:54:0					HostCpuPercentHigh	SL-DEMO;SLHOST16(sl_qa)	High V
2018-Oct-01 06:20:10					HostCpuPercentHigh	SL-DEMO;SLHOST17(sl_amx)	High A
2019-May-02 03:28:5					HostMemoryUsedHigh	SL-DEMO-LX;192.168.200.92	High V
2018-Oct-01 06:19:38					HostVirtualMemoryUsedH	SL-DEMO;SLHOST17(sl_amx)	High A
2018-Oct-01 06:18:38					HostMemoryUsedHigh	SL-DEMO;SLHOST17(sl_amx)	High V
2018-Jan-12 11:38:56					HostCpuPercentHigh	SL-DEMO-LX;192.168.200.205	High A
2019-May-02 10:40:3					HostVirtualMemoryUsedH	SL-DEMO-LX;192.168.200.42	High A
2019-Apr-25 10:19:43					HostMemoryUsedHigh	SL-DEMO;SLHOST8	High V
2018-Jun-19 09:22:23					HostCpuPercentHigh	SL-DEMO-LX;192.168.200.202	High A
2018-Nov-09 10:33:54					HostVirtualMemoryUsedH	SL-DEMO;SLHOST16(sl_qa)	High A
2018-May-01 23:45:4					HostCpuPercentHigh	SL-DEMO-LX;192.168.200.202	High A

[Alert Detail](#)
[Go to CI](#)
[Own](#)
[Acknowledge](#)
[Unacknowledge](#)

[Add Comment](#)
[Clear All Comments](#)

Alert Detail for Component - HTML

Use the **Alert Detail for Component** display to investigate current and historical activity of a specific alert instance as it applies to the associated CI, and also compare against **Metric History** trends of the associated CI. A trend graph for the CI associated with the alert instance. You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.

Access the **Alert Detail for Component** display by clicking [Details](#) in the **Alerts Table** or [Alert Detail](#) in the **Alerts Table by Component** display.

The **Alert History** table at the bottom of the display contains a row of data for each time the alert instance was updated. See the alert **ID**, **Row Update Time**, **Cleared** status and **Reason**, **Owner** and the **Alert Level** column icon, where:



The alert reached its ALARM LEVEL threshold in the table row.

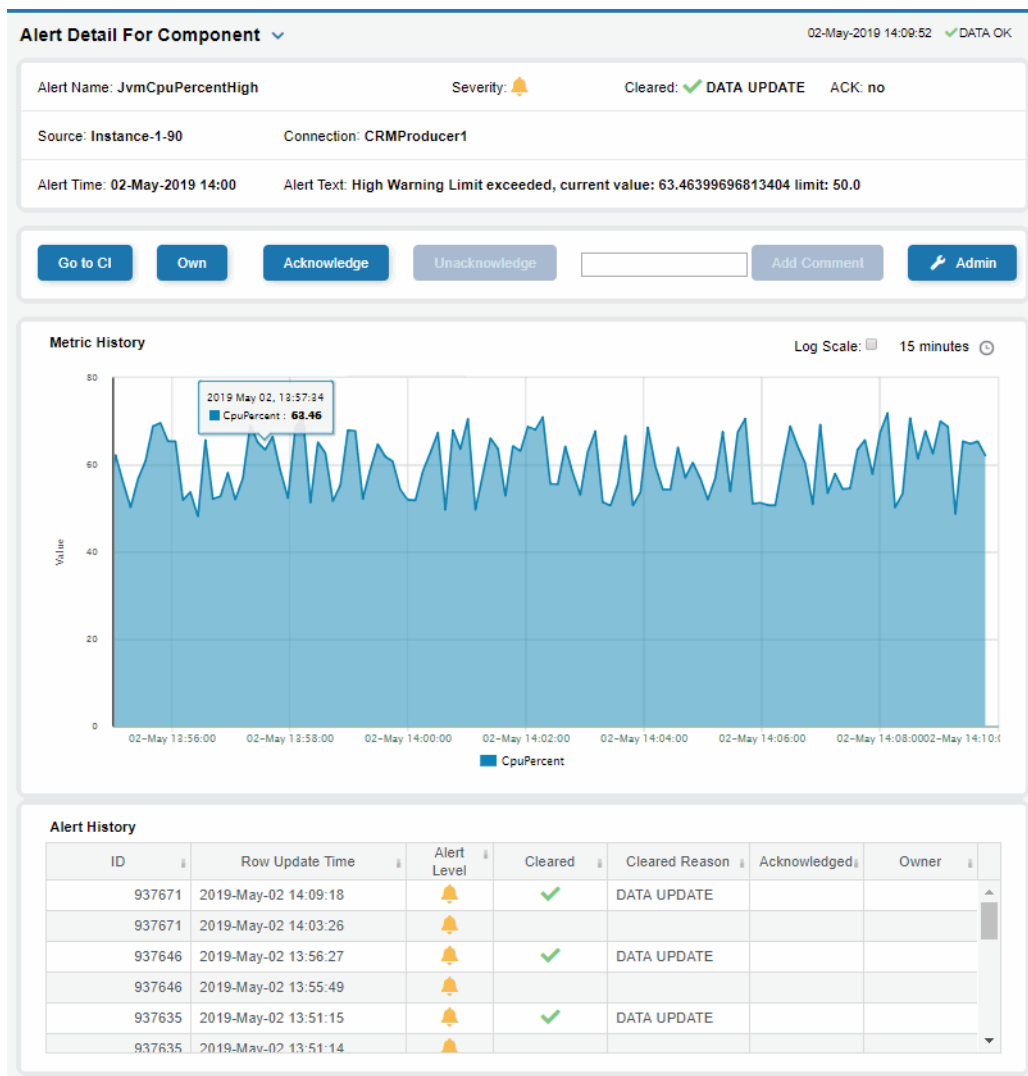


The alert reached its WARNING LEVEL threshold in the table row.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Right-click on a table cell to **Export to Excel**. Use **Ctrl** + click or **Shift** + click to select multiple alerts.

To investigate, click:

Go to CI to see utilization conditions for the CI associated with the alert in a summary display.
Admin to open the **Alert Configuration for Component** display where you can see, modify and refine alert threshold settings for that particular alert. A trend graph traces the relevant alert metric for the CI so you can adjust thresholds in real-time.



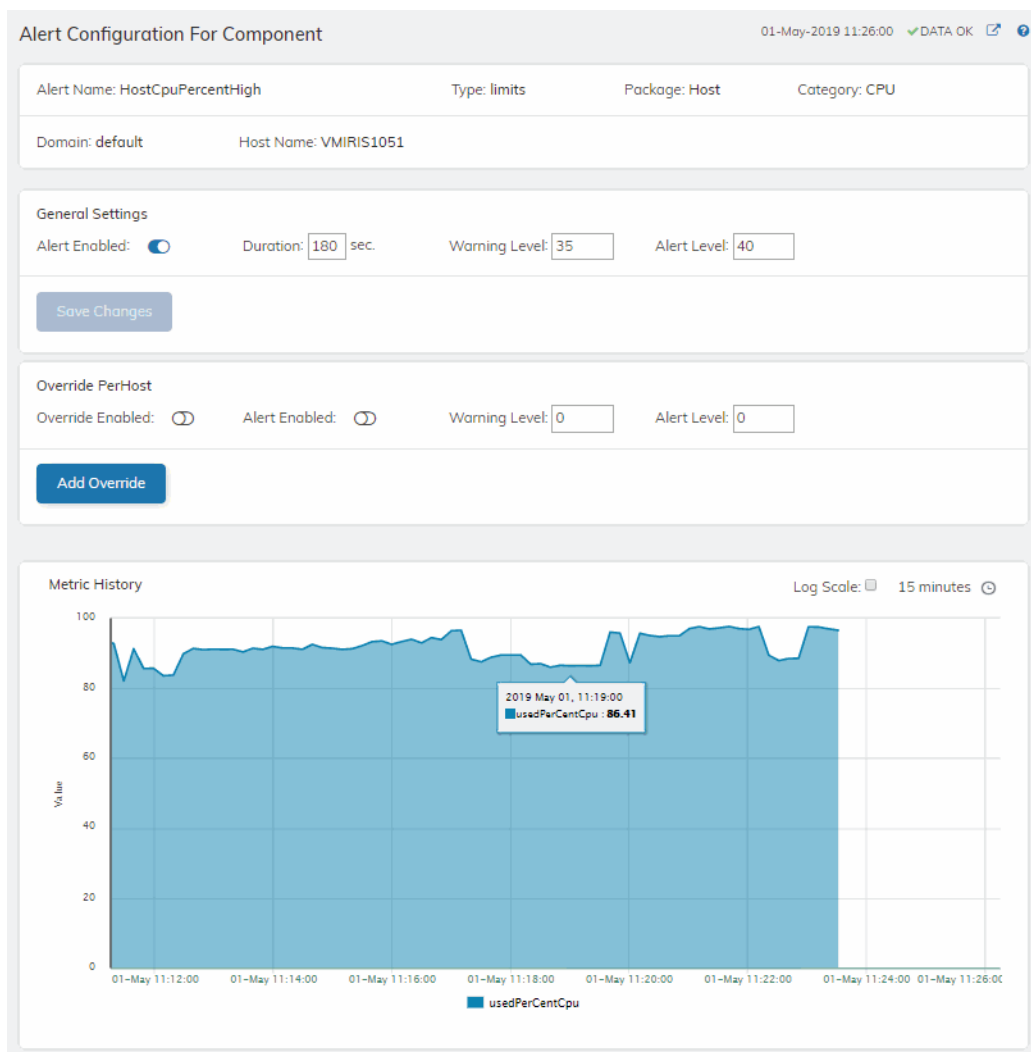
Alert Configuration for Component - HTML

Use the **Alert Configuration for Component** display to see, modify and refine alert threshold settings for a particular alert. A trend graph traces the history of the relevant metric for this alert so you can adjust thresholds in real-time. You can also modify alert thresholds, add an override alert and toggle ON or OFF  both global and override alerts.

Access the **Alert Configuration for Component** display by clicking  in the **Alert Detail for Component** display.

The bottom half of the display provides a **Metric History** trend graph which traces the performance metric pertaining to the alert. You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.

You must be logged in as rtvalertmgr or rtvadmin to modify alerts.



Alerts

Alerts Table

Use this display to track and manage all alerts that have occurred in the system, where:



One or more alerts exceeded their ALARM LEVEL threshold in the table row



One or more alerts exceeded their WARNING LEVEL threshold in the table row

You can search, filter, sort and choose columns to include by clicking a column header icon (located to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Use the **Ack'd** and **Cleared** drop-downs to filter the table by those columns. Right-click on a table cell to **Export to Excel** or **Copy Cell Value**. Use **Ctrl** + click or **Shift** + arrow to select multiple alerts. To investigate, select one alert and click:

Details

to open the **Component Alert Detail** display to get details about that particular alert instance as it specifically applies to the associated CI.

CI

to see utilization conditions for the CI associated with the alert during the seconds (minutes, hours or days) leading up to the alert being executed in a summary display.

With one or more alerts selected, you can click **Own** to set the alert(s) owner field, **Ack** to acknowledge the alert(s), **Unack** to clear the acknowledgement on previously acknowledged alert(s), **Clear** to set the **Cleared** flag on the selected alert(s), **Comment** to add a comment to the alert(s) and **CI** to get details about the CI associated with the alert (these buttons are enabled when you click one or more alerts).

You must be logged in as rtvalertmgr or rtvadmin to perform the **Own**, **Ack**, **Unack**, or **Comment** actions. Otherwise, you get an error dialog.

Alerts Table 30-Apr-2019 13:47:46 DATA

Own

Ack

Unack

Clear

Comment

Details


















CI

Ack'd: all

Cleared: false

Cmdb Filter: *****

Alert Count: 92

Time	Ack	Clr	Sevl	Alert Name	Alert Text	Owner	ID	Source	Comments	CI
2019-Apr-30 00:04:07				JvmNotConnected	Server disconnected		1043	RTV-DATA-TIB		win4
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1009	Z-SIMDATA-1		local
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1008	Z-SIMDATA-1		local
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1007	Z-SIMDATA-1		local
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1006	Z-SIMDATA-1		local
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1005	Z-SIMDATA-1		local
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1004	Z-SIMDATA-1		local
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1003	Z-SIMDATA-1		local
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1002	Z-SIMDATA-1		local
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1001	Z-SIMDATA-1		local
2019-Apr-30 01:34:49				JvmNotConnected	Server disconnected		1000	Z-SIMDATA-1		local
2019-Apr-30 12:01:02				JvmCpuPercentHigh	High Alert Limit exced		1064	Z-SIMDATA-1		local
2019-Apr-30 13:44:01				JvmCpuPercentHigh	High Warning Limit exc		928739	RTV-DATA-KAF		Insts
2019-Apr-30 13:47:04				JvmCpuPercentHigh	High Warning Limit exc		928747	RTV-DATA-KAF		Insts
2019-Apr-30 01:36:49				HostCpuPercentHigh	High Warning Limit exc		1010	Z-SIMDATA-1		defa
2019-Apr-30 01:36:49				HostCpuPercentHigh	High Warning Limit exc		1010	Z-SIMDATA-1		defa
2019-Apr-30 02:05:10				HostCpuPercentHigh	High Alert Limit exced		1011	Z-SIMDATA-1		defa

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of 3

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Admin

These displays enable you to set alert thresholds, observe how alerts are managed, and view internal data gathered and stored by RTView (used for troubleshooting with SL Technical Support). Displays in this View are:

- **"Alert Administration"**: Displays active alerts and provides interface to modify, enable and manage alerts.
- **"Alert Overrides Admin"**: Set and modify alert overrides. Access this display from the **Alert Administration** display.
- **"Cache Table"**: View cached data that RTView is capturing and maintaining, and use this data use this for debugging with SL Technical Support.

Alert Administration

The **Alert Administration** display allows administrators to enable/disable alerts and manage alert thresholds. The table describes the global settings for all alerts on the system.

You can set the **Delay** time (the number of seconds that must pass before an alert is triggered, where **0** sets it to immediately execute).

You can set the **Warning Level** which executes a single warning alert when the number of seconds specified here is exceeded. To set the warning to occur sooner, reduce the **Warning Level** value. To set the warning to occur later, increase the **Warning Level** value.

You can set the **Alarm Level** which executes a single alarm alert when the number of seconds specified here is exceeded. To set the alarm to occur sooner, reduce the **Alarm Level** value. To set the alarm to occur later, increase the **Alarm Level** value.

Note: For low value-based alerts (an alert that executes based on a value going below a certain threshold), to set the alarm to occur sooner you increase the **Alarm Level** value. To set the alarm to occur later, reduce the **Alarm Level** value.

You can apply alert thresholds globally or as an *override*. Setting override alerts allows you to set thresholds for a subset of your resources, or for a single resource (for example, a single server). Override alerts are useful if the majority of your resources require the same threshold setting, but there are a few resources that require a different threshold setting. For example, you might not usually be concerned with execution time at a process level, but perhaps certain processes are critical. In this case, you can apply alert thresholds to each process individually. See below for instructions.

You can filter, sort and choose columns to include by clicking a column header icon (located to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Use the **Ack'd** and **Cleared** drop-downs to filter the table by those columns. Right-click on a table cell to **Export to Excel**.

To set thresholds and enable a global alert:

Select an alert and, under **Settings for alert** (in the lower portion of the screen), modify settings for the alert **Delay**, **Warning Level** and/or **Alarm Level** and **Save Settings**. With that alert selected, check the **Alert Enabled** box under **Settings for alert** (in the lower portion of the screen) and **Save Settings**. The **Alert Enabled** box (next to the selected alert) is now checked.

To set thresholds and enable an override alert:

To set an override alert, select an alert and click **Override Settings** to open the **Alert Overrides Admin** display.

Alerts Administration 30-Apr-2019 10:34:01 ✓ DATA OK

Package: All http://rtvdemos.sl.com/emdemo_central_rtvquery

Alert Name	Alert Enabled	Alert Delay	Warning Level	Alert Level	Override Count
HostNetworkTxRateHigh	<input type="checkbox"/>	30	50	75	0
HostProcessCountLow	<input type="checkbox"/>	30	15	5	0
HostStateData	<input type="checkbox"/>	30			0
HostStorageUsedHigh	<input type="checkbox"/>	30	80	90	0
HostSwapUsedHigh	<input type="checkbox"/>	30	75	90	0
HostVirtualMemoryUsedHigh	<input type="checkbox"/>	30	75	90	0
JvmCpuPercentHigh	<input checked="" type="checkbox"/>	60	50	70	0
JvmGcDutyCycleHigh	<input type="checkbox"/>	30	50	75	0
JvmMemoryUsedAfterGCHigh	<input type="checkbox"/>	0	1	80	0
JvmMemoryUsedHigh	<input checked="" type="checkbox"/>	60	75	86	0
JvmNotConnected	<input checked="" type="checkbox"/>	60			0
JvmStateData	<input type="checkbox"/>	30			0
JvmThreadCountHigh	<input checked="" type="checkbox"/>	60	8000	12000	0

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Settings for alert

Alert Enabled: ☐ Delay: Warning Level: Alert Level:

Alert Selected: **HostSwapUsedHigh** Description: **The percentage of swap space used is above the limits defined for that Host**

For additional details, see [“Alert Overrides Admin”](#).

Alert Name	The name of the alert.
Alert Enabled	When checked, the alert is enabled globally.
Alert Delay	The amount of time (in seconds) that the value must be above the specified Warning Level or Alarm Level threshold before an alert is executed. 0 is for immediate execution.

Warning Level	The global warning threshold for the selected alert. When the specified value is exceeded a warning is executed.
Alert Level	The global alarm threshold for the selected alert. When the specified value is exceeded an alarm is executed.
Override Count	The number of times thresholds for this alert have been defined individually in the Tabular Alert Administration display. A value of: -0 indicates that no overrides are applied to the alert. -1 indicates that the alert does not support overrides.

Settings for alert

Select an alert in the table to use the following options:

Alert Enabled	Check / uncheck this box to enable or disable the selected alert globally.
Delay	Enter the amount of time (in seconds) that the value must be above the specified Warning Level or Alarm Level threshold before the selected alert is executed. 0 is for immediate execution.
Warning Level	Enter the global warning threshold for the selected alert. When the specified value is exceeded a warning is executed. To set the warning to occur sooner, reduce the Warning Level value. To set the warning to occur later, increase the Warning Level value.
Alert Level	Enter the global alarm threshold for the selected alert. When the specified value is exceeded an alarm is executed. To set the alarm to occur sooner, reduce the Alarm Level value. To set the warning to occur later, increase the Alarm Level value. NOTE: For low value-based alerts (such as EmsQueuesConsumerCountLow), to set the alarm to occur sooner, increase the Alarm Level value. To set the alarm to occur later, reduce the Alarm Level value.
Save Settings	Click to apply alert settings for the selected alert.
Original Defaults	Click to revert to original alert settings for the selected alert.
Override Settings	Click to set an alert override in the Alert Overrides Admin display on the selected alert.

Alert Overrides Admin


Administrators use this display to create override alerts. To access this display, select an alert in the **Alert Administration** display and choose **Override Settings**.

The table lists all the resources to which you can apply the alert you selected from the **Alert Administration** display. Each row in the table is a different resource, columns describe whether that alert is enabled (globally and as an override) and if so, the current alert thresholds for each.

You can filter, sort and choose columns to include by clicking a column header icon (located to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Use the **Display** drop-down to filter the table to show **All** resources, only resources with the **Overridden** alert applied or **Free** resources (to show only resources without the alert override applied). Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

To set an override alert:

Select a resource and **Override Type** from the drop-down menu (depending on the alert, there might be only one type). Under **Settings for selected index** (in the lower portion of the screen), modify settings for the alert **Delay**, **Warning Level** and/or **Alarm Level** and **Add Override**. The table updates with your new settings.



With that resource selected, toggle on  **Override Enabled** and **Alert Enabled** under **Settings for alert** (in the lower portion of the screen) and **Save Settings**. The table updates with your new settings. The **Alert Administration** display **Override Count** also updates for the alert.

Alert Overrides Administration
11-Mar-2019 15:28:11
DATA OK

Alert: **SolVpnSubscriptionCountHigh**
Override Type: **PerVPN**
Display: **All**

Connection	vpn-name	Override Enab..	Alert Enabled	Warning Level	Alert Level
solaceLoaner	BridgeBroker1				
solaceLoaner	Broker1				
solaceLoaner	Broker10				
solaceLoaner	Broker2				
solaceLoaner	Broker3				
solaceLoaner	Broker4				
solaceLoaner	Broker5				
solaceLoaner	Broker6				

Settings for selected index

Override Enabled: 
Alert Enabled: 
Warning Level:
Alert Level:

Add Override
Save Settings
Remove Override

Cache Table

View the raw data that RTView is capturing and maintaining to investigate utilization and capacity metrics, as well as connection details, for caches on a data server.

Select a **Data Server** from the drop-down menu. The upper table contains a row of data for each cache on the selected data server. You can see the current number of **Rows** and **Columns** in each table and the amount of **Memory** used. You can also find out the cache **Table** type of which there are five:

- **current** tables show the most recently received values for each index.
- **current_condensed** tables are current tables with primary compaction configured.
- **history** tables show the historical values for each index.
- **history_condensed** tables are history tables with primary compaction configured.
- **history_combo** tables are history tables with primary compaction configured, and which is also configured to store rows of recent raw data followed by rows of older condensed data.

Select a cache to see connection utilization details for that cache in the lower table. The lower table shows the contents of the selected cache table. Available columns vary by cache. For example, a JVM cache table might provide **BootClassPath** and **InputArgument** columns, and a Tomcat cache might provide **RateAccess** and **cacheMaxSize** columns.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Or just click a column header to sort.

Right-click on a table cell to **Export to Excel** or **Copy Cell Value**. Use **Ctrl + click** or **Shift + click** to select multiple alerts. Use **History Tables** to include / exclude history tables in the table. Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

This low-level option can be useful to identify the source of the problem when the displays are not showing the expected data. Use this data for debugging and troubleshooting with Technical Support.

Cache Table 07-May-2019 14:11 ✓ DATA

Data Server: central-alert History Tables: ☐

Data Server URL: https://rtvdemos.sl.com/emdemo_central_rtquery

Cache	Table	Rows	Columns	Memory
JmxStatsTotals	current	1	4	441
RtvAlertGroupMap	current	493	3	67424
RtvAlertMapByCI	current	62	5	13614
RtvAlertSourceStats	current	8	2	940
RtvAlertStatsByArea	current	8	9	2930
RtvAlertStatsByAreaAndAlertGroup	current	8	10	3454
RtvAlertStatsByCI	current	59	5	9228
RtvAlertStatsByCIAndAlertGroup	current	59	6	12506

Cache: **RtvAlertStatsByCIAndAlertGroup** Table: **current**

time_stamp	CITYPE	CINAME	ALERTGROUP	MaxSeverity	AlertCount
2019-May-07 14:11:33	JVM	localhost:EMSMON_TOI	None	2	1
2019-May-07 14:11:33	JVM	localhost:EMSMON_DAT	None	2	1
2019-May-07 14:11:33	JVM	localhost:SOLMON_DISF	None	2	1
2019-May-07 14:11:33	JVM	localhost:SOLMON_DAT	None	2	1
2019-May-07 14:11:33	JVM	localhost:EMSMON_DISI	None	2	1
2019-May-07 14:11:33	JVM	localhost:SOLMON_TOM	None	2	1
2019-May-07 14:11:33	JVM	localhost:EMSMON_DAT	None	2	1
2019-May-07 14:11:33	JVM	Instance-1-90;CRMBroke	None	1	1
2019-May-07 14:11:33	JVM	Instance-1-90;CRMZooki	None	1	1
2019-May-07 14:11:33	JVM	Instance-1-171;CRMCon	None	1	1
2019-May-07 14:11:33	JVM	Instance-1-171;CRMCon	None	1	1
2019-May-07 14:11:33	JVM	Instance-1-171;CRMBrok	None	1	1
2019-May-07 14:11:33	JVM	localhost:TMolecule5_2	None	1	1
2019-May-07 14:11:33	JVM	localhost:PMolecule12_1	None	1	1

Page 1 of 2 1 - 40 of 59 items

CHAPTER 7 RTView Manager

Use the RTView Manager application to track the health of your Solace PubSub+ Monitor system: RTView and Tomcat processes, the historian and the Solace data server. RTView Manager runs as a process, separately from your Solace PubSub+ Monitor system, has its own URL / console, as well as its own data server, database, alert notification system and historian.

This chapter includes:

- [“Displays”](#): Describes [“Tomcat Displays”](#), [“JVM Processes Displays”](#), [“RTView Servers Displays”](#) and [“Drilldowns’ Displays”](#) which are accessed from the navigation tree (left panel).
- [“Alerts Displays”](#): Describes the display that is used to manage alerts.
- [“Admin Displays”](#): Describes displays that administrators use to manage alert thresholds.
- [“Modify RTView Manager Settings”](#): Describes how to change default settings for RTView Manager.
- [“Troubleshoot”](#): Tips for resolving technical issues.
- [“Configure Alert Notification”](#): Describes how to setup alert notification.
- [“Alerts for RTView Manager”](#): Describes RTView Manager alerts.
- [“Configure High Availability”](#): Describes how to configure HA.

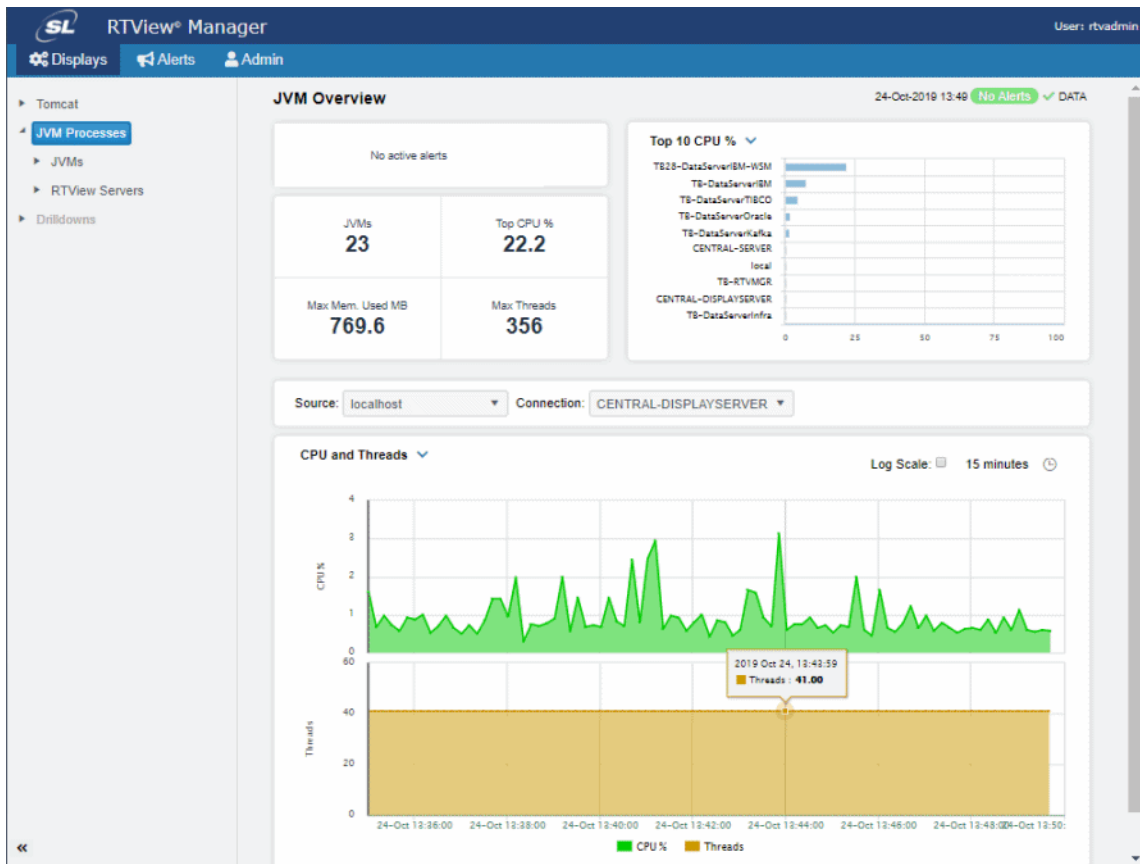
Login to RTView Manager

To access RTView Manager, start the Solace PubSub+ Monitor (if not currently running), then browse to one of the following URLs and login (username/password are rtvadmin/rtvadmin):

http://<ip_address>:3070/rtview-manager if you are running on Jetty.

http://localhost:8068/rtview-manager if you are using Tomcat.

The RTView Manager main console opens.



Displays

The displays that come with RTView Manager are organized by the following Views in the navigation tree:

- [“Tomcat Displays”](#): For monitoring the health of Tomcat servers, applications and all installed web modules. Performance data provided includes current and historic metrics, number of sessions, request rates, cache hit rates and data transmission metrics.
- [“JVM Processes Displays”](#): For monitoring the health of Java Virtual Machine (JVM) processes. JVM metrics track garbage collection information and trends, including memory usage before and after garbage collection, duration and duty cycles. This, combined with tracking of JVM memory pool trends, enables you to be notified of memory leaks, unusual garbage collection activities and CPU and memory resource issues automatically with minimal user analysis, speeding the discovery of the root cause of any issue. It also monitors a Java Virtual Machine’s memory heap, non-heap memory, monitor threads and other key metrics to ensure the JVM has good performance. Detailed metrics including JVM CPU usage, Max Heap, Current Heap, Used Heap and Live Threads can all be tracked over time.
- [“RTView Servers Displays”](#): This series of displays is for monitoring the health of the RTView servers monitoring your system. RTView Manager metrics include connected state, number of clients and other status information for Data Server, Historian and Display Server processes.
- [“‘Drilldowns’ Displays”](#) or [“Other”](#) displays: These displays (such as [“Alerts Table by Component”](#) and [“Alert Detail for Component”](#)) are typically accessed by drilling down from other displays (however, [“Alerts History Table”](#) is accessed directly from the navigation tree).

Tomcat Displays

The Tomcat HTML displays provide extensive visibility into the health and performance of Tomcat application servers and installed web modules. The following Tomcat Views (and their associated displays) can be found under **Components** tab > **Application/Web Servers** > **Tomcat**.

Tomcat has the following displays:

- [“Tomcat Overview”](#)
- [“Tomcat Servers Heatmap”](#): Performance metrics for one Tomcat Server, including current and historic performance metrics.
- [“Single Tomcat Server”](#): Heatmap of performance metrics for all Web modules for one Tomcat Server.
- [“All Tomcat Apps”](#): Table and trend graphs of performance metrics for Web modules.
- [“Single Tomcat App”](#): Table and trend graphs of performance metrics for a single Web module.

Tomcat Overview

The Tomcat Overview is the top-level display for the Tomcat Solution Package, which provides a good starting point for immediately getting the status of all your Tomcat servers, web modules and connections. You can select the RTView DataServer for which you want to see data and easily view the current data for that DataServer including:

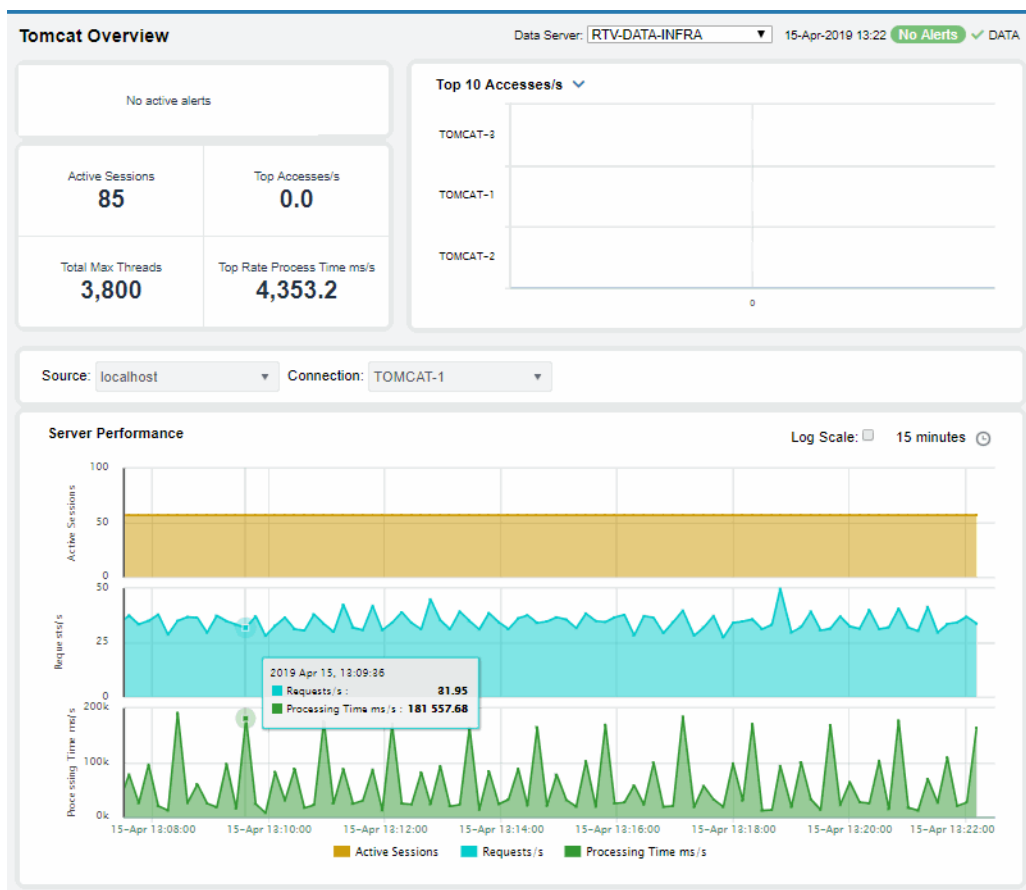
- The total number of active alerts for the selected DataServer, including the total number of critical and warning alerts.
- The greatest number of active sessions, top accesses per second, highest number of connections and the top process rate.
- A visual list of the top 10 servers with the greatest values for **Accesses**, **Requests**, **Cache Hit Rate**, **Process Rate**, **Sent** and **Received Rate**.

You can hover over each region in the upper half of the Overview to see more detail in a Summary display.

For example, clicking on the alerts in the CRITICAL and WARNING alerts region opens the **Alerts Table by Components** display.

The bottom half of the display provides a trend graph which traces **Active Sessions**, **Requests** per second and **Processing Time**.

You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.

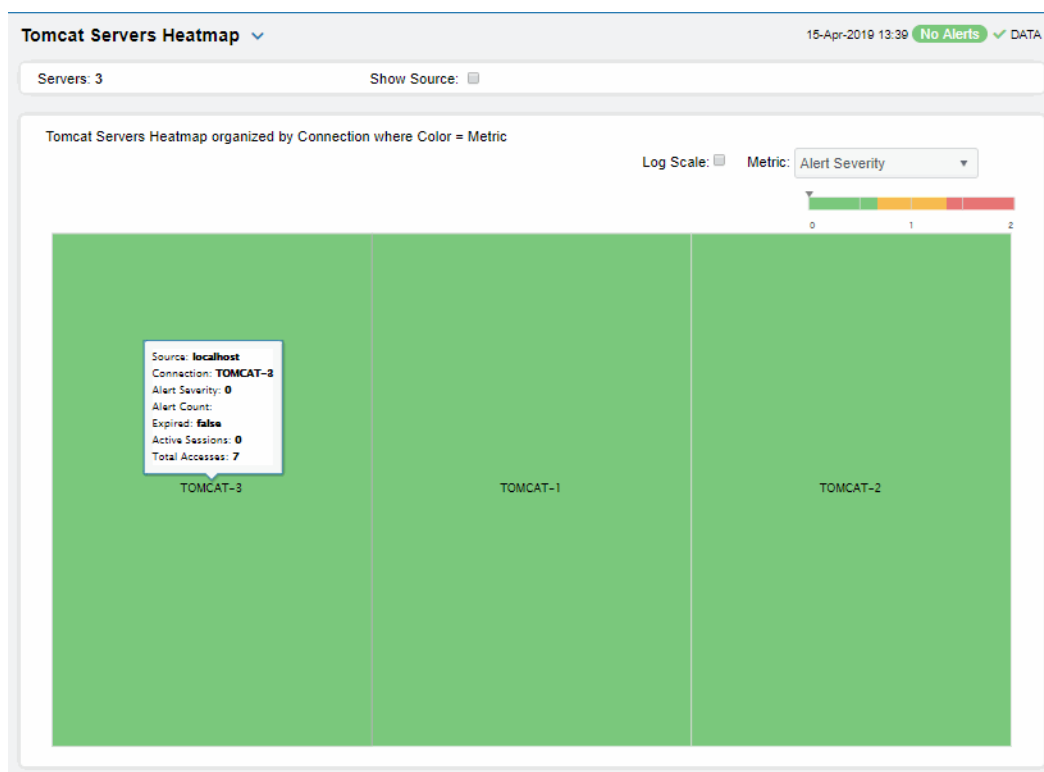


Tomcat Servers Heatmap

View performance metrics for all monitored Tomcat Servers. The heatmap organizes Tomcat Web modules by server, and uses color to show the most critical Metric value for each Tomcat connection associated with the selected source. Each rectangle in the heatmap represents a Web module. In this heatmap, the rectangle size is the same for all Web modules. Each Metric (selected from the drop-down menu) has a color gradient bar that maps relative values to colors.

Use this display to see at-a-glance the health of all your web applications. You can select the heatmap color metric from a list including active sessions, access rate, and total access count.

Use the available drop-down menus or right-click to filter data shown in the display. Use the check-boxes ☒ to include or exclude labels in the heatmap. Move your mouse over a rectangle to see additional information. Drill-down and investigate by clicking a rectangle in the heatmap to view details for the selected Web module in the **Application Summary** display.

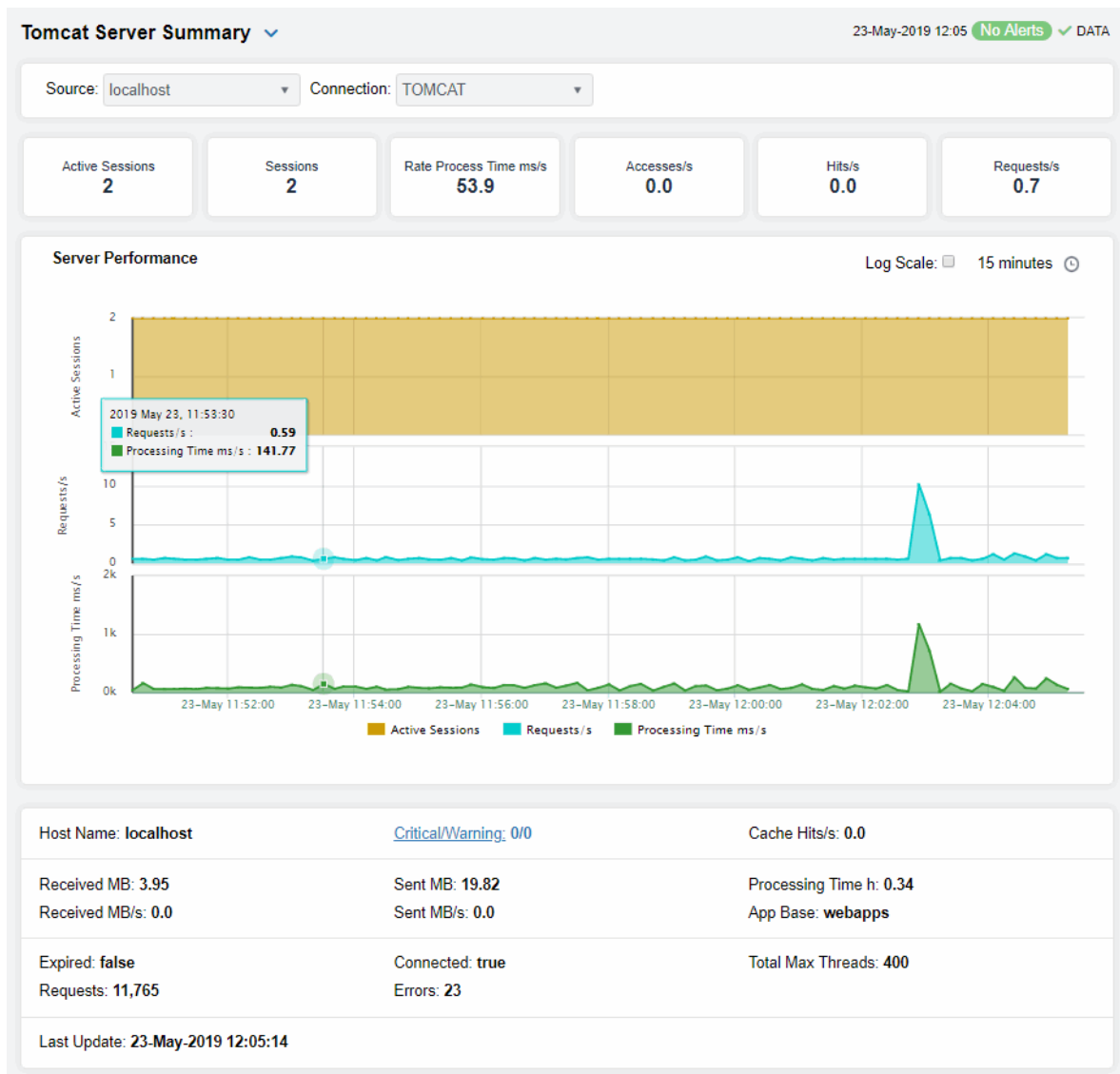


Single Tomcat Server

Track utilization and performance metrics for a connection on a Tomcat server. Clicking on the sessions/processing rate information boxes at the top of the display takes you to the **Tomcat Servers Table** display, where you can compare and sort performance values against other Tomcat servers.

The trend graph traces for **Processing Time per second**, **Requests per second** and (number of) **Active Sessions**. You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.

Clicking the **Critical/Warning** link at the bottom of the display opens the **Alerts Table by Component** display.



Tomcat Applications

Investigate detailed utilization metrics for all Tomcat applications. This display contains all metrics available for Tomcat applications, including the total **Alert Count**, **Accesses/second** and **Total Sessions**.

Choose a particular **Source** or **All**, and a particular **Connection** or **All**, from the drop-downs. Each row in the table contains data for a particular web module. You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**.

Or just click a column header to sort.

Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

Double-click a web module to see details in the **Tomcat Application Summary** display.

Web Module	Expired	Alert Level	Alert Count	Total Accesses	Accesses/s	Total Sessions	Active Sessions	Expired Sessions	Cache Hits
/manager		✓		7	0.0	0	0	0	0
/rtvdisplayplus		✓		7	0.0	0	0	0	0
/host-manager		✓		7	0.0	0	0	0	0
/docs		✓		7	0.0	0	0	0	0
/rtvdataplus		✓		7	0.0	0	0	0	0
/rtvquery		✓		7	0.0	0	0	0	0

All Tomcat Apps

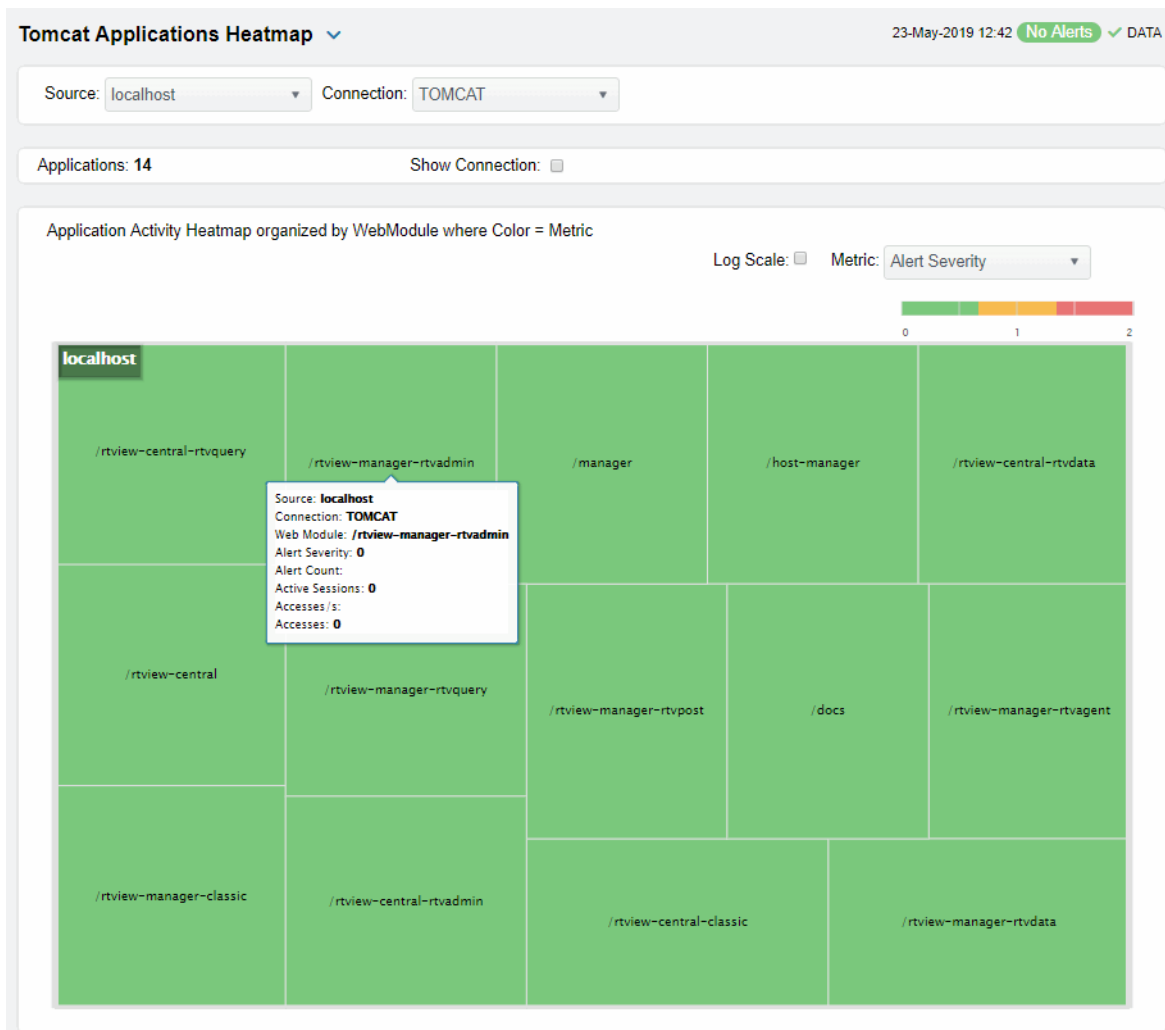
This heatmap allows you to view the status and alerts of Tomcat applications on a particular host or **All** hosts, and a particular connection or **All** connections.

Use the **Metric** drop-down menu to view the **Alert Severity**, **Alert Count**, **Active Sessions**, **Accesses per Second** or (the total number of) **Accesses**.

Each rectangle in the heatmap represents a web module. The rectangle color indicates the most critical alert state. Click on a rectangle to drill-down to the **Tomcat Application Summary** display and view metrics for a particular web module. Toggle between the commonly accessed Table and Heatmap displays by clicking the drop down list on the display title.

Mouse-over rectangles to view more details about host performance and status.

You can view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.



Single Tomcat App

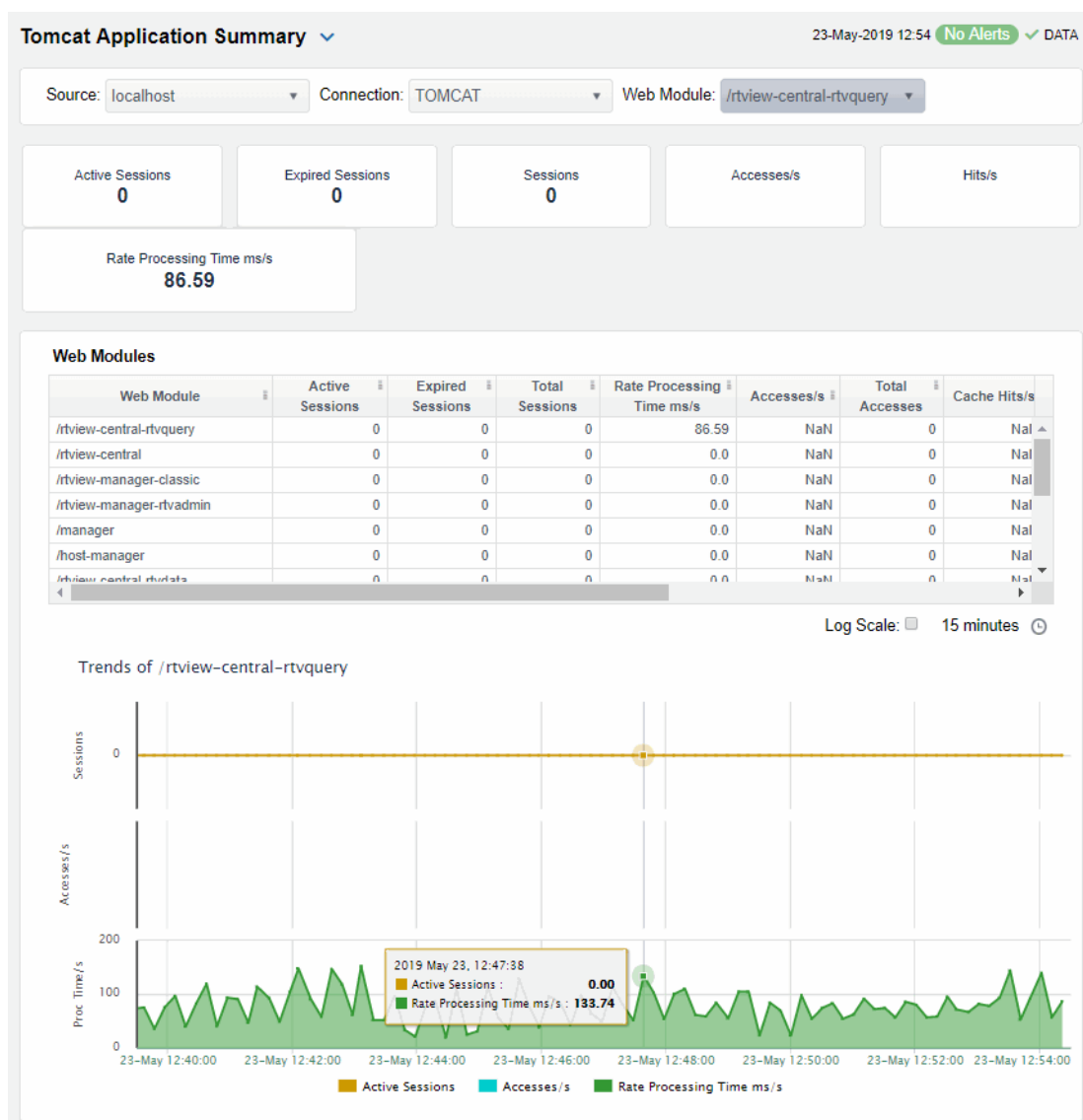
Track utilization and performance metrics for a particular Tomcat web module. Clicking on the sessions/processing rate information boxes at the top of the display takes you to the **Tomcat Servers Table** display, where you can compare and sort performance values against other Tomcat servers.

Use the **Web Modules** table to compare detailed utilization metrics for all web modules. Each row in the table contains data for a particular web module. You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**.

Or just click a column header to sort. Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

The trend graph traces for **Processing Time per second**, **Accesses per second** and (the number of) **Active Sessions**. You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.

Clicking the **Critical/Warning** link at the bottom of the display opens the **Alerts Table by Component** display.



JVM Processes Displays

The RTView Manager JVM displays present performance data for monitored Java Virtual Machine (JVM) processes. Use these displays to examine the current and historical performance metrics and resource usage of JVMs. Any JVM that is enabled for monitoring can be included in these displays. The displays include summary overviews and detail pages with historical trends.

You can set alert thresholds on performance and resource metrics for your JVMs, including **CPU Percent**, **Memory Used** and **Gc Duty cycle**. Alerts are shown in the [“JVMs Heatmap”](#) display. Use the detailed JVM displays to investigate further; for example a **Memory Used** alarm might take you to the [“JVM Summary”](#) display to get historical memory use, or a **Gc Duty Cycle** alarm might take you to the [“JVM GC Trends”](#) display. Displays in this View are:

The HTML version features an overview display, [“JVM Overview”](#) (pictured below), and the following displays which can be found under **Components** tab > **Processes /JVM Processes** once RTView Manager is installed:

- [“JVMs Heatmap”](#): Heatmap of alert states for all JVM connections
- [“JVM Summary”](#): Table of connection details for all JVM connections.
- [“JVM System Properties”](#): Table of connection details for a single JVM as well as performance trend graphs.
- [“JVM GC Trends”](#): Trend graphs of garbage collection memory utilization.

JVM Overview

The **JVM Overview** is the top-level display for the JVM Solution Package, which provides a good starting point for immediately getting the status of all your JVM instances on your Data Server.

Choose a DataServer for which you want to see data and easily view the current data for that DataServer including:

- The total number of active alerts, including the total number of critical and warning alerts.
- The number of JVMs and the **Top CPU %** user across all servers.
- The maximum memory used and maximum number of threads.

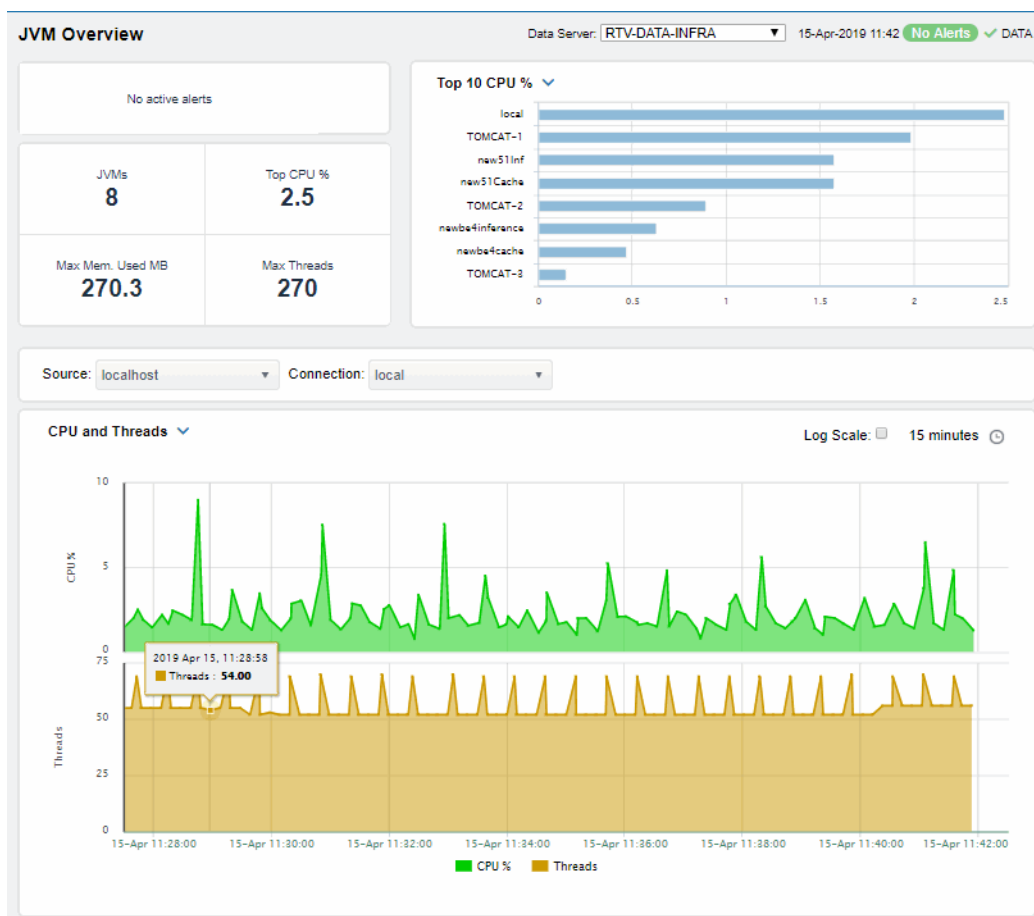
A bar graph shows the JVMs with **Top 10 CPU %** utilization. Use the drop-down menu to show JVMs with **Top 10 Used Heap** memory utilization and JVMs with **Top 10 Live Threads**.

You can hover over each region in the upper half of the Overview to see more detail. You can also drill down to see even more detail by clicking on each respective region in the Overview.

For example, clicking on the alerts in the CRITICAL and WARNING alerts region opens the Alerts Table display. Clicking on **Top CPU %** opens the [“JVM Summary”](#) display.

The bottom half of the display provides a performance trend graph for a connection on the DataServer. Choose a **Source** and **Connection** from the drop-down menus. Use the trend graph drop-down menu to show metrics for **CPU and Threads** utilization or **Heap Memory** utilization.

You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.



JVMs Table

Investigate JVM connection utilization metrics and configuration information for one or all JVMs. Choose one or **All** JVMs from the **Source** drop-down menu. Each row in the table contains data for a particular connection on the selected JVM(s).

This display contains all metrics available for JVM connections, including the **Port** number and the current most critical **Alert Level**, where:

- Red indicates that one or more alerts exceeded their ALARM LEVEL threshold in the table row.
- Yellow indicates that one or more alerts exceeded their WARNING LEVEL threshold in the table row.
- Green indicates that no alerts exceeded their WARNING or ALARM LEVEL threshold in the table row.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**.

Or just click a column header to sort.

Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

Double-click on a table row to drill-down to the **JVM Summary - HTML** display and view metrics for the JVM hosting the connection.

Check the **Show Inactive** box to include inactive connections.

Toggle between the commonly accessed **Table** and **Heatmap** displays by clicking the drop down list on the display title.

Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

JVMs Table 15-Apr-2019 12:59 No Alerts DATA

Source: - All -

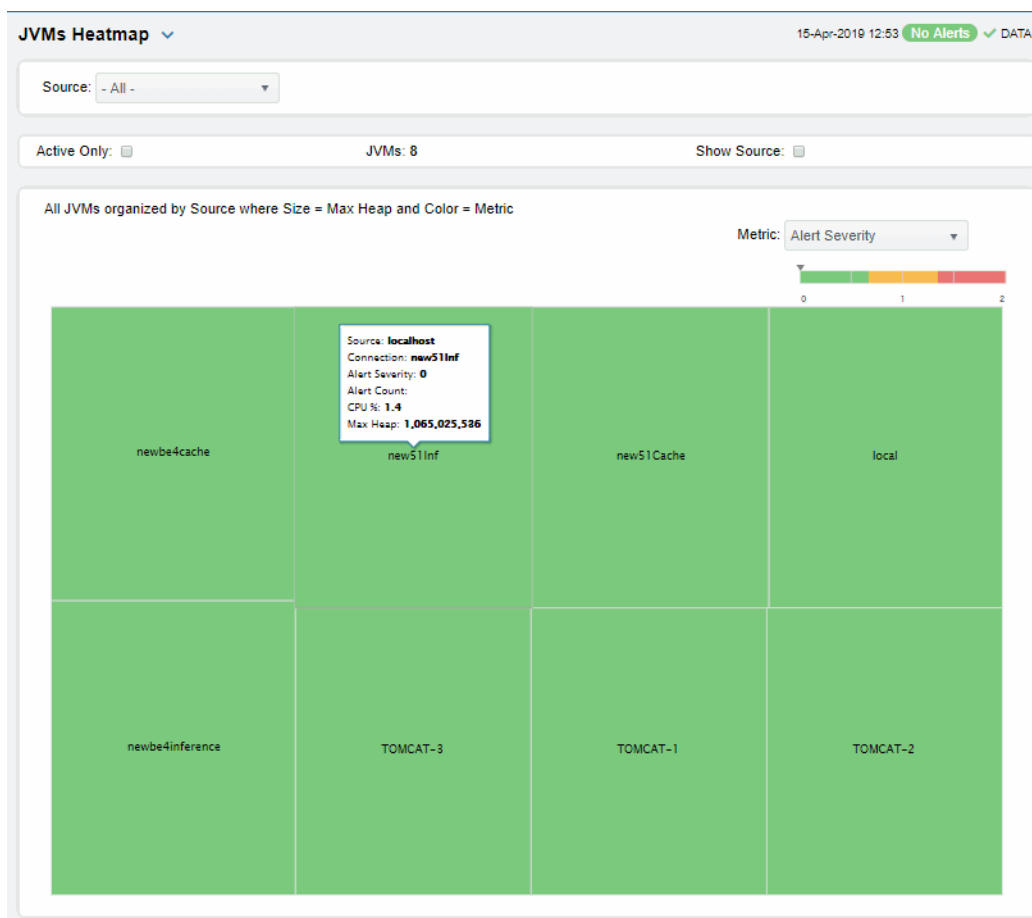
Active Only: ☐ JVMs: 14

Source	Connection	Expired	Connected	Alert Level	Alert Count	Host	Port	PID	CPU %
localhost	TOMCAT-3		✓	✓		172.30.1.85	9999		0.
localhost	TOMCAT-2		✓	✓		172.30.1.57	9999		1.
localhost	TOMCAT-1		✓	✓		172.30.1.174	9999		1.
localhost	local		✓	✓				348@172.30.1.104	1.
localhost	local		✓	✓				9@172.30.1.174	1.
localhost	local		✓	✓				1114@172.30.1.31	1.
localhost	local		✓	✓				1120@172.30.1.31	1.
localhost	local		✓	✓				123@172.30.1.97	1.
localhost	local		✓	✓				126@172.30.1.97	1.
localhost	local		✓	✓				9@172.30.1.174	1.
localhost	new51nf		✓	✓		192.168.200.144	58701		1.
localhost	newbe4cache		✓	✓		192.168.200.144	48700		0.
localhost	new51Cache		✓	✓		192.168.200.144	58700		0.
localhost	newbe4inference		✓	✓		192.168.200.144	48701		0.

JVMs Heatmap

View the most critical alert state for all monitored JVM connections for one or all sources, as well as CPU and memory utilization. The heatmap organizes JVM connections by source and host, and uses color to show the most critical Metric value for each JVM connection associated with the selected source. Each rectangle in the heatmap represents a JVM connection. The rectangle size represents the amount of memory reserved for that process; a larger size is a larger value. Each Metric (selected from the drop-down menu) has a color gradient bar that maps relative values to colors.

Choose one or **All Sources** from the **Source** drop-down menu. Use the check-boxes ☒ to include or exclude labels in the heatmap. Move your mouse over a rectangle to see detailed JVM connection information (including **PID**). Drill-down and investigate by clicking a rectangle to view details for the selected connection in the **JVM Summary** display.



Metric

Select the Metric to display in the heatmap. Each Metric has a color gradient bar that maps relative values to colors.

Alert Severity

The maximum level of alerts in the heatmap rectangle. Values range from 0 - 2, as indicated in the color gradient bar, where 2 is the highest Alert Severity.





Red indicates that one or more alerts have reached their alarm threshold. Alerts that have exceeded their specified ALARM LEVEL threshold have an Alert Severity value of 2.

Yellow indicates that one or more alerts have reached their alarm threshold. Alerts that have exceeded their specified WARNING LEVEL threshold have an Alert Severity value of 1.

Green indicates that no alerts have reached their alert thresholds. Alerts that have not exceeded their specified thresholds have an Alert Severity value of 0.

Alert Count

The number of alerts for the rectangle. The color gradient bar values range from 0 to the maximum number of alerts in the heatmap.

CPU %	The total percent (%) CPU utilization for the rectangle. The color gradient  bar values range from 0 to the maximum percent (%) CPU utilization in the heatmap.
Memory %	The total percent (%) memory utilization for the rectangle. The color gradient  bar values range from 0 to the maximum percent (%) memory utilization in the heatmap.
Current Heap	The current amount of heap committed for the connection, in kilobytes. The color gradient  bar values range from 0 to the maximum amount in the heatmap.
Used Heap	The total amount of heap used by the connection, in kilobytes. The color gradient  bar values range from 0 to the maximum amount used in the heatmap.

JVM Summary

Track utilization by a single connection on a JVM, including **Memory** and **CPU** usage, amount of **Committed Memory** (the amount of memory, in megabytes, guaranteed to be available for use by the JVM).

Choose a **Source** and **Connection** from the drop down menus. The amount of committed memory can be a fixed or variable size. If set to be a variable size, the amount of committed memory can change over time, as the JVM may release memory to the system. This means that the amount allocated for **Committed** memory could be less than the amount initially allocated. Committed memory will always be greater than or equal to the amount allocated for **Used memory** and **Maximum Memory** used, number of **Threads** and **Peak Threads**.

You can also verify whether the memory usage has reached a plateau. And if usage is approaching the limit, determine whether to allocate more memory.

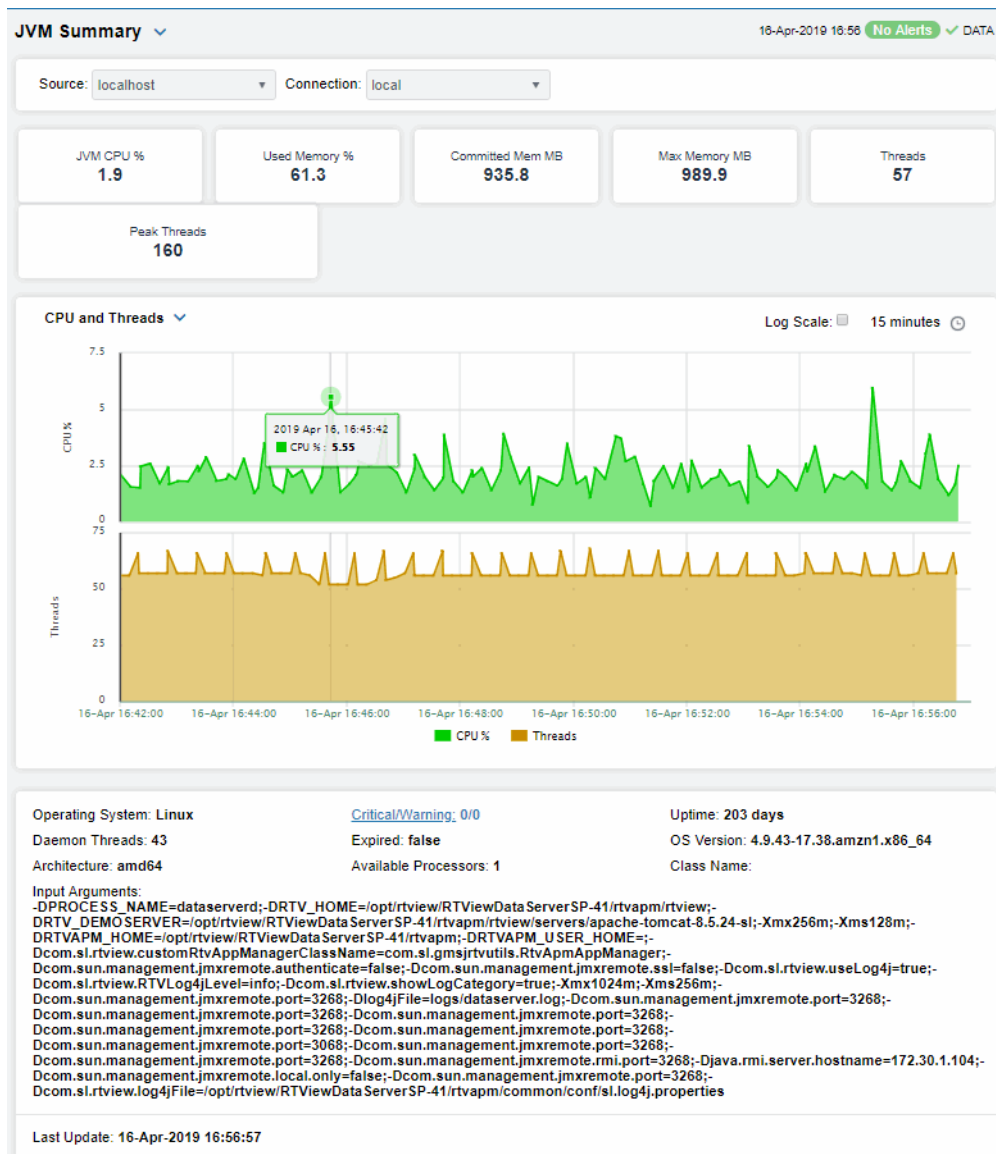
Clicking on the information boxes at the top of the display takes you to the **JVMs Table - HTML** display, where you can view and compare with other connections on the JVM.

You can set the time range for the trend graph to trace. You can also choose what to trace from the drop-down menu:

- **CPU and Threads** traces the amount of CPU used by the JVM and the total number of live threads.
- **Heap Memory** traces the amount of memory used for memory management by the application in the time range specified. This value may change or be undefined. Note that a memory allocation can fail if the JVM attempts to set the Used memory allocation to a value greater than the **Committed** memory allocation, even if the amount for **Used** memory is less than or equal to the Maximum memory allocation (for example, when the system is low on virtual memory).

At the bottom of the display you also can get JVM operating system information, the number of processors available to the JVM, the **Architecture** which is the ISA used by the processor, the number of **Daemon Threads** and **Input Arguments** for starting JVM.

Clicking the **Critical/Warning** link at the bottom of the display opens the Alerts Table by Component display.



JVM System Properties

View JVM arguments in the RuntimeMXBean InputArguments attribute, command line arguments for starting applications and system properties settings for a connection.

Choose a **Source** and **Connection** from the drop-down menus. You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**.

Or just click a column header to sort.

Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

Click a column header to sort column data in ascending or descending order or right-click to filter data shown in the display. Toggle between the commonly accessed Table and Heatmap displays by clicking the drop down list on the display title.

JVM System Properties 15-Apr-2019 13:05 No Alerts DATA

Source: localhost Connection: local

JVM Arguments

Value
-Dcom.slsrtview.customRtvAppManagerClassName=com.slsrjrtvutils.RtvAppManager
-Dcom.sun.management.jmxremote.authenticate=false
-Dcom.sun.management.jmxremote.ssl=false
-Dcom.slsrtview.useLog4j=true
-Dcom.slsrtview.RTVLog4jLevel=info
-Dcom.slsrtview.showLogCategory=true
-Xmx1024m
-Xms256m

Command-Line Arguments

Value

System Properties

Property	Value
com.sun.management.jmxremote.rmi.port	3288
awt.toolkit	sun.awt.windows.WToolkit
com.slsrtview.RTVLog4jLevel	info
file.encoding.pkg	sun.io
java.specification.version	1.7
sun.cpu.isalist	amd64

JVM GC Trends

Track JVM garbage collection memory utilization trends for a single connection. Choose a **Source**, **Connection** and **Garbage Collector** from the drop-down menus. The upper trend graph traces the following for the selected garbage collector for the time range specified:

- **Max:** The maximum amount of memory, in megabytes, used for JVM garbage collection.
- **Committed:** The amount of memory, in megabytes, guaranteed to be available for use by JVM non-heap memory management. Note that the amount of committed memory can be a fixed or variable size. If set to be a variable size, it can change over time, as the JVM may release memory to the system. This means that the amount allocated for committed memory could be less than the amount initially allocated. Committed memory will always be greater than or equal to the amount allocated for used memory.
- **Used - Before:** The amount of memory, in megabytes, used before the last garbage collection.
- **Used - After:** The amount of memory, in megabytes, used after the last garbage collection.

The lower trend graph traces the following for the selected garbage collector for the time range specified:

- **Duration:** The duration, in seconds, of garbage collection.
- **Duty Cycle:** The percentage of time that the application spends in garbage collection.

You can hover over the trend graph to see the values at a particular time.

You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.



RTView Servers Displays

The following RTView Servers displays can be found under **Components** tab > **Processes** > **JVM Processes** > **RTView Servers** after installation.

These displays present performance data for all RTView servers. Use these displays to monitor the health of the servers monitoring your system. Displays are:

- **"Data Servers"**: Shows metrics for RTView Data Servers.
- **"Data Server Summary"**: Shows details for one Data Server.
- **"Display Servers"**: Note that this display does not contain data.
- **"Display Server Summary"**: Note that this display does not contain data.
- **"Historian Servers"**: Shows metrics for RTView Historian Servers.

Data Servers

View connections on one or all RTView Data Servers, as well as connection status and client count. Choose one or **All** data servers from the **Source**: drop-down menu. Each row in the table is a different data server.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**.

Or just click a column header to sort.

Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

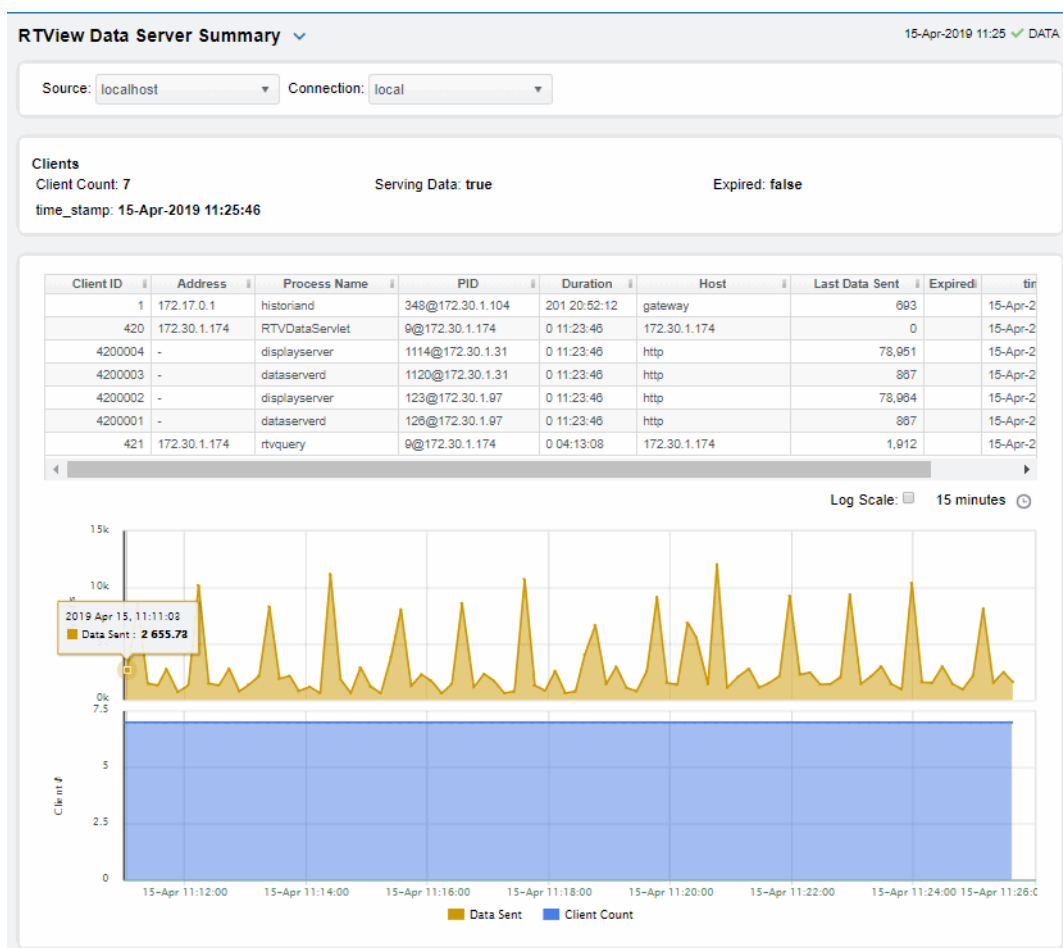
Double-click to drill-down to details about the selected data server as well as the selected connection in the **Data Server Summary** display.

Source	Connection	Client Count	Serving Data	Expired	time_stamp
localhost	local	7	✓		16-Apr-2019 14:56:16

Data Server Summary

Track utilization metrics for a specific data server and a connection. Choose a data server and a connection from the **Source** and **Connection** drop-down menus. View client details such as client ID, IP address, process name, host and duration. The trend graph traces data sent and client count for the selected connection. You can hover over the trend graph to see the values at a particular time. You can specify the

time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.



Historian Servers

Track the status of RTView Historian Servers, their connections, status and role and data configuration file usage. View the caches that are archived by the Historian application, substitution variables associated with the history cache configuration file, as well as the history cache status.

Each row in the table contains data for a particular server. You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting Filter, Sort Ascending, Sort Descending or Columns. Or just click a column header to sort. Right-click on a table cell to Export to Excel or Copy Cell Value.

RTView Historians Table 16-May-2019 15:12 ✓ DATA

Source:

Historians: 2

Source	Connection	Connected To DB	Suspended	Config File Count	Primary	Expired	Time Stamp
localhost	RTVMGR-HIST-X2			0	✓		16-May-2019 15:12:26
localhost	EMSMON-HIST-3			0	✓		16-May-2019 15:12:26

‘Drilldowns’ Displays

This View contains the following displays:

- [“Alerts History Table”](#): Track history of any alert that has occurred in your RTView Enterprise system.
- [“Alerts Table by Component”](#): Track alerts associated with CIs shown in a display.
- [“Alert Detail for Component”](#): Investigate an alert instance and its history.

Alerts History Table

Use this display to track the history of alerts, including cleared alerts, that have occurred in your monitoring system. There is one row in the table for each update to each alert.

Choose a Data Server from the drop down to filter alerts shown in the table. The **Alerts History Table** only shows alerts associated with the selected Data Server.

Select **Expand Alert Index** to separate each column in the **Alert Index** into different lines of text. When unselected, the **Alert Index** remains as a single line, with all index parts separated by semicolon (;).

Select **History Alerts** to show all historical alerts. When unselected, only current alerts are shown in the table.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Right-click on a table cell to **Export to Excel**.

Alerts History Table 07-Oct-2019 09:25 DATA

Data Server: RTV-DATA-TIBCO Expand Alert Index: History Alerts: ☒

Data Server URL: https://rtvdemos.sl.com/tibmon_rtvquery/ 15 minutes

Alert Level	Ack	Cleared	Alert Name	Alert Index	Alert Text	Owner	Id	Source	Row Update Time
			JvmMemoryUsed-High	win44-newbe4cache	High Alert Limit exceeded		144843		2019-Oct-07 09:11:41
		<input checked="" type="checkbox"/>	JvmMemoryUsed-High	win44-newbe4cache	High Alert Limit exceeded		144843		2019-Oct-07 09:11:50
			BwServerCpuUsed-High	sl4-64(simon)	High Alert Limit exceeded		144911		2019-Oct-07 09:18:4
		<input checked="" type="checkbox"/>	BwServerCpuUsed-High	sl4-64(simon)	High Alert Limit exceeded		144911		2019-Oct-07 09:19:0
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144855		2019-Oct-07 09:10:5
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144854		2019-Oct-07 09:10:5
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144853		2019-Oct-07 09:10:5
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144852		2019-Oct-07 09:10:5
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144851		2019-Oct-07 09:10:5
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144856		2019-Oct-07 09:11:5
			BwProcessAvgElapsedTime-High	slhpux11(simon)-domain	High Alert Limit exceeded		144865		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	slhpux11(simon)-domain	High Alert Limit exceeded		144864		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	slhpux11(simon)-domain	High Alert Limit exceeded		144863		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	slhpux11(simon)-domain	High Alert Limit exceeded		144862		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	slhpux11(simon)-domain	High Alert Limit exceeded		144861		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	slhpux11(simon)-domain	High Alert Limit exceeded		144860		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	slhpux11(simon)-domain	High Alert Limit exceeded		144859		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144872		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144871		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144870		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144869		2019-Oct-07 09:12:1
			BwProcessAvgElapsedTime-High	sl4-64(simon)-domains	High Alert Limit exceeded		144868		2019-Oct-07 09:12:1

Alerts Table by Component

As an alternative to the **Alerts Table**, use the **Alerts Table by Component** to track and manage all alerts that are specifically associated with the CIs shown in a display.

You access the **Alerts Table by Component** by clicking (the alert status icon) in the title bar of other displays. The display in which you click is the source display.

Package provides the technology label associated with the alerts shown. For example, **Jvm**, **Tomcat** and **Host** are the technology labels for Java Virtual Machines, Tomcat applications and servers (respectively). These labels are also correlated with the RTView solution package names (for example, the Solution Package for Host Agent). **Category** lists all alert categories related to the source display.

Use the **ACK** and **Cleared** drop-downs to filter the table by **All**, **True** or **False**.

See the **Alert Level** column icon, where:



The alert reached its ALARM LEVEL threshold in the table row.



The alert reached its WARNING LEVEL threshold in the table row.

To investigate, click:

Alert Detail

to open the **Alert Detail for Component** where you can see the current and historical conditions that precipitated the alert being executed.

[Go to CI](#) to open the summary display for the CI associated with the alert where you can investigate utilization metrics for the CI leading up to the alert being executed.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Right-click on a table cell to **Export to Excel**. Use **Ctrl** + click or **Shift** + click to select multiple alerts.

With one or more alerts selected, click [Own](#) to set the alert(s) owner field, [Acknowledge](#) to acknowledge the alert(s), [Unacknowledge](#) to clear the acknowledgement on previously acknowledged alert(s), [Add Comment](#) to add a comment to the alert(s).

You must be logged in as rtvalertmgr or rtvadmin to perform the **Own**, **Ack**, **Unack**, or **Comment** actions. Otherwise, you get an error dialog.

Alerts Table by Component 02-May-2019 11:05:09 ✔ DATA OK [🔗](#) [?](#)

Package: Host Category: CPU:Network:Storage Cleared: False ACK: False

Alert Count: 16

Row	Update Time	Acknowledge	Cleared	Alert Level	Alert Name	Alert Index Values	
2018-Nov-09 23:54:0					HostCpuPercentHigh	SL-DEMO;SLHOST16(sl_qa)	High V
2018-Oct-01 06:20:10					HostCpuPercentHigh	SL-DEMO;SLHOST17(sl_amx)	High A
2019-May-02 03:28:5					HostMemoryUsedHigh	SL-DEMO-LX;192.168.200.92	High V
2018-Oct-01 06:19:36					HostVirtualMemoryUsedH	SL-DEMO;SLHOST17(sl_amx)	High A
2018-Oct-01 06:18:36					HostMemoryUsedHigh	SL-DEMO;SLHOST17(sl_amx)	High V
2018-Jan-12 11:38:56					HostCpuPercentHigh	SL-DEMO-LX;192.168.200.205	High A
2019-May-02 10:40:3					HostVirtualMemoryUsedH	SL-DEMO-LX;192.168.200.42	High A
2019-Apr-25 10:19:43					HostMemoryUsedHigh	SL-DEMO;SLHOST8	High V
2018-Jun-19 09:22:23					HostCpuPercentHigh	SL-DEMO-LX;192.168.200.202	High A
2018-Nov-09 10:33:50					HostVirtualMemoryUsedH	SL-DEMO;SLHOST16(sl_qa)	High A
2018-May-01 22:45:4					HostCpuPercentHigh	SL-DEMO-LX;192.168.200.202	High A

[Alert Detail](#)
[Go to CI](#)
[Own](#)
[Acknowledge](#)
[Unacknowledge](#)

[Add Comment](#)
[Clear All Comments](#)

Alert Detail for Component

Use the **Alert Detail for Component** display to investigate current and historical activity of a specific alert instance as it applies to the associated CI, and also compare against **Metric History** trends of the associated CI. A trend graph for the CI associated with the alert instance. You can hover over the trend graph to see the values at a particular time. You can specify the time range for the trend graph and view data based on a log scale, which enables visualization on a logarithmic scale and should be used when the range in your data is very broad.

Access the **Alert Detail for Component** display by clicking  in the **Alerts Table** or  in the **Alerts Table by Component** display.

The **Alert History** table at the bottom of the display contains a row of data for each time the alert instance was updated. See the alert **ID**, **Row Update Time**, **Cleared** status and **Reason**, **Owner** and the **Alert Level** column icon, where:




The alert reached its ALARM LEVEL threshold in the table row.




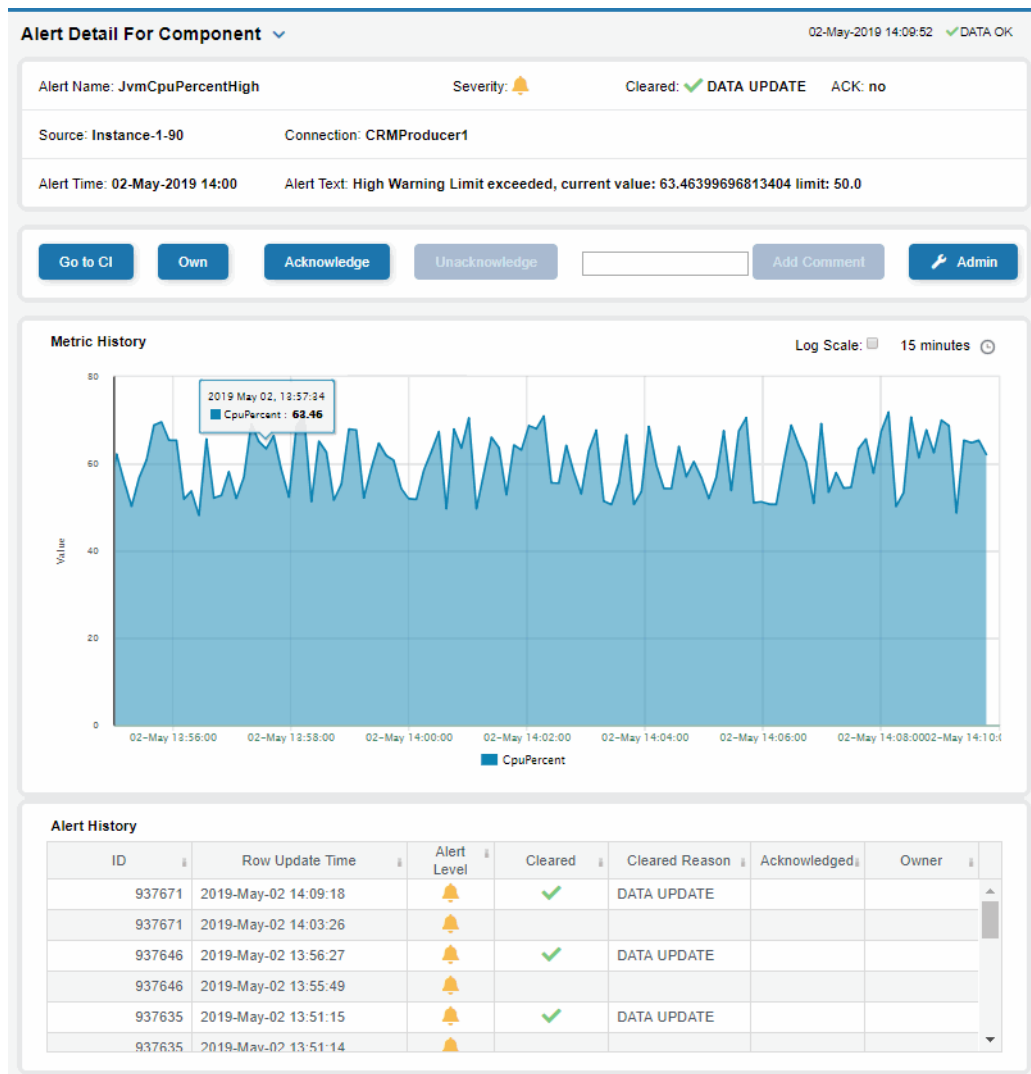
The alert reached its WARNING LEVEL threshold in the table row.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Right-click on a table cell to **Export to Excel**. Use **Ctrl** + click or **Shift** + click to select multiple alerts.

To investigate, click:

 to see utilization conditions for the CI associated with the alert in a summary display.

 to open the **Alert Configuration for Component** display where you can see, modify and refine alert threshold settings for that particular alert. A trend graph traces the relevant alert metric for the CI so you can adjust thresholds in real-time.



Alerts Displays

Alerts Table

Use this display to track and manage all alerts that have occurred in the system, where:



One or more alerts exceeded their ALARM LEVEL threshold in the table row



One or more alerts exceeded their WARNING LEVEL threshold in the table row

You can search, filter, sort and choose columns to include by clicking a column header icon (located to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Use the **Ack'd** and **Cleared** drop-downs to filter the table by those columns. Right-click on a table cell to **Export to Excel** or **Copy Cell Value**. Use **Ctrl** + click or **Shift** + arrow to select multiple alerts. To investigate, select one alert and click:

Details to open the **Component Alert Detail** display to get details about that particular alert instance as it specifically applies to the associated CI.

CI to see utilization conditions for the CI associated with the alert during the seconds (minutes, hours or days) leading up to the alert being executed in a summary display.

With one or more alerts selected, you can click **Own** to set the alert(s) owner field, **Ack** to acknowledge the alert(s), **Unack** to clear the acknowledgement on previously acknowledged alert(s), **Clear** to set the **Cleared** flag on the selected alert(s), **Comment** to add a comment to the alert(s) and **CI** to get details about the CI associated with the alert (these buttons are enabled when you click one or more alerts).

You must be logged in as rtvalertmgr or rtvadmin to perform the **Own**, **Ack**, **Unack**, or **Comment** actions. Otherwise, you get an error dialog.

Alerts Table											
30-Apr-2019 13:47:46 DATA											
<div> <div>Own Ack Unack Clear Comment Details CI</div> <div>Ack'd: all Cleared: false Cmdb Filter: ***** Alert Count: 92</div> </div>											
Time	Ack	Clr	Sev	Alert Name	Alert Text	Owner	ID	Source	Comments	CI	
2019-Apr-30 00:04:07			⚠	JvmNotConnected	Server disconnected		1043	RTV-DATA-TIB		win4	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1009	Z-SIMDATA-1		local	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1008	Z-SIMDATA-1		local	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1007	Z-SIMDATA-1		local	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1006	Z-SIMDATA-1		local	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1005	Z-SIMDATA-1		local	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1004	Z-SIMDATA-1		local	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1003	Z-SIMDATA-1		local	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1002	Z-SIMDATA-1		local	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1001	Z-SIMDATA-1		local	
2019-Apr-30 01:34:49			⚠	JvmNotConnected	Server disconnected		1000	Z-SIMDATA-1		local	
2019-Apr-30 12:01:02			⚠	JvmCpuPercentHigh	High Alert Limit exceed		1064	Z-SIMDATA-1		local	
2019-Apr-30 13:44:01			🔔	JvmCpuPercentHigh	High Warning Limit exc		928739	RTV-DATA-KAF		Insta	
2019-Apr-30 13:47:04			🔔	JvmCpuPercentHigh	High Warning Limit exc		928747	RTV-DATA-KAF		Insta	
2019-Apr-30 01:36:49			🔔	HostCpuPercentHigh	High Warning Limit exc		1010	Z-SIMDATA-1		defa	
2019-Apr-30 01:36:49			🔔	HostCpuPercentHigh	High Warning Limit exc		1010	Z-SIMDATA-1		defa	
2019-Apr-30 02:05:10			⚠	HostCpuPercentHigh	High Alert Limit exceed		1011	Z-SIMDATA-1		defa	
<div> <div>Page 1 of 3</div> <div>1 - 40 of 92 items</div> </div>											

Admin Displays

These displays enable you to set alert thresholds, observe how alerts are managed, and view internal data gathered and stored by RTView (used for troubleshooting with SL Technical Support). Displays in this View are:

- **"Alert Administration"**: Displays active alerts and provides interface to modify, enable and manage alerts.
- **"Alert Overrides Admin"**: Set and modify alert overrides. Access this display from the **Alert Administration** display.
- **"Cache Table"**: View cached data that RTView is capturing and maintaining, and use this data use this for debugging with SL Technical Support.

Alert Administration

The **Alert Administration** display allows administrators to enable/disable alerts and manage alert thresholds. The table describes the global settings for all alerts on the system.

You can set the **Delay** time (the number of seconds that must pass before an alert is triggered, where **0** sets it to immediately execute).

You can set the **Warning Level** which executes a single warning alert when the number of seconds specified here is exceeded. To set the warning to occur sooner, reduce the **Warning Level** value. To set the warning to occur later, increase the **Warning Level** value.

You can set the **Alarm Level** which executes a single alarm alert when the number of seconds specified here is exceeded. To set the alarm to occur sooner, reduce the **Alarm Level** value. To set the alarm to occur later, increase the **Alarm Level** value.

Note: For low value-based alerts (an alert that executes based on a value going below a certain threshold), to set the alarm to occur sooner you increase the **Alarm Level** value. To set the alarm to occur later, reduce the **Alarm Level** value.

You can apply alert thresholds globally or as an *override*. Setting override alerts allows you to set thresholds for a subset of your resources, or for a single resource (for example, a single server). Override alerts are useful if the majority of your resources require the same threshold setting, but there are a few resources that require a different threshold setting. For example, you might not usually be concerned with execution time at a process level, but perhaps certain processes are critical. In this case, you can apply alert thresholds to each process individually. See below for instructions.

You can filter, sort and choose columns to include by clicking a column header icon (located to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Use the **Ack'd** and **Cleared** drop-downs to filter the table by those columns. Right-click on a table cell to **Export to Excel**.

To set thresholds and enable a global alert:

Select an alert and, under **Settings for alert** (in the lower portion of the screen), modify settings for the alert **Delay**, **Warning Level** and/or **Alarm Level** and **Save Settings**. With that alert selected, check the **Alert Enabled** box under **Settings for alert** (in the lower portion of the screen) and **Save Settings**. The **Alert Enabled** box (next to the selected alert) is now checked.

To set thresholds and enable an override alert:

To set an override alert, select an alert and click **Override Settings** to open the **Alert Overrides Admin** display.

Alerts Administration 30-Apr-2019 10:34:01 ✓ DATA OK

Package: All http://rtvdemos.sl.com/emdemo_central_rtvquery

Alert Name	Alert Enabled	Alert Delay	Warning Level	Alert Level	Override Count
HostNetworkTxRateHigh	<input type="checkbox"/>	30	50	75	0
HostProcessCountLow	<input type="checkbox"/>	30	15	5	0
HostStateData	<input type="checkbox"/>	30			0
HostStorageUsedHigh	<input type="checkbox"/>	30	80	90	0
HostSwapUsedHigh	<input type="checkbox"/>	30	75	90	0
HostVirtualMemoryUsedHigh	<input type="checkbox"/>	30	75	90	0
JvmCpuPercentHigh	<input checked="" type="checkbox"/>	60	50	70	0
JvmGcDutyCycleHigh	<input type="checkbox"/>	30	50	75	0
JvmMemoryUsedAfterGCHigh	<input type="checkbox"/>	0	1	80	0
JvmMemoryUsedHigh	<input checked="" type="checkbox"/>	60	75	86	0
JvmNotConnected	<input checked="" type="checkbox"/>	60			0
JvmStateData	<input type="checkbox"/>	30			0
JvmThreadCountHigh	<input checked="" type="checkbox"/>	60	8000	12000	0

Page 2 of 5 101 - 200 of 432 items

Settings for alert

Alert Enabled: ☐ Delay: Warning Level: Alert Level:

Alert Selected: **HostSwapUsedHigh** Description: The percentage of swap space used is above the limits defined for that Host

For additional details, see [“Alert Overrides Admin”](#).

Alert Name	The name of the alert.
Alert Enabled	When checked, the alert is enabled globally.
Alert Delay	The amount of time (in seconds) that the value must be above the specified Warning Level or Alarm Level threshold before an alert is executed. 0 is for immediate execution.
Warning Level	The global warning threshold for the selected alert. When the specified value is exceeded a warning is executed.
Alert Level	The global alarm threshold for the selected alert. When the specified value is exceeded an alarm is executed.

Override Count	The number of times thresholds for this alert have been defined individually in the Tabular Alert Administration display. A value of: -0 indicates that no overrides are applied to the alert. -1 indicates that the alert does not support overrides.
-----------------------	---

Settings for alert

Select an alert in the table to use the following options:

Alert Enabled	Check / uncheck this box to enable or disable the selected alert globally.
Delay	Enter the amount of time (in seconds) that the value must be above the specified Warning Level or Alarm Level threshold before the selected alert is executed. 0 is for immediate execution.
Warning Level	Enter the global warning threshold for the selected alert. When the specified value is exceeded a warning is executed. To set the warning to occur sooner, reduce the Warning Level value. To set the warning to occur later, increase the Warning Level value.
Alert Level	Enter the global alarm threshold for the selected alert. When the specified value is exceeded an alarm is executed. To set the alarm to occur sooner, reduce the Alarm Level value. To set the warning to occur later, increase the Alarm Level value. NOTE: For low value-based alerts (such as EmsQueuesConsumerCountLow), to set the alarm to occur sooner, increase the Alarm Level value. To set the alarm to occur later, reduce the Alarm Level value.
Save Settings	Click to apply alert settings for the selected alert.
Original Defaults	Click to revert to original alert settings for the selected alert.
Override Settings	Click to set an alert override in the Alert Overrides Admin display on the selected alert.

Alert Overrides Admin

Administrators use this display to create override alerts. To access this display, select an alert in the **Alert Administration** display and choose **Override Settings**.

The table lists all the resources to which you can apply the alert you selected from the **Alert Administration** display. Each row in the table is a different resource, columns describe whether that alert is enabled (globally and as an override) and if so, the current alert thresholds for each.

You can filter, sort and choose columns to include by clicking a column header icon (located to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Use the **Display** drop-down to filter the table to show **All** resources, only resources with the **Overridden** alert applied or **Free** resources (to show only resources without the alert override applied). Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

To set an override alert:

Select a resource and **Override Type** from the drop-down menu (depending on the alert, there might be only one type). Under **Settings for selected index** (in the lower portion of the screen), modify settings for the alert **Delay**, **Warning Level** and/or **Alarm Level** and **Add Override**. The table updates with your new settings.

With that resource selected, toggle on **Override Enabled** and **Alert Enabled** under **Settings for alert** (in the lower portion of the screen) and **Save Settings**. The table updates with your new settings. The **Alert Administration** display **Override Count** also updates for the alert.

Alert Overrides Administration
11-Mar-2019 15:28:11
DATA OK

Alert: **SolVpnSubscriptionCountHigh**
Override Type: **PerVPN**
Display: **All**

Connection	vpn-name	Override Enab..	Alert Enabled	Warning Level	Alert Level
solaceLoaner	BridgeBroker1				
solaceLoaner	Broker1				
solaceLoaner	Broker10				
solaceLoaner	Broker2				
solaceLoaner	Broker3				
solaceLoaner	Broker4				
solaceLoaner	Broker5				
solaceLoaner	Broker6				

Settings for selected index

Override Enabled: ☒
Alert Enabled: ☒
Warning Level:
Alert Level:

Add Override
Save Settings
Remove Override

Cache Table

View the raw data that RTView is capturing and maintaining to investigate utilization and capacity metrics, as well as connection details, for caches on a data server.

Select a **Data Server** from the drop-down menu. The upper table contains a row of data for each cache on the selected data server. You can see the current number of **Rows** and **Columns** in each table and the amount of **Memory** used. You can also find out the cache **Table** type of which there are five:

- **current** tables show the most recently received values for each index.
- **current_condensed** tables are current tables with primary compaction configured.
- **history** tables show the historical values for each index.
- **history_condensed** tables are history tables with primary compaction configured.
- **history_combo** tables are history tables with primary compaction configured, and which is also configured to store rows of recent raw data followed by rows of older condensed data.

Select a cache to see connection utilization details for that cache in the lower table. The lower table shows the contents of the selected cache table. Available columns vary by cache. For example, a JVM cache table might provide **BootClassPath** and **InputArgument** columns, and a Tomcat cache might provide **RateAccess** and **cacheMaxSize** columns.

You can search, filter, sort and choose columns to include by clicking a column header icon (to the right of each column label) and selecting **Filter**, **Sort Ascending**, **Sort Descending** or **Columns**. Or just click a column header to sort.

Right-click on a table cell to **Export to Excel** or **Copy Cell Value**. Use **Ctrl + click** or **Shift + click** to select multiple alerts. Use **History Tables** to include / exclude history tables in the table. Right-click on a table cell to **Export to Excel** or **Copy Cell Value**.

This low-level option can be useful to identify the source of the problem when the displays are not showing the expected data. Use this data for debugging and troubleshooting with Technical Support.

Cache Table 07-May-2019 14:11 ✓ DATA

Data Server: central-alert History Tables: ☐

Data Server URL: https://rtvdemos.sl.com/emdemo_central_rtquery

Cache	Table	Rows	Columns	Memory
JmxStatsTotals	current	1	4	441
RtvAlertGroupMap	current	493	3	67424
RtvAlertMapByCI	current	62	5	13614
RtvAlertSourceStats	current	8	2	940
RtvAlertStatsByArea	current	8	9	2930
RtvAlertStatsByAreaAndAlertGroup	current	8	10	3454
RtvAlertStatsByCI	current	59	5	9228
RtvAlertStatsByCIAndAlertGroup	current	59	6	12506

Cache: RtvAlertStatsByCIAndAlertGroup Table: current

time_stamp	CITYPE	CINAME	ALERTGROUP	MaxSeverity	AlertCount
2019-May-07 14:11:33	JVM	localhost:SOLOWORK_MIS	None	2	1
2019-May-07 14:11:33	JVM	localhost:EMSMON_TON	None	2	1
2019-May-07 14:11:33	JVM	localhost:EMSMON_DAT	None	2	1
2019-May-07 14:11:33	JVM	localhost:SOLMON_DISF	None	2	1
2019-May-07 14:11:33	JVM	localhost:SOLMON_DAT	None	2	1
2019-May-07 14:11:33	JVM	localhost:EMSMON_DISI	None	2	1
2019-May-07 14:11:33	JVM	localhost:SOLMON_TOM	None	2	1
2019-May-07 14:11:33	JVM	localhost:EMSMON_DAT	None	2	1
2019-May-07 14:11:33	JVM	Instance-1-90;CRMBroke	None	1	1
2019-May-07 14:11:33	JVM	Instance-1-90;CRMZooki	None	1	1
2019-May-07 14:11:33	JVM	Instance-1-171;CRMCon	None	1	1
2019-May-07 14:11:33	JVM	Instance-1-171;CRMCon	None	1	1
2019-May-07 14:11:33	JVM	Instance-1-171;CRMBrok	None	1	1
2019-May-07 14:11:33	JVM	localhost:TMolecule5_2	None	1	1
2019-May-07 14:11:33	JVM	localhost:PMolecule12_1	None	1	1

Page 1 of 2 1 - 40 of 59 items

Modify RTView Manager Settings

RTView Manager has predefined connections that can be modified if necessary. You can modify RTView Manager settings using the RTView Configuration Application here (<http://localhost:3070/rtview-manager-rtvadmin> or <http://localhost:8068/rtview-manager-rtvadmin>).

You can use the RTView Configuration Application to modify the majority of settings for RTView Manager.

This section contains:

- [“Open the RTView Configuration Application for RTView Manager”](#)
- [“Modify Connections for Data Collection”](#)
- [“Modify Default Polling Rates for RTView Manager Caches”](#)
- [“Modify Default Settings for Storing Historical Data”](#)
- [“Change Port Assignments”](#)
- [“Configure Alert & Historical Database Connections”](#)

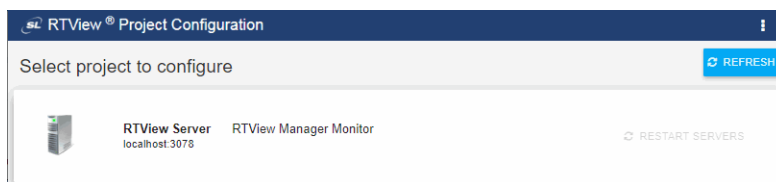
Open the RTView Configuration Application for RTView Manager

To access the RTView Configuration Application for RTView Manager:

1. Start the Solace PubSub+ Monitor (if not currently running), then browse to one of the following URLs and login (username/password are rtvadmin/rtvadmin):
 - http://<ip_address>:3070/rtview-manager-rtvadmin if you are using Jetty.
 - <http://localhost:8068/rtview-manager-rtvadmin> if you are using Tomcat.

The RTView Manager main console opens.

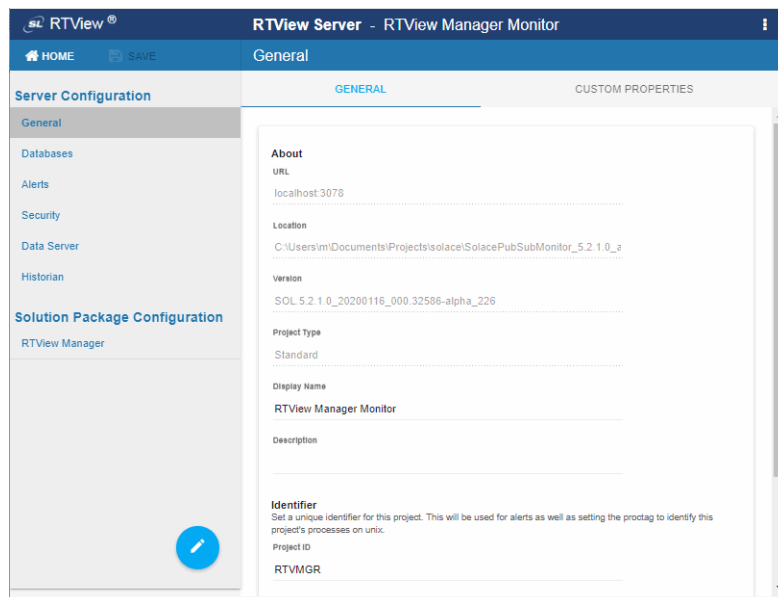
The RTView Configuration Application **HOME** page opens.



Select the **RTView Server - RTView Manager Monitor** project.

The main configuration page for **RTView Manager** opens.

The navigation tree is in the left panel and the **General** and **Custom Properties** tabs are shown in the upper part of the main page. The name of the selected tab is highlighted and the other tabs are grayed out. You click on either of the grayed tabs to change the selected tab.




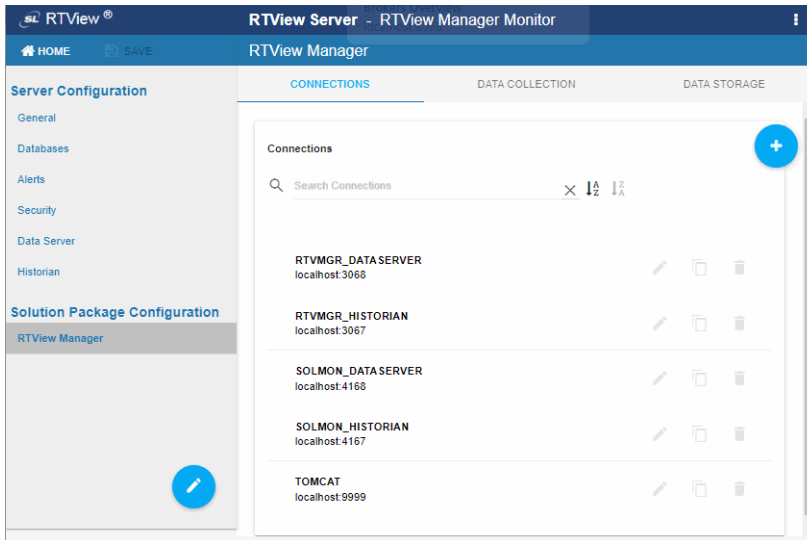
These instructions use the following format to describe navigation to each tab: **Navigation tree>Tab**. For example, the figure above illustrates the **General>GENERAL** Tab.

Modify Connections for Data Collection





RTView Manager has predefined connections to the Solace PubSub+ Monitor components. These connections do not need to be modified unless you change the ports or security settings for the Solace PubSub+ Monitor components

To modify connections:

1. “Open the RTView Configuration Application for RTView Manager”, select **RTView Manager**>**CONNECTIONS** tab and click .



The **Add Connection** dialog opens. Note that the predefined connections are listed in the main panel.

2. In the **Add Connection** dialog, enter the **Connection Name**, **Host**, **Port**, **Username** and **Password**.
3. Click  to close the dialog and  (in title bar) to save your settings.
The connections you create are listed in the **Connections** tab.
4. If your connection is secured, select **Security** (in the navigation tree) and fill in the **SSL Credentials** section with the appropriate **Truststore** and **Truststore Password** values for the connection.
5. Repeat these steps to add more brokers and when finished, click  to close the dialog and  (in title bar) to save your settings. RTView Manager

The connections you created are listed in the **Connections** tab.

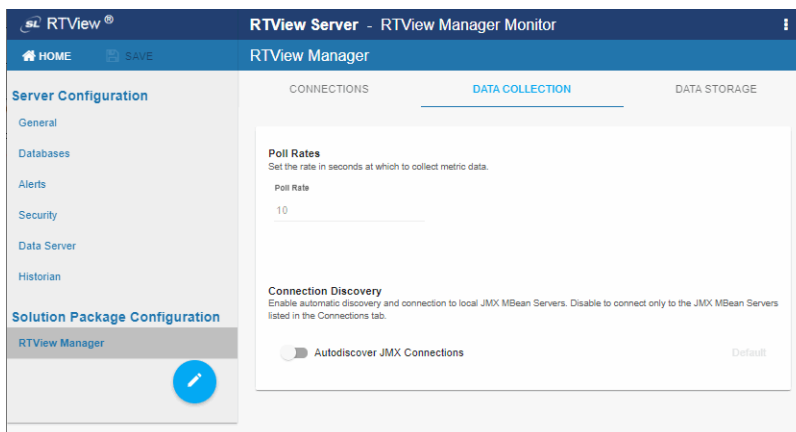
6. Click **RESTART SERVERS** to apply changes. The data server will be available again in 10-15 seconds.
7. Open a browser and go to the RTView Manager (Solace PubSub+ Monitor must be running):
 - **http://<ip_address>:3070/rtview-manager** if you are using Jetty.
 - **http://localhost:8068/rtview-manager** if you are using Tomcat.
 (username/password are rtvadmin/rtvadmin)

You should now see monitoring data for the modified connection. If you encounter issues, check the log files in the **projects/rtview-manager/logs** directory for errors.

Modify Default Polling Rates for RTView Manager Caches

To modify the default polling rate settings for RTView Manager caches, perform the following:

- “[Open the RTView Configuration Application for RTView Manager](#)” and go to **RTView Manager Monitor project>DATA COLLECTION** tab.



Poll Rates: Collection period in seconds. The default setting is **10** seconds.

Autodiscover JMX Connections: Toggle **ON** to enable RTView to automatically discover JMX MBean Servers. Toggle **OFF** to restrict connections to the JMX MBean Servers that are listed in the **CONNECTIONS** tab. Blue (toggled right) enables, gray (toggled left) disables. By default, this feature is disabled.

- Click **SAVE** your settings, then click **RESTART SERVERS** to apply changes. The data server will be available again in 10-15 seconds.

Modify Default Settings for Storing Historical Data

Use the RTView Configuration Application to change the default settings for storing historical data for RTView Manager and the default cache settings to modify the default behavior of the data being collected, aggregated and stored.

- “[Define the Storage of In Memory History](#)”: Specify the maximum number of history rows to store in memory.

- [“Define Compaction Rules”](#): Define rules for reducing the amount of data stored over time.
- [“Define Duration”](#): Specify when data becomes expired and/or deleted from the Monitor.
- [“Enable/Disable Storage of Historical Data”](#): Choose the metrics you want to store in the database and specify a prefix for history table names.
- [“Define Prefix for All History Table Names”](#): Specify a prefix to prepend to database table names.

Define the Storage of In Memory History



You can define the maximum number of history rows to store in memory in the **RTView Manager/Data Storage/History Rows** property. This property can improve Monitor responsiveness.

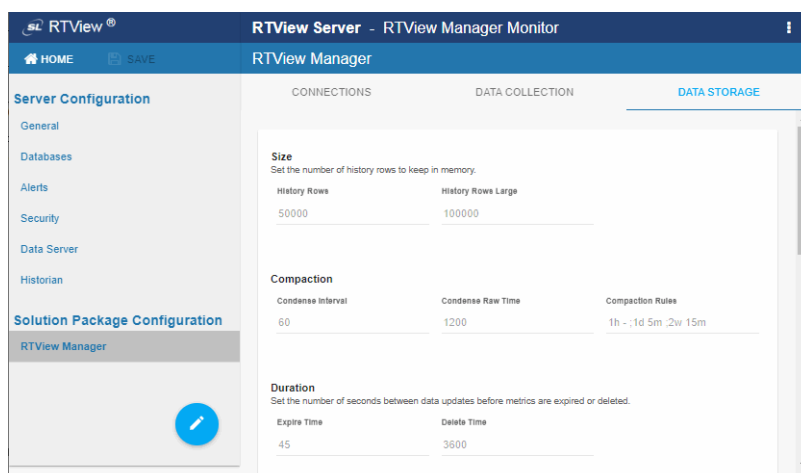
Note that changing this value is only recommended if you have a high degree of understanding about how historical data is being stored in memory, as well as how that data is compacted and stored in the database.

The **History Rows** property defines the maximum number of rows to store for the `JvmGcInfo`, `JvmMemoryPool`, `RtvDataServerManager`, `RtvDisplayServerManager` and `RtvDataServerClientTotals` caches. The default setting for **History Rows** is **50,000**.

The **History Rows Large** property defines the maximum number of rows to store for the `JvmOperatingSystem`, `JvmThreading`, `JvmMemory`, `RtvDataServerClientStats` and `TomcatWebModuleStats` caches. The default setting for **History Rows Large** is **100,000**.

To modify the default settings:

- [“Open the RTView Configuration Application for RTView Manager”](#) and go to **RTView Manager>DATA STORAGE** tab.
- Under **Size**, enter the desired number of rows in the **History Rows** and **History Rows Large** fields.
-  your settings, then click  to apply changes. The data server will be available again in 10-15 seconds.





Define Compaction Rules

Data compaction, essentially, is reducing redundancy in the data to be stored in the database by using a rule so that you store sampled data instead of raw data, which prevents storing of redundant data which potentially can overload the database. The compaction rule is defined through the following fields:

- **Condense Interval:** The time interval at which the cache history is condensed. The default is **60** seconds, which means that every **60** seconds all rows of the same index are condensed. As a result of this first condensing operation there will be only one row per index every minute. The following caches are impacted by this setting: JvmGcInfo, JvmMemoryPool, JvmOperatingSystem, JvmThreading, JvmMemory, RtvDataServerManager and RtvDataServerClientTotals.
- **Condense Raw Time:** The time span of raw data kept in memory. The default is **1200** seconds. The following caches are impacted by this setting: JvmGcInfo, JvmMemoryPool, JvmOperatingSystem, JvmThreading, JvmMemory, RtvDataServerManager, RtvDataServerClientTotals, TomcatWebModuleStats, TomcatGlobalRequestStats and TomcatWebModuleTotals.
- **Compaction Rules:** This field defines the rules used to condense your historical data in the database. By default, the columns kept in history are aggregated by averaging rows with the following rule **1h -;1d 5m;2w 15m**, which means the data from the last hour is not aggregated (1h - rule), the data from the last day is aggregated every 5 minutes (1d 5m rule), and the data from the last 2 weeks old is aggregated every 15 minutes (2w 15m rule). The following caches are impacted by this setting: JvmOperatingSystem, JvmThreading, JvmMemory, RtvDataServerManager, RtvDataServerClientTotals, TomcatWebModuleStats, TomcatGlobalRequestStats and TomcatWebModuleTotals.

To modify these settings do the following:

- [“Open the RTView Configuration Application for RTView Manager”](#) and go to **RTView Manager>DATA STORAGE** tab.
- Under **Compaction**, enter values in the **Condense Interval**, **Condense Raw Time** and **Compaction Rules** fields.
-  **SAVE** your settings, then click Click  **RESTART SERVERS** to apply changes.



Define Duration

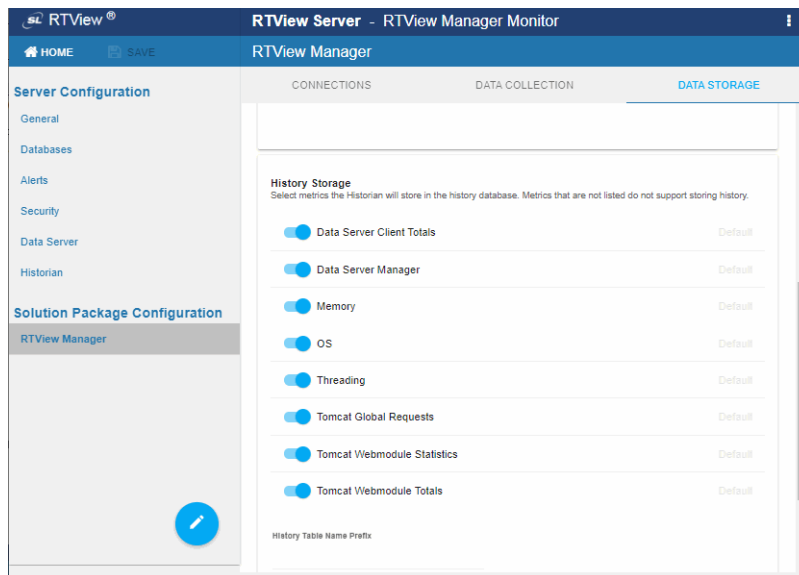
The data for each metric is stored in a specific cache and, when the data is not updated in a certain period of time, that data either marked as expired or, if it has been expired over an extended period of time, it is deleted from the cache altogether.

- **Expire Time:** This field sets the period of time when the **Expire** metric from the cache is set to true indicating the entry row is expired. The default expiration time is **45** seconds. The following caches are impacted by this field: JvmConnections, JvmGcInfo, JvmMemoryPool, JvmClassLoading, JvmCompilation, JvmOperatingSystem, JvmThreading, JvmMemory, JvmMemoryManager, JvmSystemProperties, RtvDataServerManager, RtvDisplayServerManager, RtvHistorianManager, RtvDataServerClientStats, RtvDataServerClientTotals, RtvServerVersion, TomcatWebModuleStats, TomcatConnectorInfo, TomcatGlobalRequestStats, TomcatHostInfo, and TomcatWebModuleTotals.
- **Delete Time:** This field sets the period of time that a given entry row should be expired before it gets deleted from the cache. It defaults to **3600** seconds and applies to the following caches: JvmConnections, JvmGcInfo, JvmMemoryPool, JvmClassLoading, JvmCompilation, JvmOperatingSystem, JvmRuntime, JvmThreading, JvmMemory, JvmMemoryManager, JvmSystemProperties, RtvDataServerManager, RtvDisplayServerManager, TomcatWebModuleStats, TomcatGlobalRequestStats, TomcatWebModuleTotals, RtvHistorianManager, RtvDataServerClientStats, RtvDataServerClientTotals, RtvServerVersion, TomcatWebModuleStats, TomcatConnectorInfo, TomcatGlobalRequestStats, TomcatHostInfo and TomcatWebModuleTotals.

Enable/Disable Storage of Historical Data

Under **History Storage** you can select which tables you want the Historian to store in the database. To enable/disable the collection of historical data, perform the following:

- [“Open the RTView Configuration Application for RTView Manager”](#) and go to **RTView Manager>DATA STORAGE** tab.
- Scroll down to **History Storage** and toggle to enable/disable the storage of various database tables in the database. Blue (toggled right) enables storage, gray (toggled left) disables storage. The caches impacted by these settings are SolAppliances (Message Brokers), SolBridgeStats (Bridge Stats), SolClientStats (Client Stats), SolCspfNeighbors (CSPF Neighbors), SolEndpointStats (Endpoint Stats), SolEndpoints (Endpoints), SolApplianceInterfaces (Interface), SolApplianceMessageSpool (Message Spools), SolEventModuleEvents (Syslog Events) and SolVpns (VPNs).
-  **SAVE** your settings, then click  **RESTART SERVERS** to apply changes.





Define Prefix for All History Table Names

The **History Table Name Prefix** field allows you to define a prefix that is added to the database table names so that the Monitor can differentiate history data between data servers when you have multiple data servers with corresponding Historians using the same solution package(s) and database. In this case, each Historian needs to save to a different table, otherwise the corresponding data server will load metrics from both Historians on startup. Once you have defined the **History Table Name Prefix**, you need to create the corresponding tables in your database as follows:

- Locate the .sql template for your database under **/rtvapm/solmon/dbconfig** and make a copy of it
- Add the value you entered for the **History Table Name Prefix** to the beginning of all table names in the copied .sql template
- Use the copied .sql template to create the tables in your database

To add the prefix do the following:

- “Open the RTView Configuration Application for RTView Manager”, go to **RTView Manager>DATA STORAGE** tab and scroll down to the bottom of the page.
- In the **History Table Name Prefix** field, enter the desired prefix name.
-  your settings, then click  to apply changes.

Change Port Assignments

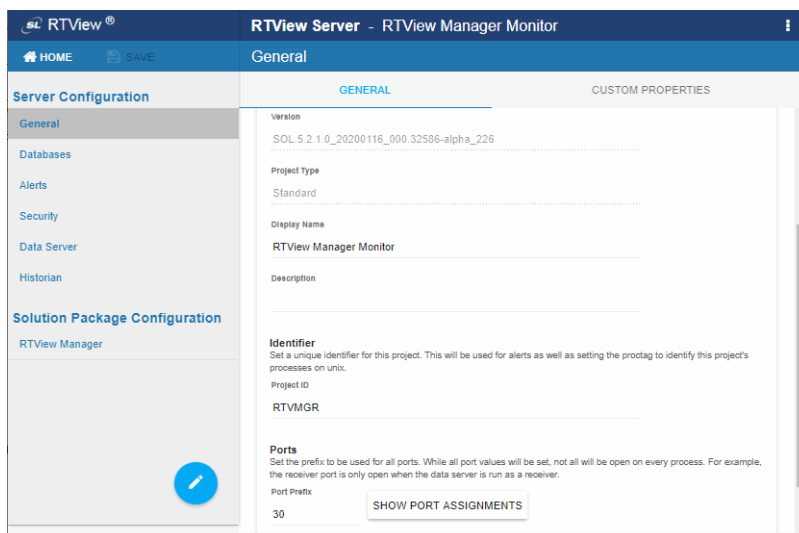
This configuration is optional.



There are deployment architectures that might require the change of default ports for selected processes, either because the process will be executed multiple times in the same host or because the selected port number is already in use by another application. In these circumstances, you should reassign ports for RTView Manager using the RTView Configuration Application.

Java Process	Description	Default Port(s)
RTView Manager Data Server	Gathers performance metrics.	Default Port= 3078 Default JMX Port = 3068
RTView Manager Historian	Retrieves data from the RTView Data Server and archives metric history to a database.	Default JMX Port= 3067

To modify port settings or deploy Java processes on different hosts (rather than on a single host):

1. “Open the RTView Configuration Application for RTView Manager” and go to **General>GENERAL** tab.



2. Under **Ports** (scroll down to the bottom of the page), specify the port prefix that you want to use in the **Port Prefix** field. Click **Show Port Assignments** to see the port numbers that are created using the **Port Prefix** you specify.
3. Click  **SAVE** (in the title bar), then click  **RESTART SERVERS** to apply changes.
4. Edit the **update_wars** (.bat or .sh) file and change the port prefix for all ports to the prefix you just specified.
5. Rebuild the war files and install them to the application server by executing the following script, located in the **/bin** directory:

Windows:

make_all.bat

UNIX:

./make_all.sh

Configure Alert & Historical Database Connections

The Monitor is delivered with a default memory resident HSQLDB database, which is suitable for evaluation purposes. However, in production deployments, we recommend that you deploy one of our supported databases. For details, see the *RTView Core® User's Guide*.

This section describes how to setup an alternate production database, and how to configure the Alert Settings Database connection and the Historian Database connection. You connect and configure the databases using the RTView Configuration Application. You also copy portions of the **database.properties** template file (located in the **common\dbconfig** directory) into the RTView Configuration Application.

Monitor Databases

The Monitor requires two database connections that provide access to the following information:

Alert Settings

The ALERTDEFS database contains alert administration and alert auditing information. The values in the database are used by the alert engine at runtime. If this database is not available, the Self-Service Alerts Framework under which alerts are executed cannot work correctly.

Historian

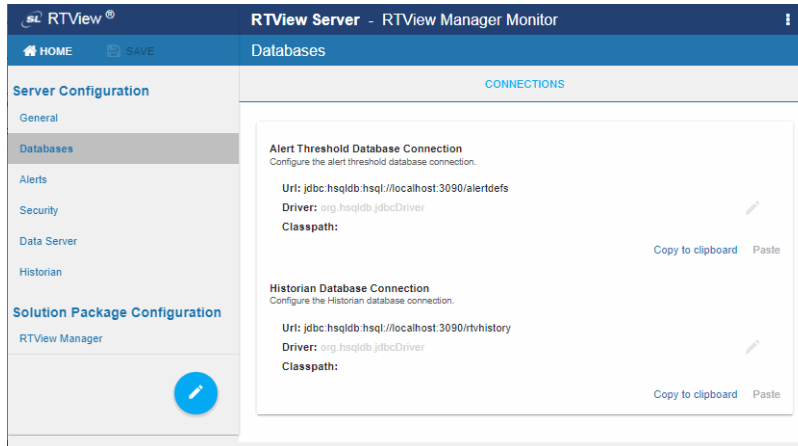
The RTVHISTORY database contains the historical monitoring data to track system behavior for future analysis, and to show historical data in displays.

To Configure the ALERTDEFS and RTVHISTORY Databases:

1. Install a database engine of your choice. Supported database engines are Oracle, Microsoft SQL Server, MySQL, and DB2.
NOTE: The default page size of DB2 is 4k. It is required that you create a DB2 database with a page size of 8k. Otherwise, table indexes will not work.
2. Open the **database.properties** template file, which is located in the **common\dbconfig** directory, find the line that corresponds to your supported database in the "Define the

ALERTDEFS DB" section and make a note of this information. Keep the **database.properties** template file open.

3. "Open the RTView Configuration Application for RTView Manager" and go to **Databases>CONNECTIONS** tab.



4. Click **Alert Threshold Database Connection** to open the **Edit Connection** dialog.
5. Enter the information (you previously noted from the **database.properties** file) into the **Edit Connection** dialog and click **Save**.

URL: Enter the full database URL to use when connecting to this database using the specified JDBC driver.

Driver: Enter the fully qualified name of the JDBC driver class to use when connecting to this database.

Classpath: Enter the location of the jar where the JDBC driver resides in your environment.

Username: Enter the username to enter into this database when making a connection.

Password: Enter the password to enter into this database when making a connection.

Run Queries Concurrently: Select this check box to run database queries concurrently.

Click **SAVE** to close the dialog and **SAVE** (in title bar) to save your settings.
6. Return to the **database.properties** template file, which is located in the **common\dbconfig** directory, find the line that corresponds to your supported database in the "Define the RTVHISTORY DB" section and make a note of this information.
7. In the RTView Configuration Application, click the **Historian Database Connection** to open the **Edit Connection** dialog.
8. Enter the information (you previously retrieved from the **database.properties** file) into the **Edit Connection** dialog and click **Save**.

URL: Enter the full database URL to use when connecting to this database using the specified JDBC driver.



Driver: Enter the fully qualified name of the JDBC driver class to use when connecting to this database.

Classpath: Enter the location of the jar where the JDBC driver resides in your environment.

Username: Enter the username to enter into this database when making a connection.

Password: Enter the password to enter into this database when making a connection.

Run Queries Concurrently: Select this check box to run database queries concurrently.

9. Click  to store the newly added connection and close the dialog and  (in title bar) to save your settings.

10. Click  to apply changes.

11. Manually create database tables. If your configured database user has table creation permissions, then you only need to create the Alerts tables. If your configured database user does not have table creation permission, then you must create both the Alert tables and the History tables.

To create tables for your database, use the **.sql** template files provided for each supported database platform, which is located in the **dbconfig** directory of the **common** and **solmon** directories, where:

`<db> = {db2, mysql, oracle, sqlserver, sybase}`

- **Alert Settings**

`SolacePubSubMonitor/rtvapm/common/dbconfig/
create_common_alertdefs_tables_<db>.sql`

- **Historian**

`SolacePubSubMonitor/rtvapm/common/dbconfig/
create_common_history_tables_<db>.sql`

`SolacePubSubMonitor/rtvapm/rtvmgr/dbconfig/
create_rtmgr_history_tables_<db>.sql`

NOTE: The standard SQL syntax is provided for each database, but requirements can vary depending on database configuration. If you require assistance, consult with your database administrator.

The most effective method to load the **.sql** files to create the database tables depends on your database and how the database is configured. Some possible mechanisms are:

- **Interactive SQL Tool**

Some database applications provide an interface where you can directly type SQL commands. Copy/paste the contents of the appropriate **.sql** file into this tool.

- **Import Interface**

Some database applications allow you to specify a **.sql** file containing SQL commands. You can use the **.sql** file for this purpose.

Before loading the **.sql** file, you should create the database and declare the database name in the command line of your SQL client. For example, on MySQL 5.5 Command Line Client, to create the tables for the Alert Settings you should first create the database:

```
create database myDBName;
```

before loading the **.sql** file:

```
mysql -u myusername -mypassword myDBName <  
create_common_alertdefs_tables_mysql.sql;
```

If you need to manually create the Historical Data tables, repeat the same process. In some cases it might also be necessary to split each of the table creation statements in the **.sql** file into individual files.

Third Party Application

If your database does not have either of the two above capabilities, a third party tool can be used to enter SQL commands or import **.sql** files. Third party tools are available for connecting to a variety of databases (RazorSQL, SQLMaestro, Toad, for example).

You have finished configuring the databases. To configure alert notifications, proceed to [Configure Alert Notification](#).

Troubleshoot

This section includes:

- [“Log Files for RTView Manager”](#)
- [“JAVA_HOME”](#)
- [“Permissions”](#)
- [“Network/DNS”](#)
- [“Data Not Received from Data Server”](#)

Log Files for RTView Manager

When any component encounters an error, an error message is output to the console and/or to the corresponding log file. Logging is enabled by default. If you encounter issues with log files, verify the **logs** directory exists.

RTView Manager Log Files

If you encounter issues, look for errors in the following log files, located in the **SolacePubSubMonitor/projects/rtview-manager/logs** directory:

- **dataserver.log**
- **historian.log**

JAVA_HOME

If you encounter issues starting Solution Package for Solace or RTView Manager processes on Linux, verify that JAVA_HOME is set correctly in the path as JAVA_HOME is required for Tomcat to start correctly. On Windows, JAVA_HOME or JRE_HOME should exist as environment variables indicating a valid Java path.

Permissions



If you encounter permissions-related errors in the response from the **start_servers** command, check ownership of the directory structure.

Network/DNS

If any log file shows reference to an invalid URL, check your system's hosts file and also confirm with your network administrator that you're not being blocked from accessing the remote system.

Data Not Received from Data Server

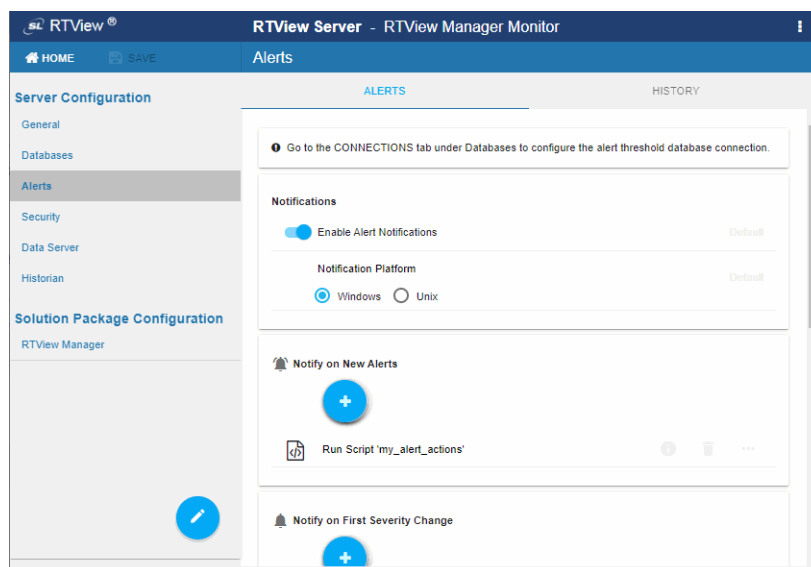
In the Solution Package for Solace, if you go to the **Administration>RTView Cache Tables** display and see that caches are not being populated with monitoring data (the number of rows in the table is zero), check for connection property errors that are provided to the Data Server. Do the following:

1. ["Open the RTView Configuration Application for RTView Manager"](#) and go to the **RTView Manager>CONNECTIONS** tab.
2. Verify the settings for each connection and make corrections if necessary.
Click  in the title bar when finished, then click  to apply changes. It takes about 10-15 seconds for the data server to be available again.
3. In Solace PubSub+ Monitor, go to the **Admin>Cache Tables** display and verify that all caches are being populated with monitoring data (the number of rows in the table is greater than zero).

Configure Alert Notification

To configure alert notification for RTView Manager:

1. ["Open the RTView Configuration Application for RTView Manager"](#), select the **RTView Manager** project, then select **Alerts** (in the navigation tree).



2. See [“Configure Alert Notification”](#).

Alerts for RTView Manager

RTView Manager comes with the following alert types for RTView Servers (Data Servers, Display Servers and Historian Servers):

JvmCpuPercentHigh	<p>Executes a single warning alert and a single alarm alert if the percent of JVM CPU used exceeds the specified threshold.</p> <p>Index Type: Per JVM</p> <p>Metric: CpuPercent</p>
JvmGcDutyCycleHigh	<p>Executes a single warning alert and a single alarm alert if the garbage collector duty cycle exceeds the specified threshold.</p> <p>Index Type: Per GC Source</p> <p>Metric: DutyCycle</p>
JvmMemoryUsedAfterGCHigh	<p>Executes a single warning alert and a single alarm alert if the percent of memory used after garbage collection exceeds the specified threshold.</p> <p>Index Type: Per GC Source</p> <p>Metric: PctMemoryUsedAfterGC</p>
JvmMemoryUsedHigh	<p>Executes a single warning alert and a single alarm alert if the percent of memory used exceeds the specified threshold.</p> <p>Index Type(s): Per JVM</p> <p>Metric: MemoryUsedPercent</p>
JvmNotConnected	<p>Executes a single alert if the JVM is disconnected, indicating that it might have crashed.</p> <p>Index Type(s): Per JVM</p> <p>Metric: Connected</p>
JvmStaleData	<p>Executes a single alert if the data update wait time exceeds the specified duration threshold.</p> <p>Index Type(s): Per JVM</p> <p>Metric: Expired</p>
JvmThreadCountHigh	<p>Executes a single warning alert and a single alarm alert if the number of threads exceeds the specified threshold.</p> <p>Index Type(s): Per JVM</p> <p>Metric: ThreadCount</p>
TomcatAccessRateHigh	<p>Executes a single warning alert and a single alarm alert if the number of accesses per second exceeds the specified threshold.</p> <p>Index Type(s): Per Server</p> <p>Metric: RateaccessCount</p>

TomcatActiveSessionsHigh

Executes a single warning alert and a single alarm alert if the number of active sessions exceeds the specified threshold.

Index Type(s): Per Server

Metric: activeSessions

TomcatAppAccessRateHigh

Executes a single warning alert and a single alarm alert if the number of accesses per second exceeds the specified threshold.

Index Type(s): Per Application

Metric: RateaccessCount

TomcatAppActiveSessionsHigh

Executes a single warning alert and a single alarm alert if the number of active sessions exceeds the specified threshold.

Index Type(s): Per Application

Metric: activeSessions

Configure High Availability

To configure HA for RTView Manager, refer to [“High Availability”](#) instructions for the Solace PubSub+ Monitor.

APPENDIX A Monitor Scripts

This section describes scripts that are available for the Monitor as well as the **rtvservers.dat** configuration file. This section contains:

- [“Scripts”](#)
- [“rtvservers.dat”](#)

Scripts

The following scripts are available when used from an initialized command window. The scripts can be executed from a Windows Command Prompt or UNIX terminal window. On Windows, you can type the commands as described in this section. On UNIX systems, you must add **.sh** to each command. For example, **rtvapm_init.sh**. Also on UNIX systems, it is a requirement that the installation directory path not contain spaces.

These instructions assume use of a BASH or a BASH-compliant shell.

Script Name	Description
my_alert_actions.bat/sh	Sample script to define actions for alerts. Location: The project directory. Format: my_alert_actions (Append .sh on UNIX)
rtv_setup.bat/sh	Initializes a command prompt or terminal window. Location: <installation directory>/bin This script must be executed in the directory in which it resides. Format: rtv_setup (Append .sh on UNIX)
rtvapm_init.bat/sh	Initializes a command window. Location: rtvapm This script must be executed in the directory in which it resides. Format: rtvapm_init (Append .sh on UNIX)

start_cmd.bat	<p>Starts an initialized Command Prompt window on Windows.</p> <p>Location: <installation directory>/bin</p> <p>This script must be executed in the directory in which it resides. You can also execute the script by double-clicking in an Explorer window.</p>
start_rtv.bat/sh	<p>Starts processes in an RTView configuration as specified in the rtvservers.dat configuration file.</p> <p>Location: rtvapm/common/bin</p> <p>This script must be executed in the project directory (the directory containing the rtvservers.dat file). This script requires rtvapm_init.bat/sh be executed first.</p> <p>An RTView configuration might include a Data Server or Display Server, an Historian and a Central Server Database. start_rtv only attempts to start processes it detects are not running. The action can be applied to all RTView configurations, a single RTView configuration or a single process in an RTView configuration.</p> <p>Before starting an RTView server, this script detects port conflicts caused by another server. If the conflict is caused by another RTView server, it returns a message identifying that server by its rtvapm. For example:</p> <pre>...start_rtv.bat: another dataserver running with JMX port 3268 under C:\rtview\RTViewDataServer\rtvapm</pre> <p>If the port conflict is caused by a non-RTView process, it returns a message similar to this, for example:</p> <pre>...start_rtv.bat: JMX port 3268 in use by PID 1234</pre> <p>In both cases the script includes this advice:</p> <p>Warning: server not started, port conflict</p> <hr/> <p>To avoid port conflicts, run your start script with the -portprefix: command line argument to change the first two (2) digits of all your server ports.</p> <p>To persist these port changes, change the port prefix in the RTView Configuration Application or use the -saveportprefix command line argument.</p> <p>Additional arguments can be included on the command line in which case they are passed to every server specified by the command.</p> <p>Additional arguments can also be included in the rtvservers.dat file, in which case they are only applied to the specific server in whose command they are included.</p> <p>Note: If you use the -properties or -propfilter argument with start_rtv, you should also use them with status_rtv and stop_rtv. Those commands use the JMX ports defined for the server, and if any of the properties specified by -properties or -propfilter arguments change those ports, subsequent commands will be unable to find the server unless also given those properties.</p>

—console (or **—c**) - Start the processes with a command window (which is useful for testing).

When used without arguments, this script returns usage information and a list of available configurations. For example, **start_rtv** returns:

Usage: **start_rtv config or 'all' [server or 'all'] [args...]**

Available configs:

```

    default
        dataserver
        historian
        displayserver
        database
    sender
        dataserver

```

all

Starts all RTView configurations that are specified in the **rtvservers.dat** file.

all applies the action to all RTView configurations specified in the **rtvservers.dat** file (and corresponding servers or clients specified in each configuration). **Note:** When multiple configurations are specified in the **rtvservers.dat** file and they have different project settings directory locations, the **all** argument processes all the configurations. However, if the configurations have the same project settings directory locations, the **all** argument processes only the first configuration as the others are considered alternative configurations.

Example:

start_rtv all
(Append **.sh** on UNIX)

[Configuration Name]

Starts a single RTView configuration specified in the **rtvservers.dat** file:

start_rtv [Configuration Name]
(Append **.sh** on UNIX)

Configuration Name is the RTView configuration name specified in the **rtvservers.dat** file. The action applies to all servers or clients specified in the configuration.

Example:

start_rtv web_deployment
(Append **.sh** on UNIX)

[Server Name]

Starts a single process in an RTView configuration specified in the **rtvservers.dat** file:

start_rtv [Configuration Name] [Server Name]
(Append **.sh** on UNIX)

Server Name is the name of a server or client member in the configuration. For example, **dataserver**, **displayserver**, **historian** and **database**. The action applies only to that server or client in the configuration.

Example:

start_rtv web_deployment dataserver
(Append **.sh** on UNIX)

Use With Secured JMX Ports

This script works with RTView servers whose JMX ports are secured with either a username and password, or with SSL. You provide the scripts with the necessary credential information and the scripts manage authentication with the server. There are two ways that you can provide credential information to the scripts: via command-line arguments and via properties placed in any property file that is used by the server.

Securing with username and password

- To secure with a username and password via command-line, use the arguments as follows:

-jmxuser:...

-jmxpass:...

- To secure with a username and password in a property file, use the properties as follows:

sl.rtvview.jmxremote.username=...

sl.rtvview.jmxremote.password=....

Securing with SSL

To secure with SSL, you provide the client KeyStore and TrustStore locations and their corresponding passwords.

- To secure with SSL via command-line, use the arguments as follows:

-sslkeystore:...

-sslkeystorepass:...

-ssltruststore:...

-ssltruststorepass:...

- To secure with SSL in a property file, use the properties as follows:

sl.rtvview.ssl.client.keyStore=...

sl.rtvview.ssl.client.keyStorePassword=...

sl.rtvview.ssl.client.trustStore=...

sl.rtvview.ssl.client.trustStorePassword=....

Password Encryption

To encrypt the passwords in your properties files, use the command-line tool "encode_string", for example:

encode_string encoder2 password

This will give you an encrypted value for "password" that you can use in your properties.

start_server.bat/sh

Starts the RTView DataServer.

Location:

<installation directory>

This script must be executed in the directory in which it resides. You can also execute the script by double-clicking in an Explorer window.

Format:

start_server

(Append .sh on UNIX)

start_servers.bat/sh	<p>Starts the RTViewCentral servers.</p> <p>Location: <installation directory>/bin</p> <p>This script must be executed in the directory in which it resides. You can also execute the script by double-clicking in an Explorer window.</p> <p>Format: start_servers (Append .sh on UNIX)</p>
start_tomcat.bat/sh	<p>Starts Apache Tomcat.</p> <p>Location: <installation directory>/bin</p> <p>This script must be executed in the directory in which it resides. You can also execute the script by double-clicking in an Explorer window.</p> <p>Format: start_tomcat (Append .sh on UNIX)</p>
status_collector.bat/sh	<p>Returns the status of RTView DataCollector.</p> <p>Location: <installation directory></p> <p>This script must be executed in the project directory (the directory containing the rtvservers.dat file).</p> <p>Format: status_collector (Append .sh on UNIX)</p>
status_rtv.bat/sh	<p>Returns the status of all RTView configurations that are specified in the rtvservers.dat configuration file.</p> <p>Location: rtvapm/common/bin</p> <p>This script must be executed in the project directory (the directory containing the rtvservers.dat file). This script requires rtvapm_init.bat/sh be executed first.</p> <p>This action uses defined JMX ports. An RTView configuration might include a Data Server, a Display Server or Viewer, an Historian and a Central Server Database. status_rtv only attempts to start processes it detects are not running. The action can be applied to all RTView configurations, a single RTView configuration or a single process in an RTView configuration.</p> <p>Additional arguments can be included on the command line in which case they are passed to every server specified by the command. Additional arguments can also be included in the rtvservers.dat file, in which case they are only applied to the specific server in whose command they are included.</p> <p>Note that if you use -properties or -propfilter arguments with start_rtv, you should also use them with status_rtv and stop_rtv. Those commands use the JMX ports defined for the server, and if any of the properties specified by -properties or -propfilter arguments change those ports, subsequent commands will be unable to find the server unless also given those properties.</p>

all

Returns the status of all RTView configurations specified in the **rtvservers.dat** file. **Note:** When multiple configurations are specified in the **rtvservers.dat** file and they have different project settings directory locations, the **all** argument processes all the configurations. However, if the configurations have the same project settings directory locations, the **all** argument processes only the first configuration as the others are considered alternative configurations.

Example:

status_rtv all
(Append **.sh** on UNIX)

[Configuration Name]

Returns the status of a single RTView configuration specified in the **rtvservers.dat** file:

status_rtv [Configuration Name]
(Append **.sh** on UNIX)

Configuration Name is the RTView configuration name specified in the **rtvservers.dat** file. The action applies to all servers or clients specified in the configuration.

Example:

status_rtv web_deployment
(Append **.sh** on UNIX)

[Server Name]

Returns the status of a single process in an RTView configuration specified in the **rtvservers.dat** file:

status_rtv [Configuration Name] [Server Name]
(Append **.sh** on UNIX)

Server Name is the name of a server or client member in the configuration. For example, **dataserver**, **displayserver**, **historian** and **database**. The action applies only to that server or client in the configuration.

Example:

status_rtv web_deployment dataserver
(Append **.sh** on UNIX)

Use With Secured JMX Ports

This script works with RTView servers whose JMX ports are secured with either a username and password, or with SSL. You provide the scripts with the necessary credential information and the scripts manage authentication with the server. There are two ways that you can provide credential information to the scripts: via command-line arguments and via properties placed in any property file that is used by the server.

Securing with username and password

- To secure with a username and password via command-line, use the arguments as follows:

-jmxuser:...

-jmxpass:...

- To secure with a username and password in a property file, use the properties as follows:

sl.rtvview.jmxremote.username=...

sl.rtvview.jmxremote.password=....

Securing with SSL

To secure with SSL, you provide the client KeyStore and TrustStore locations and their corresponding passwords.

- To secure with SSL via command-line, use the arguments as follows:

-sslkeystore:...

-sslkeystorepass:...

-ssltruststore:...

-ssltruststorepass:...

- To secure with SSL in a property file, use the properties as follows:

sl.rtvview.ssl.client.keyStore=...

sl.rtvview.ssl.client.keyStorePassword=...

sl.rtvview.ssl.client.trustStore=...

sl.rtvview.ssl.client.trustStorePassword=....

Password Encryption

To encrypt the passwords in your properties files, use the command-line tool "encode_string", for example:

encode_string encoder2 password

This will give you an encrypted value for "password" that you can use in your properties.

status_server.bat/sh

Returns the status of the RTView DataServer.

Location:

<installation directory>

This script must be executed in the project directory (the directory containing the **rtvservers.dat** file).

Format:

status_server

(Append **.sh** on UNIX)

status_servers.bat/sh	<p>Returns the status of the RTViewCentral servers (as well as the Solace PubSub+ Monitor in RTViewSolaceMonitor).</p> <p>Location: <installation directory>/bin</p> <p>This script must be executed in the project directory (the directory containing the rtvservers.dat file).</p> <p>Format: status_servers (Append .sh on UNIX)</p>
stop_collector.bat/sh	<p>Stops the RTView DataCollector.</p> <p>Location: <installation directory></p> <p>This script must be executed in the directory in which it resides. You can also execute the script by double-clicking in an Explorer window.</p> <p>Format: stop_collector (Append .sh on UNIX)</p>
stop_rtv.bat/sh	<p>Stops processes in an RTView configuration as specified in the rtvservers.dat configuration file.</p> <p>Location: rtvapm/common/bin</p> <p>This script must be executed in the project directory (the directory containing the rtvservers.dat file). This script requires rtvapm_init.bat/sh be executed first.</p> <p>This action uses defined JMX ports. An RTView configuration might include a Data Server or a Display Server, an Historian and a Central Server Database. stop_rtv only attempts to start processes it detects are not running. The action can be applied to all RTView configurations, a single RTView configuration or a single process in an RTView configuration.</p> <p>Additional arguments can be included on the command line in which case they are passed to every server specified by the command. Additional arguments can also be included in the rtvservers.dat file, in which case they are only applied to the specific server in whose command they are included.</p> <p>Note that if you use -properties or -propfilter arguments with start_rtv, you should also use them with status_rtv and stop_rtv. Those commands use the JMX ports defined for the server, and if any of the properties specified by -properties or -propfilter arguments change those ports, subsequent commands will be unable to find the server unless also given those properties.</p> <p>Location: project directory</p> <p>This script must be executed in the project directory (the directory containing the rtvservers.dat file).</p>

all

Stops all RTView configurations that are specified in the **rtvservers.dat** file. **all** applies the action to all RTView configurations specified in the **rtvservers.dat** file (and corresponding servers or clients specified in each configuration).

Note: When multiple configurations are specified in the **rtvservers.dat** file and they have different project settings directory locations, the **all** argument processes all the configurations. However, if the configurations have the same project settings directory locations, the **all** argument processes only the first configuration as the others are considered alternative configurations.

Example:

stop_rtv all
(Append **.sh** on UNIX)

[Configuration Name]

Stops a single RTView configuration specified in the **rtvservers.dat** file:

stop_rtv [Configuration Name]
(Append **.sh** on UNIX)

Configuration Name is the RTView configuration name specified in the **rtvservers.dat** file. The action applies to all servers or clients specified in the configuration.

Example:

stop_rtv web_deployment
(Append **.sh** on UNIX)

[Server Name]

Stops a single process in an RTView configuration specified in the **rtvservers.dat** file:

stop_rtv [Configuration Name] [Server Name]
(Append **.sh** on UNIX)

Server Name is the name of a server or client member in the configuration. For example, **dataserver**, **displayserver**, **historian** and **database**. The action applies only to that server or client in the configuration.

Example:

stop_rtv web_deployment dataserver
(Append **.sh** on UNIX)

Use With Secured JMX Ports

This script works with RTView servers whose JMX ports are secured with either a username and password, or with SSL. You provide the scripts with the necessary credential information and the scripts manage authentication with the server. There are two ways that you can provide credential information to the scripts: via command-line arguments and via properties placed in any property file that is used by the server.

Securing with username and password

- To secure with a username and password via command-line, use the arguments as follows:

-jmxuser:...

-jmxpass:...

- To secure with a username and password in a property file, use the properties as follows:

sl.rtvview.jmxremote.username=...

sl.rtvview.jmxremote.password=....

Securing with SSL

To secure with SSL, you provide the client KeyStore and TrustStore locations and their corresponding passwords.

- To secure with SSL via command-line, use the arguments as follows:

-sslkeystore:...

-sslkeystorepass:...

-ssltruststore:...

-ssltruststorepass:...

- To secure with SSL in a property file, use the properties as follows:

sl.rtvview.ssl.client.keyStore=...

sl.rtvview.ssl.client.keyStorePassword=...

sl.rtvview.ssl.client.trustStore=...

sl.rtvview.ssl.client.trustStorePassword=....

Password Encryption

To encrypt the passwords in your properties files, use the command-line tool "encode_string", for example:

encode_string encoder2 password

This will give you an encrypted value for "password" that you can use in your properties.

stop_server.bat/sh

Stops the RTView DataServer.

Location:

<installation directory>

This script must be executed in the directory in which it resides.

Format:

stop_server

(Append .sh on UNIX)

stop_servers.bat/sh	<p>Stops the RTViewCentral servers.</p> <p>Location: <installation directory>/bin</p> <p>This script must be executed in the directory in which it resides. You can also execute the script by double-clicking in an Explorer window.</p> <p>Format: stop_servers (Append .sh on UNIX)</p>
stop_tomcat.bat/sh	<p>Stops Apache Tomcat.</p> <p>Location: <installation directory>/bin</p> <p>This script must be executed in the directory in which it resides.</p> <p>Format: start_tomcat (Append .sh on UNIX)</p>
update_wars.bat/sh	<p>Creates/updates the primary Monitor servlets.</p> <p>Location: <installation directory>/projects/rtview-server</p> <p>This script must be executed in the directory in which it resides. This script requires rtvapm_init.bat/sh be executed first.</p> <p>Format: update_wars.sh [appname [host [portprefix]]]</p> <p>For example: update_wars.sh my-appname my-hostname 99</p> <p>The name, host, and portprefix are declared in variables at the top of the script for easy editing, and can be passed into the scripts on the command-line.</p> <p>-secure Use the "-secure" argument to update the rtvquery war with security enabled.</p> <p>You can use ? or help to get a usage message. For example: update_wars.sh help</p> <p>You can edit other variables at the top of the scripts to set properties for high-availability (HA).</p> <p>Set HA_HOST to the hostname of the backup data server.</p> <p>Set HA_DISPLAYHOST to the hostname of the backup display server.</p> <p>Set HA_FAILBACK to true to automatically reconnect to the primary display server.</p>

validate_install.bat/sh	<p>Use this script if you encounter error messages when starting servers, to verify your system environment (for example, to verify that Java is installed) as well as your installation directories.</p> <p>Location:</p> <p><installation directory>/bin</p> <p>This script must be executed in the directory in which it resides. Also, in Unix, this script checks and corrects file permissions and file formats (if, for example, the wrong unzip command was used during installation). If file permissions or formats are fixed, the script returns a count of the files fixed. Additionally, if invoked with the argument "-v" (verbose) it returns the names of the files fixed.</p> <p>The script returns the following information (where <RTViewInstallation> is your RTView installation):</p> <ul style="list-style-type: none"> • In Windows <p>Validating installation in /opt/rtview/<RTViewInstallation> ... Java installation correct. ... rtvapm installation correct.</p> <ul style="list-style-type: none"> • In UNIX <p>Validating installation in /opt/rtview/<RTViewInstallation> ... Java installation correct. ... rtvapm installation correct. ... file permissions correct. ... file formats correct.</p>
--------------------------------	---

rtvservers.dat

This section describes the **rtvservers.dat** configuration file which is used to manage your RTView Enterprise deployment and RTView Enterprise processes. This section includes:

- ["Single Configuration File"](#)
- ["Multiple Configuration File"](#)

The **rtvservers.dat** text file contains one or more RTView Enterprise configurations. An RTView Enterprise configuration is a group of servers that should be started together. For example, the configuration might include any of the following: a Data Server, Historian, HSQLDB database, and a Display Server (for a Web Deployment). The **rtvservers.dat** file is used when the following scripts are executed:

- [start_rtv](#) Starts RTView Enterprise processes specified in the **rtvservers.dat** file.
- [stop_rtv](#) Stops the RTView Enterprise processes specified in the **rtvservers.dat** file.
- [status_rtv](#) Returns status information for RTView Enterprise processes specified in the **rtvservers.dat** file.

Single Configuration File

The following **rtvservers.dat** file, located in your project directory, contains a single RTView Enterprise configuration, named **default**.

```
default . dataserver rundata
```

```
default . historian runhist -ds
default . displayserver rundisp -ds
default . database rundb
```

Note: The last line in the **rtvservers.dat** file must end with a new line, or be followed by a blank line.

In this example, to start the **default** configuration type: **start_rtv default** or **start_rtv all**. To start a single server in the configuration, type **start_rtv <Configuration Name> <Server Name>**. For example: **start_rtv default displayserver**.

Each line has the following format consisting of four fields:

<Configuration Name> <Project Settings Directory Location> <Property Filter Identifying the Server> <Command>

<Configuration Name>	The name of the RTView Enterprise configuration (default in this example).
<Project Settings Directory Location>	The RTView Enterprise project settings directory location, relative to the location of the rtvservers.dat file (., the current directory, in this example).
<Property Filter Identifying the Server>	The property filter that identifies the server, which is the property filter under which the server's JMX port is defined. By default, this is the server name, such as dataserver , displayserver and historian .
<Command>	The script used to start the process. Valid values are: <ul style="list-style-type: none"> • rundata: Starts the Data Server. • runhist: Starts the Historian. • rundisp: Starts the Display Server. • rundb: Starts the HSQLDB Database.

Multiple Configuration File

When multiple configurations are specified in the **rtvservers.dat** file and they have different project settings directory locations, the **all** argument processes all the configurations. However, if the configurations have the same project settings directory locations, the **all** argument processes only the first configuration as the others are considered alternative configurations. Alternative configurations allow you to alternate between two configurations for a single RTView Enterprise deployment.

For example, the following **rtvservers.dat** file, located in your project directory/**servers** directory, contains two configurations, **bwmon** and **emsmon**. Note that the project settings directory locations differ (**./bwmon** and **./emsmon**, respectively).

```
bwmon ./bwmon dataserver rundata
bwmon ./bwmon historian runhist -ds
bwmon ./bwmon displayserver rundisp -ds

emsmon ./emsmon dataserver rundata
emsmon ./emsmon historian runhist -ds
emsmon ./emsmon displayserver rundisp -ds
```

Because the project settings directory locations differ, you can use type **start_rtv all** to start both configurations. To start only the bwmon configuration, type: **start_rtv bwmon**. To start a single server in the **bwmon** configuration, type **start_rtv <Configuration Name> <Server Name>**. For example: **start_rtv bwmon displayserver**.

APPENDIX B Alert Definitions

This section describes alerts for Solace PubSub+ and their default settings.

Alert	Warning Level	Alarm Level	Duration	Enabled
SolBridgeInboundByteRateHigh The number of inbound bytes per second across the bridge has reached its maximum. Index Type: PerBridge	8000000	10000000	30	FALSE
SolBridgeInboundMsgRateHigh The number of inbound messages per second across the bridge as a whole has reached its maximum. Index Type: PerBridge	40000	50000	30	FALSE
SolBridgeOutboundByteRateHigh The number of outbound bytes per second across the bridge has reached its maximum. Index Type: PerBridge	8000000	10000000	30	FALSE
SolBridgeOutboundMsgRateHigh The number of outbound messages per second across the bridge has reached its maximum. Index Type: PerBridge	40000	50000	30	FALSE
SolBrokerNoQueueFound This is an Event Alert. Event Alerts do not have duration or threshold settings. A single alarm alert when there are discarded queues in the broker. (Delta of discard-queue-not-found is non-zero). Note: This alert cannot be executed for Cloud Brokers. This request XML is a system level request which means that Cloud login credentials do not have permission to execute it. Index Type: PerBroker				FALSE
SolBrokerNoSubscriptionMatch This is an Event Alert. Event Alerts do not have duration or threshold settings. A single alarm alert when there are no current subscription matches (Delta of no-subscription-match is non-zero). Note: This alert cannot be executed for Cloud Brokers. This request XML is a system level request which means that Cloud login credentials do not have permission to execute it. Index Type: PerBroker				FALSE
SolBrokerNoValidDestination This is an Event Alert. Event Alerts do not have duration or threshold settings. A single alarm alert when invalid destinations exist in the broker. (Delta of discard-nodest is non-zero). Note: This alert cannot be executed for Cloud Brokers. This request XML is a system level request which means that Cloud login credentials do not have permission to execute it. Index Type: PerBroker				FALSE

SolBrokerRedundancyDown & SolBrokerRedundancyActivityStatusChanged

These alerts only pertain to brokers that are configured for redundancy.

These alerts execute when a redundancy misconfiguration is detected. Brokers qualify as being configured for redundancy if the Monitor either detects an associated mate broker name or a broker is explicitly configured for redundancy.

To verify whether the Monitor has detected all brokers configured for redundancy, go to the **Admin>Cache Table** display and select the **_SolBrokerRedundancy** cache. Verify that all brokers that are configured for redundancy have the **IsHABroker** flag checked. If the **IsHABroker** flag is NOT checked, use the RTView Configuration Application to configure the brokers for redundancy.

The **SolBrokerRedundancyDown** alert verifies that redundancy is configured properly by checking whether **Redundancy Mode**, **Redundancy Status** and **Configuration Status** are valid. That is, the **Redundancy Mode** is either **Active/Active** or **Active/Standby**, the **Redundancy Status** is **Up** and the **Redundancy Configuration Status** is **Enabled**. If any of these conditions are not met, then a warning alert will be raised with the following alert text: "<hostname> is not properly configured for redundancy or redundancy is down. Redundancy Status: <a> Configuration Status: ", where <hostname> is the hostname of the offending broker and <a> and are the current Redundancy Status and Configuration Status of the broker respectively.

The **SolBrokerRedundancyActivityStatusChanged** alert checks whether the previous state of the **Active-Standby Role**, the **Activity Status** of the Primary Virtual Router and the **Activity Status** of the Backup Virtual Router is different from the current state. If they are different, that implies a change in the state of the redundancy status occurred and a warning alert will be triggered. As soon as the previous and the current redundancy state is stabilized, the warning alert automatically clears, indicating in the alert text the current and previous states being detected. The warning alert contains the following text: "<hostname> has changed its redundancy activity state. There might be untracked intermediate states from the ones that have been detected. Current state: <A> Previous state: ", where <A> and are the concatenation of active-standby-role, primary-status-activity, and backup-status-activity separated by the character "-" for current and previous states.

Best Practices & Troubleshooting

It's possible to have multiple **SolBrokerRedundancyActivityStatusChanged** warning alerts when failing over if intermediate states have been collected. For instance, if the changes from Local Active to Local Inactive to Shutdown are detected, then two **SolBrokerRedundancyActivityStatusChanged** warning alerts will be executed in this broker and will have two warnings from one broker and one from the other broker if the intermediate state on the second broker was not gathered due to polling interval being longer than the time the broker changes its redundancy state. If you only want one warning alert per broker per failover operation, the recommended action is to increase the duration of the alert. This value will vary depending on data collection latency and is system dependent. On the other hand, if you need to keep track of all intermediate states of the failover operation, then you should decrease the polling interval for the show redundancy detail poller. This is not recommended as might overflow the data collector with requests that cannot be successfully completed or preventing sending other monitoring data regarding other aspects of the broker due to the existence of requests too-often repeated.

Due to **SolBrokerRedundancyActivityStatusChanged** warning alert being a transient alert which will be automatically cleared when the redundancy status is stabilized, enabling both alerts is recommended as **SolBrokerRedundancyDown** can stay uncleared if manual intervention for fixing redundancy misconfiguration or non-functioning is required.

By default, these alerts are disabled.

SolClientInboundByteRateHigh The number of inbound bytes per second for the client has reached its maximum. Index Type: PerClient	8000000	10000000	30	FALSE
SolClientInboundMsgRateHigh The number of inbound messages per second for the client as a whole has reached its maximum. Index Type: PerClient	40000	50000	30	FALSE
SolClientOutboundByteRateHigh The number of outbound bytes per second for the client has reached its maximum. Index Type: PerClient	8000000	10000000	30	FALSE

SolClientOutboundMsgRateHigh The number of outbound messages per second for the client as a whole has reached its maximum. Index Type: PerClient	40000	50000	30	FALSE
SolClientSlowSubscriber One or more clients are consuming messages too slowly; endpoints may drop messages! Index Type: PerClient	1	NaN	30	FALSE
SolCspfNeighborDown State is not "OK" for one or more CSPF neighbors. Index Type: PerNeighbor	1	NaN	30	FALSE
SolEndpointNoBridgeClient This is an Event Alert. Event Alerts do not have duration or threshold settings. A single alarm alert when there are no binds for the Solace Endpoint exist (bind-count is zero). Index Type: PerEndpoint	NaN	NaN	NaN	FALSE
SolEndpointNoBridgeTopic This is an Event Alert. Event Alerts do not have duration or threshold settings. A single alarm alert when there are no topics subscribed to the Queue (topic-subscription-count is zero). Index Type: PerEndpoint	NaN	NaN	NaN	FALSE
SolEndpointPendingMsgsHigh The number of pending messages on a queue has reached its maximum. Index Type: PerEndpoint	8000	10000	30	FALSE
SolEndpointSpoolUsageHigh The endpoint is consuming too much message broker memory for storing spooled messages. (Threshold units are megabytes.) Index Type: PerEndpoint	40	50	30	FALSE
SolEventModuleBrokerAlert This is an Event Alert. Event Alerts do not have duration or threshold settings. If the Solace Event Module is properly configured and running and this alert is enabled, all Syslog Events that are selected as alerts from the Message Brokers that were enabled for being monitored with Syslog will trigger this type of alert from the SYSTEM scope. Alerts of this type refer to Syslog events that can be clearable and non-clearable of SYSTEM scope. Therefore this alert can be clearable and non-clearable, depending on the event that triggered its execution.				FALSE
SolEventModuleClientAlert This is an Event Alert. Event Alerts do not have duration or threshold settings. If the Solace Event Module is properly configured and running and this alert is enabled, all Syslog Events that are selected as alerts from the Message Brokers that were enabled for being monitored with Syslog will trigger this type of alert from the CLIENT scope. Alerts of this type refer to Syslog events that can be clearable and non-clearable of CLIENT scope. Therefore this alert can be clearable and non-clearable, depending on the event that triggered its execution.				FALSE

SolEventModuleVpnAlert This is an Event Alert. Event Alerts do not have duration or threshold settings. If the Solace Event Module is properly configured and running and this alert is enabled, all Syslog Events that are selected as alerts from the Message Brokers that were enabled for being monitored with Syslog will trigger this type of alert from the VPN scope. Alerts of this type refer to Syslog events that can be clearable and non-clearable of VPN scope. Therefore this alert can be clearable and non-clearable, depending on the event that triggered its execution.				FALSE
SolGuaranteedMsgingHbaLinkDown For Guaranteed Messaging only, the Operational State for each HBA Fibre-Channel should be Online (e.g., not Linkdown). Index Type: PerHbaLink	NaN	0	30	FALSE
SolGuaranteedMsgingMatePortDown For Guaranteed Messaging only, the Mate Link Ports for ADB should have status OK. Index Type: PerADB	NaN	0	30	FALSE
SolGuaranteedMsgingNoMsgSpoolAdActive This alert applies to a pair of brokers that are configured for redundancy as an HA pair. A single alert executes when neither broker in the HA pair has a message spool operational status of AD-Active . Index Type: PerMsgRouter	NaN	0	30	FALSE
SolMsgBrokerExpired This is an Event Alert. Event Alerts do not have duration or threshold settings. The collection of monitoring data has stopped abruptly. Use this alert in conjunction with the SolMsgBrokerNotConnected alert, or instead of it, if you don't need to be notified about a lack of connection when the Monitor starts up.	NaN	NaN	NaN	FALSE
SolMsgRouterActiveDiskUtilHigh The utilization of the active disk partition for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterByteEgressUtilHigh The egress rate (bytes/sec) utilization (current egress rate divided by max allowed) for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterByteIngressUtilHigh The ingress rate (bytes/sec) utilization (current ingress rate divided by max allowed) for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterConnectionUtilHigh The connection utilization for the message broker (current number of connections divided by max allowed) is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterCpuTemperatureHigh CPU temperature margin is above threshold. Index Type: PerApplianceSensor	-30	-15	30	FALSE

SolMsgRouterCspfNeighborDown Link-detect = no for CSPF neighbor. Index Type: PerAppliance	1	NaN	30	FALSE
SolMsgRouterDelvrdUnAckMsgUtilHigh The delivered unacked messages as a percentage of all messages delivered for the application is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterFanSensorCheckFailed The speed measured for one or more fans is below threshold. Index Type: PerApplianceSensor	5000	2657	30	FALSE
SolMsgRouterInboundByteRateHigh The number of inbound bytes per second for the message broker has reached its max threshold. Index Type: PerAppliance	400000	500000	30	FALSE
SolMsgRouterInboundMsgRateHigh The number of inbound messages per second for the message broker has reached its max threshold. Index Type: PerAppliance	400000	500000	30	FALSE
SolMsgRouterIngressFlowUtilHigh The ingress flow utilization (current flows divided by max allowed) for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterInterfaceDown Link-detect = no for one or more enabled network interfaces. Index Type: PerSolInterface	NaN	NaN	30	FALSE
SolMsgRouterMsgCountUtilHigh The message count utilization for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterMsgEgressUtilHigh The message egress rate utilization (current message egress rate divided by max allowed) for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterMsgIngressUtilHigh The message ingress rate utilization (current message ingress rate divided by max allowed) for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterNABUsageHigh Network Acceleration Blade memory usage is excessive. Index Type: PerNAB	60	80	30	FALSE
SolMsgRouterNotConnected The message broker is not ready for collecting performance monitoring data. Index Type: PerAppliance	NaN	NaN	30	FALSE

SolMsgRouterOutboundByteRateHigh The number of outbound bytes per second for the message broker has reached its max threshold. Index Type: PerAppliance	400000	500000	30	FALSE
SolMsgRouterOutboundMsgRateHigh The number of outbound messages per second for the message broker has reached its max threshold. Index Type: PerAppliance	400000	500000	30	FALSE
SolMsgRouterPendingMsgsHigh The total number of pending messages for this message broker has reached its maximum. Index Type: PerAppliance	400000	500000	30	FALSE
SolMsgRouterPowerSupplyFailed A power supply has failed. Index Type: PerAppliance	0	NaN	30	FALSE
SolMsgRouterSpoolUtilization The percentage of spool spaces used for storing spooled messages is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterStandbyDiskUtilHigh The utilization of the standby disk partition for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterSubscriptionUtilHigh The subscription utilization (current number of subscriptions divided by max allowed) for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterSwapUsedHigh The amount of swap space used by the message broker operating system is excessive. Index Type: PerAppliance	70	85	30	FALSE
SolMsgRouterSyslogAlert This alert executes when a Solace Syslog Warning or Critical message is received. To get Syslog event alerts (in RTView Enterprise or the standalone Monitor), go to the Alert Administration display and enable the SolMsgRouterSyslog alert.	-	-	-	-
SolMsgRouterTemperatureSensorCheckFailed A chassis temperature measurement is above threshold. Index Type: PerAppliance	40	45	30	FALSE
SolMsgRouterTranSessionCntUtilHigh The transacted session count utilization for the message broker is excessive. The metrics are: (transacted-sessions-used/ max-transacted-sessions)*100 Index Type: PerMsgRouter	70	85	30	FALSE
SolMsgRouterTranSessionResUtilHigh The transacted session resource utilization for the message broker is excessive. Index Type: PerAppliance	70	85	30	FALSE

SolMsgRouterVoltageSensorCheckFailed A power supply voltage is high or low. Index Type: PerApplianceSesor	NaN	NaN	30	FALSE
SolSparseMessageSpoolFile This is a Limits Alert that issues a Warning alert and is enabled by default. Important: Do not modify thresholds for this alert as are set by Solace development. A single warning alert (Severity 1) executes when the active disk partition usage is above 30% and the ratio between disk utilization and current persistent utilization is larger than 3 . This alert is defined to determine when there is a Sparse Message Spool File Condition. When disk space usage is several multiples of persistent store usage, then there is likely a large number of message spool files residing on the disk where each file contains few messages. This is referred to as a sparse message spool file condition, and requires urgent attention to mitigate and avoid the disk reaching capacity. For further information, refer to Solace documentation for diagnosing the sparse message spool file condition. By default, this alert is enabled.				TRUE
SolVpnConnectionCountHigh The number of connections to the server has reached its maximum. Index Type: PerVPN	60	80	30	FALSE
SolVpnInboundByteRateHigh The number of inbound bytes per second for the VPN has reached its maximum. Index Type: PerVPN	8000000	10000000	30	FALSE
SolVpnInboundDiscardRateHigh The number of discarded inbound messages per second for the server is excessive. Index Type: PerVPN	1	5	30	FALSE
SolVpnInboundMsgRateHigh The number of inbound messages per second for the VPN as a whole has reached its maximum. Index Type: PerVPN	40000	50000	30	FALSE
SolVpnOutboundByteRateHigh The number of outbound bytes per second for the VPN has reached its maximum. Index Type: PerVPN	8000000	10000000	30	FALSE
SolVpnOutboundDiscardRateHigh The number of discarded outbound messages per second for the server is excessive. Index Type: PerVPN	1	5	30	FALSE
SolVpnOutboundMsgRateHigh The number of outbound messages per second for the server as a whole has reached its maximum. Index Type: PerVPN	40000	50000	30	FALSE

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SolVpnPendingMsgsHigh The total number of pending messages for this destination has reached its maximum. Index Type: PerVPN	8000000	10000000	30	FALSE
SolVpnSubscriptionCountHigh The number of endpoints in this VPN has reached its maximum. Index Type: PerVPN	8000	10000	30	FALSE

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That's all there is to it!

APPENDIX D Security Configuration

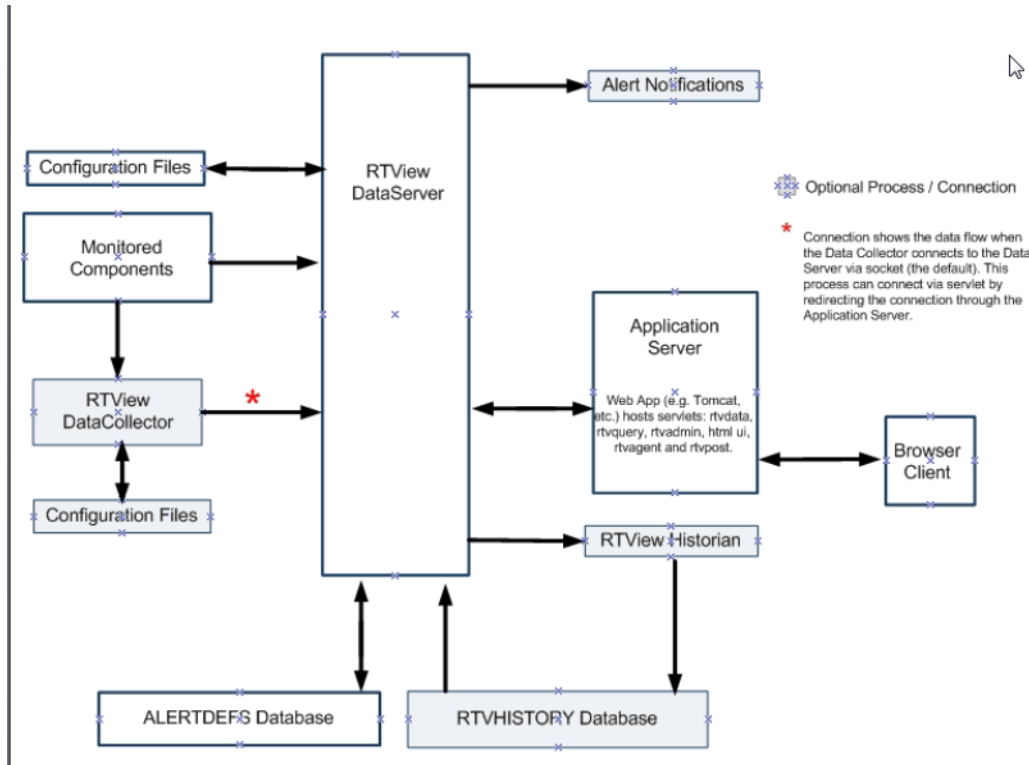
This section provides details for securing a direct connection Solace PubSub+ Monitor deployment. This section contains:

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- ["Data Collector"](#)
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Introduction

This diagram below shows how data flows through the SolacePubSubMonitor deployment. The Data Server connects to the Monitored Components to collect metric data which it stores in local caches and uses to generate alerts based on the enabled and threshold settings in the ALERTDEFS database and optionally execute user defined alert notifications. In cases where the data collection needs to be distributed, one or more Data Collectors can be deployed to connect to the Monitored Components and forward the collected data to the Data Server. The HTML UI is a browser based user interface that show metric and alert data from the Data Server and also allow the user to enable, disable and set thresholds on alerts. The Historian is an optional process that stores historical metric and alert data to the RTVHISTORY database. When the Historian is enabled, the Data Server will query historical data from the RTVHISTORY on startup to populate in-memory history and also any time the HTML UI request history data that is older than the data in the in-memory history. The Configuration Application is a browser based application for configuring the RTView processes. It connects to the Data Server to read and write Configuration Files.

The next sections provide a more detailed description of each process.



Data Server

The Data Server gathers and caches the data from the applications being monitored and also hosts the alerts for that data. Because the Data Server can exist behind firewalls, it simplifies and strengthens the secured delivery of information to clients beyond the firewall. The Data Server serves metric and alert data to the Historian via socket on port 4178 and receives data via socket from the optional Data Collector on port 4172. It also serves metrics and alert data to the HTML UI via the `rtvquery` servlet which connects via socket on port 4178. The Historian runs in the same directory as the Data Server, while the optional Data Collector(s) typically run in a different directory or a different system. By default, socket connections to the Data Server are unsecured. The Data Server supports secure socket connections (SSL) with or without certificates. It also supports client whitelist and blacklist. Secure socket and client whitelist/blacklist configuration are described here.

The HTML UI connects to the Data Server via the `rtvquery` servlet. See the HTML UI section in this document for information on how to enable authentication in the HTML UI and `rtvquery` servlets. The `rtvquery` servlet will connect to the Data Server via secure socket if the Data Server is configured for SSL sockets.

The Data Collector is an optional process that is used to distribute connections to Monitored Components Data Collectors instead of having the Data Server connect to each component to be monitored directly. This process collects data from Monitored Components and forwards it to the Data Server via socket or the `rtvagent` servlet. See the Data Collector section below for information on securing this connection.

The Configuration Application connects to the Data Server via the rtvadmin servlet to read and write properties files. The rtvadmin servlet connects to the Data Server via socket on port 4178. See the Configuration Application section below for information about servlet authentication. The rtvadmin servlet will connect via secure socket if the Data Server is configured for SSL sockets.

If the Historian is enabled, the Data Server connects to the RTVHISTORY database on startup to read initial cache history data and if the HTML UI request history data older than the in memory cache history. It also connects to the ALERTDEFS database to query and set alert thresholds. See the Database section below for more information.

The Data Server optionally executes alert notifications based on user settings. Since the notification actions are user defined, security must be determined by the user.

The Data Server opens a jmx port on 4168 to enable monitoring. By default, the jmx port is not secured but can be secured via SSL and username/password.

HTML UI

This interface is implemented in HTML and is deployed as a servlet, rtview-solmon, which is configured by default to use http authentication. Browser clients connect via http or https depending on the Application Server configuration. For secure deployments, it should be configured to use https since http authentication does not encrypt user credentials. The HTML UI sends data requests to the rtvquery servlet which connects to the Data Server via socket. By default, this socket is unsecured, but the rtvquery servlet will connect to the Data Server via secure socket if the Data Server is configured for SSL sockets.

By default, the rtvquery servlet *is* configured for authentication, but you can unsecure it:

- cd to rtvapm and run rtvapm_init
- cd to projects\rtview-server
- edit update_wars.bat (or .sh) to remove the line that sets SECURE=-secure
- run update_wars.bat (or.sh)

Data Collector

This process is optional and is used to distribute connections to Monitored Components Data Collectors instead of having the Data Server connect to each component to be monitored directly. This process collects data from Monitored Components and forwards it to the Data Server via socket on port 4172 or the rtvagent servlet. In the RTView Configuration Application Data Server?COLLECTOR tab, the Target definition determines whether data is sent to a socket or a servlet. If the URL for the target is host:port, it will be sent via socket which is not secured by default. This socket can be secured via SSL by specifying the following property on the CUSTOM PROPERTIES tab in the Configuration Application of each receiver Data Server:

Property Name: sl.rtvview.rtvagent.ssl

Property Value: true

Property Filtler: collector

If the url is the receiver's rtvagent servlet it will send data to that rtvagent servlet which will connect via socket to the Data Server on port 4172 which can be secured via SSL as described above. While the rtvagent servlet cannot be configured for authentication, Tomcat access filters can be used to restrict access and it can be deployed on https. While the Data Collector typically does not have data clients, it accepts data requests via socket on port 4176 which can be secured as described in the Data Server Section. The Data Collector also opens jmx on port 4166 for monitoring. By default, the jmx port is not secured, but can be secured via SSL and username/password.

Configuration Application

The Configuration Application connects to the Data Server via the rtvadmin servlet which is configured with http authentication. It should be run on https since user credentials are not encrypted. Passwords saved by the configuration application are scrambled except in the case where they are added in the CUSTOM PROPERTIES section. The rtvadmin servlet connects to the Data Server via socket. By default, this socket is unsecured, but the rtvadmin servlet will connect to the Data Server via secure socket if the Data Server is configured for SSL sockets.

Configuration Files

Configuration (.properties) files are stored on the file system and read by all RTView processes to control configuration. Additionally, the Configuration Application writes these files, scrambling all connection and database passwords. Passwords entered in the CUSTOM PROPERTIES tab are not scrambled.

Historian

The Historian connects to the Data Server via socket and saves cache history to a database via jdbc. This process is optional and the user can configure which data will be saved. By default, the socket connection is unsecured, but the Historian will connect via secure socket if the Data Server is configured for SSL sockets. See the Database section below for information about the connection between the Historian and the database. This process opens jmx port 4167 for monitoring. By default, the jmx port is not secured, but can be secured via SSL and username/password.

Database

The ALERTDEFS database stores alert threshold information and optionally alert persistence information. The Data Server connects to the ALERTDEFS database to query thresholds and also to set thresholds when the user interacts with the Alert Administration page in the user interface. The RTVHISTORY database stores cache data (if the Historian is enabled). The Historian connects to the RTVHISTORY database to insert cache history data and to perform data compaction. The Data Server connects to the RTVHISTORY database on startup to load initial history into the caches and also when the user interface asks for history data older than what is contained in the in-memory history caches.

By default, the Data Server and Historian will connect to the HSQLDB database that is included with RTView using an unsecured jdbc connection. See the Hsqldb documentation for information on configuring it for secure jdbc connections. Alternately, you can use your own database and secure the jdbc connection according to the documentation for that database.

Application Servers

The SolacePubSubMonitor comes with a Tomcat installation pre-configured with all of the necessary servlets. You can use this Tomcat or another Application Server. To deploy your servlets to your application server, go into the projects/rtview-server directory and run update_wars.bat or update_wars.sh. Copy all of the generated war files to the webapps directory in your application server.

Tomcat and most other Application Servers can be configured for https. This will require you to provide a certificate for your domain. Follow the application server documentation for enable https. Additionally, Tomcat access filters can be configured to restrict access according to the remote client host or address. Tomcat also has a feature named LockOut Realm to protect against brute force login attacks. After 5 successive login attempts for a given username with invalid password, then all logins for that username are rejected for the next 5 minutes. The LockOut Realm parameters are configurable. See the Tomcat documentation for more information.

If you are not using the Tomcat that came with SolacePubSubMonitor, you will need to add the following roles to your Application Server for use with the Configuration Application and HTML UI authentication. For Tomcat, users and roles are defined in conf\tomcat-users.xml:

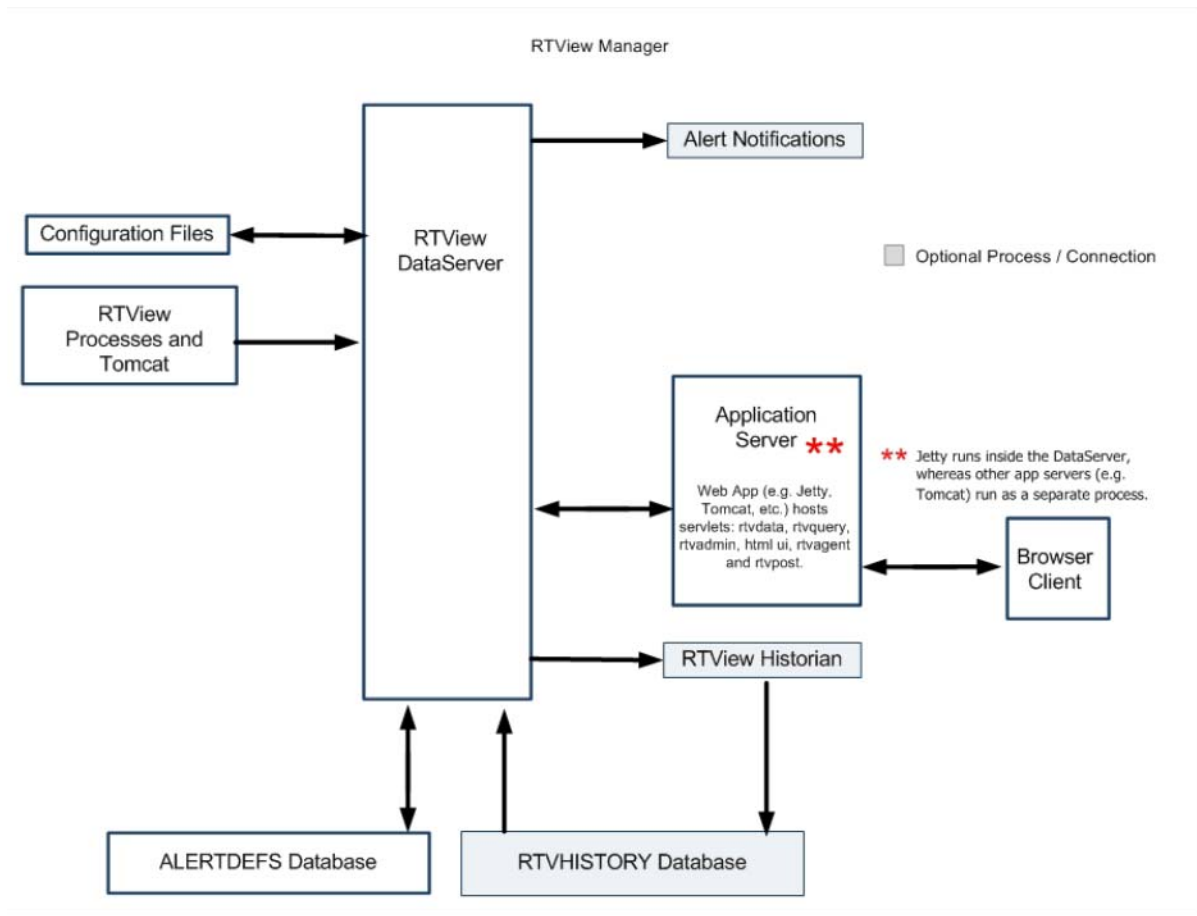
rtvadmin

rtvuser

rtvalertmgr

RTView Manager

SolacePubSubMonitor includes the RTView Manager which runs as a separate process to monitor the RTView processes and Tomcat. The RTView Manager monitor is accessible in Tomcat at <http://host:port/rtview-manager> and also in Jetty that is running in the RTView Manager data server at <http://localhost:3070/rtview-manager>. The connections to the RTView processes and tomcat are pre-configured. To modify other properties of the RTView Manager, go to the configuration application in Tomcat at <http://host:port/rtview-manager-rtvadmin> or in Jetty at <http://localhost:3070/rtview-manager-rtvadmin>.



The Tomcat application server included with this installation contains all of the RTView Manager servlets. You can use this Tomcat or another Application Server. To deploy your servlets to your application server, go into the `projects/rtview-manager` directory and run `update_wars.bat` or `update_wars.sh`. Copy all of the generated war files to the `webapps` directory in your application server.

The RTView Manager contains a Data Server, Historian, HTML UI, Configuration Application and Configuration files which can be secured as described in those sections above with the following exceptions:

All configuration for RTView Manager is done in the `projects/rtview-manager` directory instead of the `rtview-server` directory.

The `rtvquery` servlet for the RTView Manager is not secured by default. To secure it, do the following:

- `cd` to `rtvapm` and run `rtvapm_init`
- `cd` to `projects\rtview-server`
- run `update_wars.bat` (or `sh`) `-secure`
- deploy the generated war files to your Application Server

Note: Jetty does not support secured `rtvquery` servlets. You will need to use Tomcat or another Application Server.

Monitored Components

Monitored Components are the processes that the Data Server and Data Collector connect to in order to request metric data.

The Solace Data Server connects to cloud brokers via `http` and non-cloud brokers via Solace API. See the Solace documentation for information on about securing your brokers. To connect to a secured cloud broker, enter the `https` URL in the RTView Configuration Application Solace Connection dialog. To connect to a secured non-cloud broker, turn on the SSL Connection toggle in the RTView Configuration Application Solace Connection dialog, then fill in the SSL credentials on the **SECURITY** tab of the RTView Configuration Application.

The RTView Manager Data Server connects to the Tomcat, Solace Data Server and Solace Historian via JMX. The processes that open JMX ports which can be configured to require a user name and password which the user enters in the RTView Configuration Application RTView Manager Connection dialog when defining the connection to that process. These processes can also be configured to require SSL. To connect to SSL secured JMX, fill in the SSL Credentials section of **SECURITY** tab in the RTView Configuration Application with the appropriate values for your SSL configuration.

NOTE: The Data Server, Data Collector, Historian and Display Server all open JMX ports for monitoring. By default, these jmx ports are unsecured, but they can be secured either by user name and password or by SSL. For details, see `sss`.

Security Summary

Security options per RTView process are included in the section for each component above. This section provides a summary of security options for the entire deployment organized by priority.

Secure Installation Location - High Priority. The RTView installation and Application Server should be run in a secure location to ensure displays and configuration files are secure and access-restricted.

Login and Servlet Authentication - High Priority.

HTML UI - By default, the HTML UI is configured with `http` authentication which should be deployed on `https` since `http` authentication does not encrypt user credentials. The HTML UI connects to the Data Server via the `rtvquery` servlet. The `rtvquery` servlet does not have authentication enabled by default. See the HTML UI section in this document for information on enabling authentication in the `rtvquery` servlet.

Configuration Application - By default, the Configuration Application is configured with http authentication which should use https since http authentication does not encrypt user credentials.

Application Server Security - High Priority

It is highly recommended that you configure your Application Server to use https as described in the Application Server section of this document. The RTView servlets that support http authentication do not encrypt user credentials.

It is highly recommended that you change the user credentials in your Application Server for the rtvadmin, rtvuser and rtvalertmgr roles since the default credentials are documented and publicly available.

Secure Connections between RTView Processes - Medium-to-Low Priority*

The Historian, Data Server, Data Collector, rtvquery servlet, rtvdata servlet, rtvadmin servlet and rtvagent servlet all connect to the Data Server via socket which is unsecured by default. The Data Server supports secure socket connections (SSL) with or without certificates. It also supports client whitelist and blacklist. Secure socket and client whitelist/blacklist configuration are described here.

Secure Connections to Monitored Components - Medium-to-Low Priority*

The Data Server uses component specific api's to connect to Monitored Components. Securing these connections is described here.

Secure Connections to Databases - Medium-to-Low Priority*

The Data Server and Historian both create database connections using JDBC. See the Database section in this document for information on securing jdbc connections to your database.

*If Secured Installation Location has been met, these are lower priority.

APPENDIX E Limitations

This chapter defines the limitations experienced when using iPad Safari.

iPad Safari Limitations

- In the iPad settings for Safari, **JavaScript** must be **ON** and **Block Pop-ups** must be **OFF**. As of this writing, the Thin Client has been tested only on iOS 4.3.5 in Safari.
- The iPad does not support Adobe Flash, so the Fx graph objects (obj_fxtrend, obj_fxpie, obj_fxbar) are unavailable. The Thin Client automatically replaces the Fx graph objects with the equivalent non-Fx object (obj_trendgraph02, obj_pie, obj_bargraph). Note that the replacement objects behave the same as the Fx objects in most cases but not in all. In particular, obj_trendgraph02 does not support the sliding cursor object nor the **legendPosition** property. Custom Fx objects are not supported on the iPad.
- The Thin Client implements scrollbars for table objects and graph objects. However, unlike the scrollbars used on desktop browsers, the scrollbars used on the iPad do not have arrow buttons at each end. This can make it difficult to scroll precisely (for example, row by row) on objects with a large scrolling range.
- At full size, users may find it difficult to touch the intended display object without accidentally touching nearby objects and performing an unwanted drill-down, sort, scroll, and so forth. This is particularly true of table objects that support drill-down and also scrolling, and also in panel layouts that contain the tree navigation control. In those cases, the user may want to zoom the iPad screen before interacting with the Thin Client.
- If the iPad sleeps or auto-locks while a Thin Client display is open in Safari, or if the Safari application is minimized by clicking on the iPad's home button, the display is not updated until the iPad is awakened and Safari is reopened. In some cases it may be necessary to refresh the page from Safari's navigation bar.

Because the iPad uses a touch interface there are differences in the Thin Client appearance and behavior in iOS Safari as compared to the conventional desktop browsers that use a cursor (mouse) interface, such as Firefox and Internet Explorer. These are described below.

- Popup browser windows: An RTView object's drill-down target can be configured to open a display in a new window. In a desktop browser, when the RTView object is clicked the drill-down display is opened in a popup browser window. But in iOS Safari 4.3.5, only one page is visible at a time, so when the RTView object is touched a new page containing the drill-down display opens and fills the screen. The Safari navigation bar can be used to toggle between the currently open pages or close them.
- Mouseover text: When mouseover text and drill-down are both enabled on an RTView object (for example, a bar graph), in iOS Safari the first touch on an element in the object (for example, a bar) displays the mouseover text for that element and the second touch on the same element performs the drill-down.

- **Resize Mode and Layout:** By default, the Display Server runs with **resizeMode** set to **crop**. In **crop** mode, if a display is larger than the panel that contains it only a portion of the display is visible. In a desktop browser, scrollbars become available to allow the user to scroll to view the entire display. In iOS Safari, scrollbars do not appear but the display can be scrolled by dragging two fingers inside the display. (Dragging one finger scrolls the entire page, not the display).

If the Display Server is run with **resizeMode** set to **scale** or **layout**, the display is resized to fit into the panel that contains it. If a desktop browser is resized after a display is opened, the display is resized accordingly. On the iPad, the Safari browser can only be resized by reorienting the iPad itself, between portrait mode and landscape mode.

The panel layout feature is supported in the Thin Client. However, unlike a desktop browser which resizes to match the layout size, the size of Safari is fixed. So if the Display Server is run with **resizeMode** set to **crop** or **scale** mode, there may be unused space at the edges of the display(s) or, in **crop** mode, the panels and displays may be cropped.

This means that **layout** mode should be used for best results on the iPad. For layout mode to be most effective, displays should use the **anchor** and **dock** object properties. Please see RTView documentation for more information.

- **Scrolling:** The Thin Client implements scrollbars for table objects and graph objects. The scrollbars are activated by dragging with one finger.

If an RTView display is viewed in **crop** mode and is too large to be displayed entirely in Safari, scrollbars do not appear (as they would in a desktop browser) but the display can be scrolled by dragging with two fingers inside the display.

Scrollbars do not ever appear in a text area control. If the text area contains more text than is visible, use the two finger drag in the text area to scroll the text.

Regardless of the size of a listbox control, it can only display a single item (typically, the selected item). When the listbox is touched, the list of items appear in a popup list. In other words, on iOS Safari the listbox control and the combobox control behave identically.

- **Context menu:** The Thin Client context menu is opened by a right mouse button click in a desktop browser. It is opened in iOS Safari by touching any location on a display and holding that touch for 2 seconds. The menu appears in the top left corner of the display, regardless of where the display is touched. The items **Export Table to Excel**, **Drill Down**, and **Command** are not included on the context menu in Safari. All other items are available. The **Export Table to HTML** item is enabled if a table object is touched (unless the table object's **drillDownTarget** is configured to open another display). After an **Export to PDF/HTML** is performed, the exported content opens on another page in Safari. From there, the content can either be opened by another application (for example, the iBooks application opens PDF) and emailed, or it can be copied and pasted into an email.