



White Paper

RTView[®] for TIBCO

Enhanced Visibility Into Your TIBCO[®] Infrastructure

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Abstract:

RTView for TIBCO is a software application developed by SL Corporation[®] that enables users to leverage their TIBCO investment by dramatically enhancing visibility into their infrastructure. RTView provides a flexible, configurable, out-of-the-box solution to help enterprises optimize their monitoring of TIBCO Enterprise Message Service[™], TIBCO Hawk[®] and TIBCO Rendezvous[®] applications by visually presenting real-time and archived data from the TIBCO Information Bus (TIB) and other data sources, all without programming.

The purpose of this whitepaper is to review a number of ways TIBCO users are able to increase productivity by improving the visibility of their TIBCO infrastructure. Several use cases are presented along with an overview of the solution architecture.

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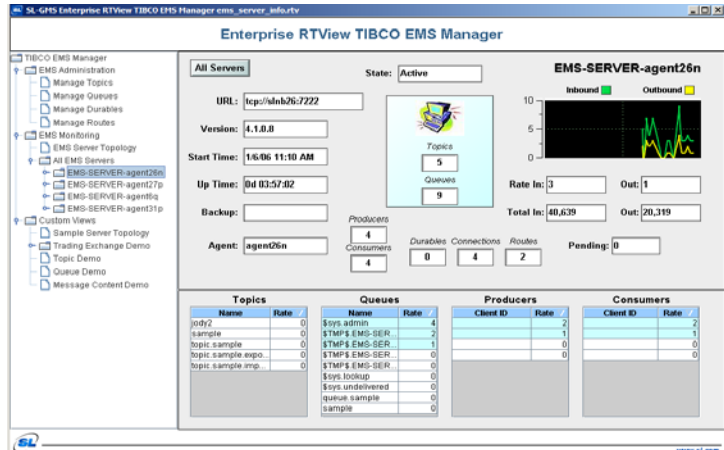
Introduction

RTView for TIBCO is a software application developed by SL Corporation that enables users to leverage their TIBCO investment by dramatically enhancing visibility into their infrastructure. RTView provides a flexible, configurable, out-of-the-box solution to help enterprises optimize their monitoring of TIBCO Enterprise Message Service™, TIBCO Hawk® and TIBCO Rendezvous® applications by visually presenting real-time and archived data from the TIBCO Information Bus (TIB) and other data sources, all without programming.

RTView for TIBCO is a platform for real-time monitoring and visualization applications that complements the TIBCO product line by enabling users to develop role-based dashboard displays of TIBCO infrastructure and operations data. RTView for TIBCO can be deployed in a variety of ways – including a stand-alone application or web browser deployment – using either rich-client applets or thin-client AJAX options. It can also be used to present TIBCO-focused displays in any JSR-168-compliant enterprise portal, including TIBCO PortalBuilder®.

SL has been a TIBCO Alliance Partner (TAP) since 2002 when the two companies jointly announced the new SL product: RTView for TIBCO. Since then, SL has worked closely with TIBCO and numerous TIBCO customers to perfect the solution.

The purpose of this whitepaper is to review the many ways TIBCO users are able to increase productivity by improving the visibility of their TIBCO infrastructure. Several use cases are presented along with an overview of the solution architecture.

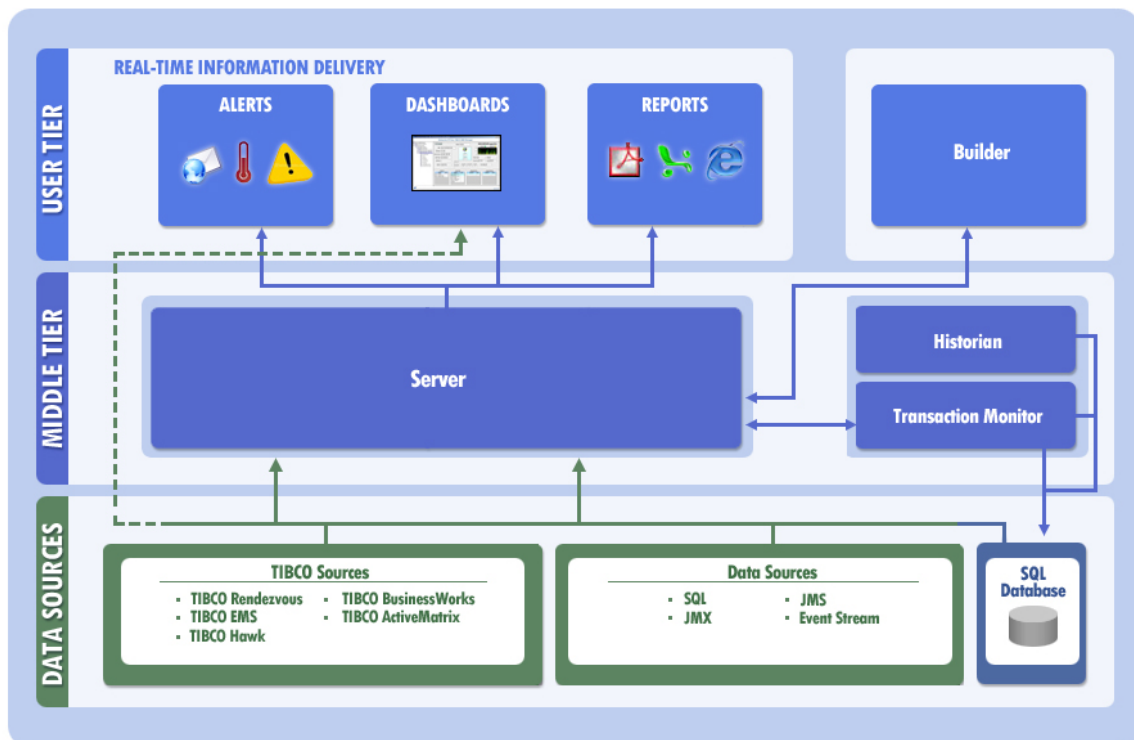


RTView provides out-of-box functionality for monitoring and administering TIBCO EMS.

Product Overview

RTView provides users with the ability to access real-time and archived data from multiple data sources and EAI messaging infrastructures. RTView can read data directly from the data source or via the RTView Server. Flexible deployment options allow users to embed displays in Java applications or enterprise portals, as well as distribute displays throughout the enterprise as compact Java applets or by using RTView's thin-client AJAX-based technology. Additionally, RTView supports reporting with comprehensive PDF, Excel, and HTML format options.

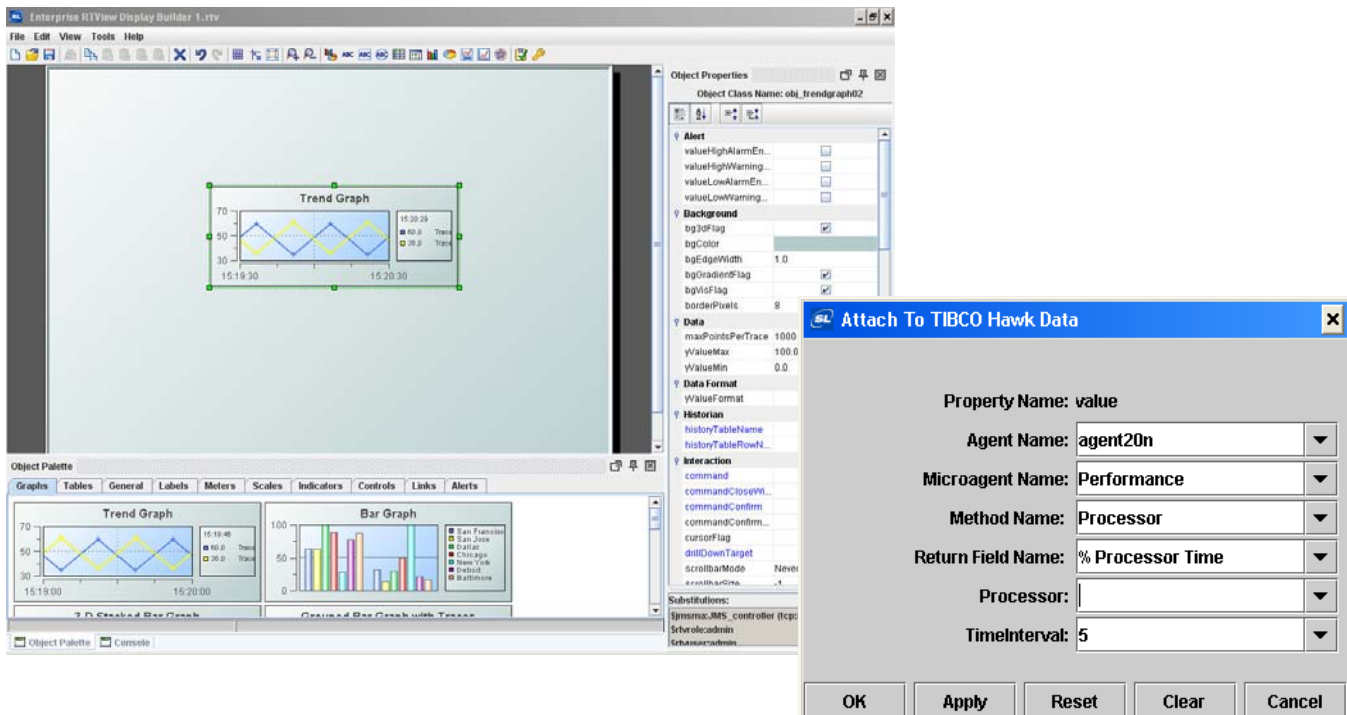
RTView for TIBCO includes support for several data sources: XML, TIBCO Rendezvous, TIBCO Hawk and TIBCO EMS Administration. Optional data sources include SQL, Excel, JMS, JMX, OLAP, and CEP/ESP as well as custom data sources. Users can create dashboard displays connected to live and archived data from all of these data sources.



Components

RTView for TIBCO includes the following components:

The **RTView Builder** is used to modify existing displays or to build custom displays with objects that connect easily to live and archived data. The Builder features point-and-click palettes of graphic objects, including meters, labels, tables, graphs and scales. Within the Builder it is possible to use RTView's real-time analytics capabilities to perform functions on data (e.g., aggregations, sums, averages). The Builder is also used to configure objects to drill down to more detailed displays. Objects can also be configured to issue system and URL commands. RTView for TIBCO enables users to issue TIBCO Hawk commands and to send TIBCO Rendezvous messages. To minimize the number of displays that need to be configured, a single display can be reused – without any edits – to show data from a number of different sources depending on values passed in when the display is viewed.



RTView's Builder streamlines the development of custom displays, guiding users through the steps required to select graphical objects, place them on the screen, attach data sources, and define drilldown paths.

RTView Server Options

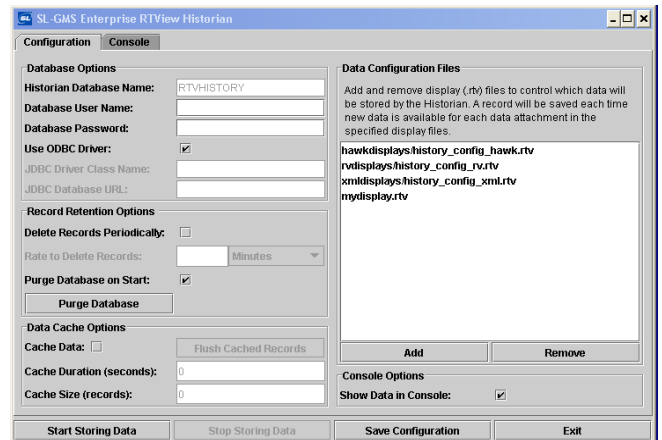
- **Data Server – Rich-Client Web or Desktop Application Deployment.**
Users can federate data from any data source through the Data Server. The Data Server outputs XML data that can be read by any number of RTView clients. This centralized access to data eliminates applet security issues and the need for running special daemons, and can provide performance enhancements by caching data from a particular data source and distributing it to multiple clients.
- **Display Server – Thin-Client Web Deployment.** The RTView Display Server combines the data caching and distribution features of the Data Server with AJAX technology to provide a true Web 2.0 thin-client web deployment option. This option requires only that the client have a web browser.

RTView Display Viewer Deployment Options

- **Display Viewer Application – Desktop Application Deployment.** Displays can be accessed using the Display Viewer Application – a high-performance, stand-alone Java application that can be installed on each client or activated via Java Web Start. The Display Viewer Application can be configured to talk directly to data sources but is most often used in conjunction with the Data Server
- **Display Viewer Applet – Rich-Client Web Deployment.** Displays can be deployed using the Display Viewer Applet. This option allows for high-performance interactive displays viewed in browsers and portals. This deployment is most often used in conjunction with the Data Server. Clients must be configured with a browser and a Java plug-in.
- **Thin-Client AJAX Viewer Deployment.** Displays can be viewed in a true thin-client mode which uses HTML and JavaScript in a fully interactive environment that requires no Java on the client.
- **Enterprise Portlet.** Any RTView display can be deployed within a JSR-168-compliant portal to provide dynamically updating portlets. Portlets support interactive behavior such as drilling down in one portlet to a view in another portlet on the same portal page.

EMS Manager Application. The RTView for TIBCO EMS Manager allows you to monitor and administer your TIBCO EMS Servers. You can create and delete topics, queues and routes and monitor your TIBCO EMS Servers. More detailed information about the EMS Manager application can be found starting on Page 9 of this whitepaper.

RTView Data Historian. The Historian is a Java application that enables you to archive data to any SQL database using JDBC or ODBC, thus allowing you to compare live data to historical data for trend analysis or comparison to other metrics. The Historian uses files created with the Display Builder to determine which data to archive, making it possible to configure the Historian with the same displays you build to view data. Data saved out of the Historian to archival databases can be attached to objects in the Display Builder and compared to live data for trend analysis, baseline plotting, or comparison to other metrics. To



The RTView Historian can be used to persist data for trend analysis.

configure the Historian, users simply enter the display file name in the configuration window. All data variables referenced in that display will be archived to any designated SQL database.

RTView Transaction Message Monitor. With the Transaction Message Monitor, users are able to monitor critical business performance indicators by tracking and summarizing information on a sequence of related TIBCO EMS or TIBCO Rendezvous messages, known as transactions. The Transaction Monitor can subscribe to any number of user-defined transactions, perform calculations on commonly used metrics (rate, latency, count, size) and output the resulting data to an XML file. The XML file output by the Transaction Monitor can be attached to objects in RTView displays and archived to a database through the Historian. The Transaction Display Generator can be used to automatically create customized dashboards that describe your transaction data.

Customization

RTView for TIBCO can be customized to meet your specific needs. SL Corporation's SL-GMS™ J/Developer application can be used to create new graphic objects and palettes. RTView for TIBCO supports the creation of custom pop-up menu items, commands (actions taken upon display interaction), functions (data aggregation and calculation), and security handling. In addition to packaged data sources, the application can be customized to read data directly from any source.

RTView includes six custom handlers which enable customization of the application. These include:

- custom data sources
- custom security manager
- custom controls (includes handlers to control behavior)
- custom functions
- custom commands
- custom embedded objects (E.G. J/Free Chart components)

Security

RTView offers role-based security that allows users to limit access to displays and data based on the user's role. To use this security feature, you must define the users that can access RTView and assign each one a password and one or more associated roles. The role definitions allow you to specify which displays can be accessed by which users. Because displays can be used as templates and parameterized by substitution data values, user and role permissions support defining not only the display being permitted, but also what data it is displaying. The username and password from the RTView login can also be passed into relational or OLAP database connections. RTView security is also customizable, allowing you to establish other security criteria based on your organization's standards and requirements.

Define and Execute Commands

It is possible to issue a system command for most graphics within RTView displays. This allows users to define a command that will start a process or application when an object is clicked, or automatically generate alert notifications when the value of an object reaches a specified threshold. Users can select from a number of system command

options. When used with object threshold capability, alerts can be automatically generated. RTView for TIBCO users are also able to generate Rendezvous messages or execute Hawk methods.

Typical RTView for TIBCO Applications

There are six general use cases for RTView for TIBCO:

- TIBCO Enterprise Message Service Management and Administration
- Extending TIBCO Hawk Displays
- Dashboards That Subscribe Directly to TIBCO Rendezvous and JMS Messages
- TIBCO Rendezvous Monitoring
- TIBCO Transaction Message Monitoring
- Dynamic Portal Content for TIBCO Active Portal

TIBCO Enterprise Message Service Management

RTView for TIBCO's EMS Manager application allows you to both *administer* your TIBCO EMS Servers, and *monitor* your EMS infrastructure. You can administer topics, queues, durables and routes, and monitor EMS Server statistics, topics, queues, durables, producers, consumers, and connections. The navigation tree in the TIBCO EMS Manager contains several built-in displays including displays that are generated for each EMS Server being monitored. The application also enables you to create custom displays.

Using Pre-Built Displays

The EMS Manager application comes with pre-built displays to enable you to perform most high-level EMS administration and monitoring tasks immediately after configuring the data sources. The following displays are supplied with the TIBCO EMS Manager application and are accessible from the navigation tree:

EMS Administration

Manage Topics	Create new topics for selected servers, and delete or purge existing topics.
Manage Queues	Create new queues for selected servers, and purge existing queues.
Manage Durables	Create new durables for selected servers, and delete or purge existing durables.
Manage Routes	Add and delete routes between servers.
Manage Bridges	Create and delete bridges between destinations.

EMS Monitoring

EMS Topology	Monitor EMS topology and metrics via an automatically generated topology diagram of EMS servers and their relationships.
All EMS Servers	Contains an overview of all your EMS Servers. You see an EMS Server entry for each server you are monitoring.

For each server, the following displays are generated:

Host Details	Server Host details, including Agent, IP, Platform, Time Range, and Top Processes. NOTE: This display will contain data only if you are running TIBCO Hawk.
Topics	Topic details, including Total Inbound, Outbound, Pending, Rate In, and Out. Also supports browsing message content.
Queues	Queue details, including Total Inbound, Outbound, Pending, Rate In, and Out. Also supports browsing queue content.
Producers	Details about Producers, including Total Messages, Total KB, Message Rate and KB.
Consumers	Details about Consumers, including Total Messages, Total KB, Message Rate and KB.
Durables	Details about Durables, including Total Messages, Total KB, Pending Messages and Pending Messages KB.
Connections	Details about Connections, Routes, Durables, Users and Listen Ports.
Monitor Messages	Monitor EMS Server messages that indicate changes in the following: Producers, Consumers, Topics, Queues, Connections, and Routes using the TIBCO message monitoring topics. The TIBCO EMS Server publishes message monitor topics when events such as connect, disconnect, produce, consume, etc. occur, but only if a listener has subscribed to them.

Quick access to EMS Monitoring and Administration displays – both custom and pre-built – is provided by the Navigation Tree, displayed in the left panel. Users can drill down to additional detail, such as a specific topic or queue.

While TIBCO administrators are able to monitor their EMS infrastructure using the TIBCO EMS Admin, there are a number of value-adds provided by RTView. The following table explains the additional monitoring and administration capabilities provided by RTView.

Enterprise RTView TIBCO EMS Manager

Navigation Tree:

- TIBCO EMS Manager
 - EMS Administration
 - EMS Monitoring
 - EMS Server Grid
 - EMS Server Topology
 - EMS Server List
 - EMS-SERVER
 - EMS-SERVER-SLXP2**
 - Host Details
 - Topics
 - Queues
 - Producers
 - Consumers
 - Durables
 - Connections, Etc
 - EMS-SERVER-agenbp1
 - EMS-SERVER-SLXP3
 - EMS-SERVER-SLXP3
 - EMS-SERVER-SLXP2

Server Details: EMS-SERVER-SLXP2

State: Active

URL: tcp://sl6000:7222

Start Time: 4/25/07 10:11 AM | Up Time: 2d 01:57:01

Version: 4.2.0.12 | Agent: SLXP2

Backup: [] | Rate In: 16 | Out: 8

FT URL: [] | Total In: 4,596,881 | Out: 1,926,307

Route Count: 4 | Durable Count: 1 | Connection Count: 18 | Pending: 0

Traffic Graph: Inbound (green) and Outbound (yellow) rates over time.

Topics (Count = 7)		Queues (Count = 28)		Producers (Count = 17)		Consumers (Count = 17)	
Name	Rate	Name	Rate	Client ID	Rate	Client ID	Rate
erwrrer	0	\$sys.admin	12		4		4
jody1	0	\$TMP\$.EMS-S...	4		1		1
sample	0	\$TMP\$.EMS-S...	1		1		1
sl.topic.1	0	\$TMP\$.EMS-S...	1		1		1
topic.sample	0	\$TMP\$.EMS-S...	1		1		1
topic.sample.exp...	0	\$TMP\$.EMS-S...	1		0		0
topic.sample.imp...	0	\$TMP\$.EMS-S...	0		0		0
		\$TMP\$.EMS-S...	0		0		0
		\$TMP\$.EMS-S...	0		0		0

Logos: SL (left), www.sl.com (right)

RTView Value-Add for TIBCO EMS Monitoring

Functionality	Native TIBCO Capability	RTView Capability
Administer EMS Servers	✓	✓
Add/remove topics/queues/durables/routes	✓	✓
Monitor EMS Servers, obtaining metrics such as rates, counts, latency	✓	✓
Auto-discover EMS Servers on a network (with Hawk)	✓	✓
Monitor server statistics (host metrics via Hawk, EMS metrics, message log)	✓	✓
Define alarm conditions and automated responses	✓	✓
Graphic insight into the EMS Server configuration, use, topology, etc.		✓
Auto-discover EMS Server topology (routes between servers)		✓
Customization - add custom monitoring displays of server metrics		✓
Persist message statistics and content to historical database		✓
Deploy custom real-time displays driven by EMS Message content		✓
Browse topics and queues		✓
Perform trend analysis		✓
Role-based, security-enabled monitoring		✓
Deploy in browsers/portals		✓

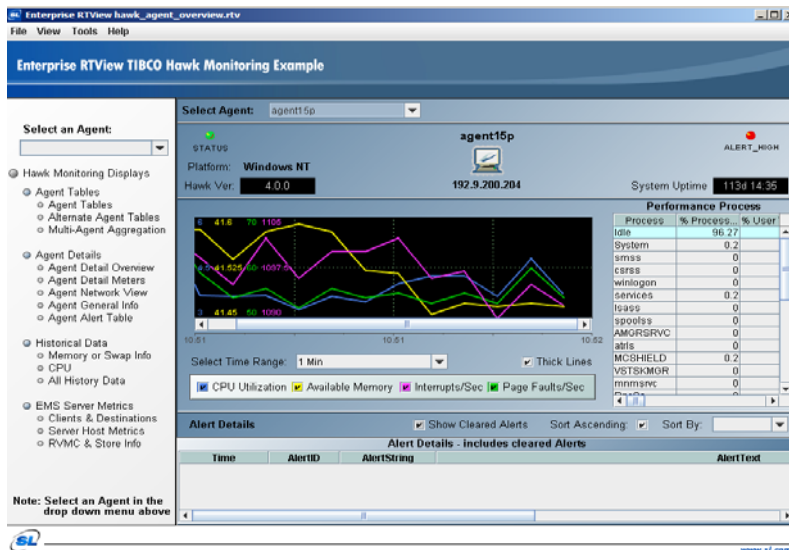
Building Custom Displays

RTView's Display Builder can be used to build custom displays for the TIBCO EMS Manager. The Display Builder provides a comprehensive palette of graphical objects that can be dragged and dropped onto the Builder. There are several metrics available to the TIBCO EMS Manager. You may attach them using the TIBCO EMS Administration data source.

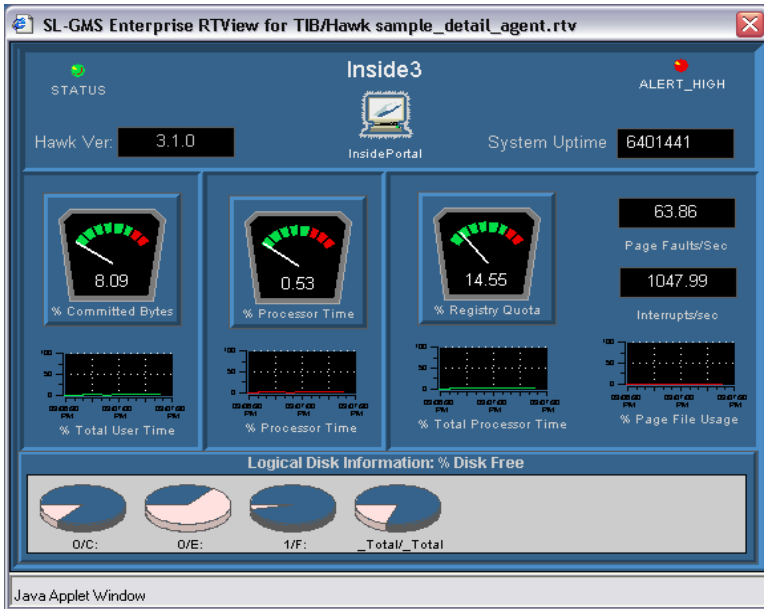
Extending TIBCO Hawk Displays

TIBCO Hawk users are able to extend Hawk by using RTView for TIBCO to build customized graphical views of Hawk Agents and microagent data, with the ability to configure drilldown paths for improved visibility and responsiveness. Selected users can be given a browser-based view without having to assign system privileges, thus maintaining a higher level of security.

RTView uses data from method invocations and method subscriptions on microagents to update graphic objects. Displays can be used to execute Hawk commands or send Rendezvous messages. RTView for TIBCO can also be used to develop custom displays for the monitoring of AMI-instrumented applications.



RTView for TIBCO provides out-of-the-box functionality as well as the ability to quickly configure custom views of Hawk agents and define conditions for visual and/or audio alerts. Quick access to other data can be provided through the customized navigation buttons at the bottom of the display.



Users can drill down to detailed agent information. Data can be saved to RTView's Historian in order to assess trends or perform historical analysis.

The ability to build custom, real-time displays that deliver mission-critical data to your users in a format most meaningful to them is one of the primary benefits of using RTView for TIBCO as a vital means to leverage your TIBCO Hawk investment.



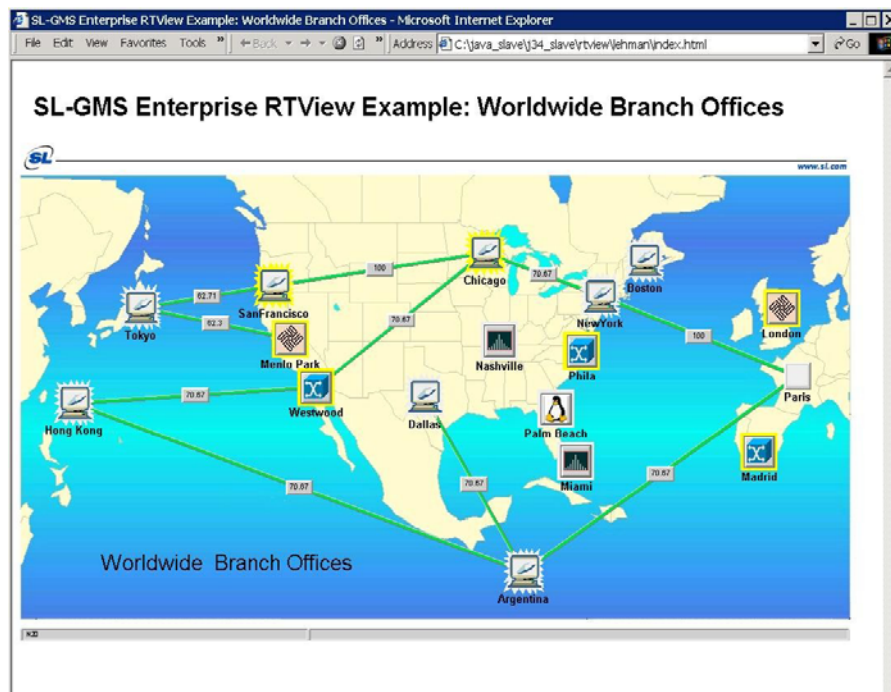
While TIBCO administrators are able to monitor their infrastructure using TIBCO Hawk, there are a number of value-adds provided by RTView. The following table will provide an explanation of the additional monitoring capabilities provided by RTView for extending Hawk.

RTView Value-Add for TIBCO Hawk Monitoring

Functionality	Native TIBCO Capability	RTView Capability
Hawk rule base	✓	✓
Console for agent and microagent status	✓	✓
Event service logs	✓	✓
Variety of alarm threshold automated actions	✓	✓
Role-based, security-enabled monitoring	✓	✓
Create specialized monitoring displays		✓
Expose AMI-instrumented information in graphical displays		✓
Aggregation of agent and microagent metrics		✓
Persist message statistics and content to historical database		✓
Define and monitor transactions (RV-based)		✓
Perform trend analysis		✓
Deploy in browsers/portals		✓

Dashboards That Subscribe Directly to TIBCO Messages

While IT managers use RTView for TIBCO as a vital tool to monitor infrastructure, the solution also can provide valuable intelligence to business users. Users can quickly build and deploy dashboards that subscribe directly to TIBCO Rendezvous or Java Message Service data and display message content. This enables business users to view high-level business metrics, with the ability to drill down to individual message detail.

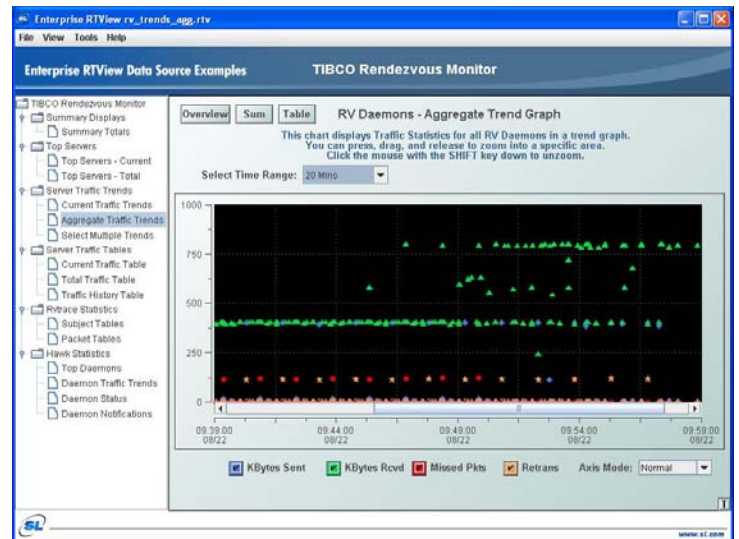


An example of a display based on subscribing to Rendezvous and JMS messages. Business users can track the volume and content of messages being transmitted across the TIBCO bus. The flexibility of RTView's Display Builder enables users to create dashboards with configurable drilldown paths to provide the right granularity of data.

TIBCO Rendezvous Monitoring

RTView has significantly expanded support for TIBCO RV monitoring with the Rendezvous Monitor, a collection of displays that present important traffic statistics about all RV daemons on the network. The Rendezvous data source has been enhanced to monitor server traffic statistics and server configurations, and enables the creation of very specific dashboards that monitor TIBCO deployments. Dashboards are provided that consolidate information to provide easy access to critical information such as:

- Auto-discovery of RV daemons
- Real-time display of connections to RV daemon metrics
- Detection of overloaded daemons
- Top producers and consumers
- UDP service ports and connections per RV daemon
- Charts of traffic statistics such as Kbytes sent/received, missed packets and retransmissions
- Aggregate traffic trends
- RVtrace multicast subject and packet tables



When the RV Monitor is used in conjunction with other RTView components, users are able to:

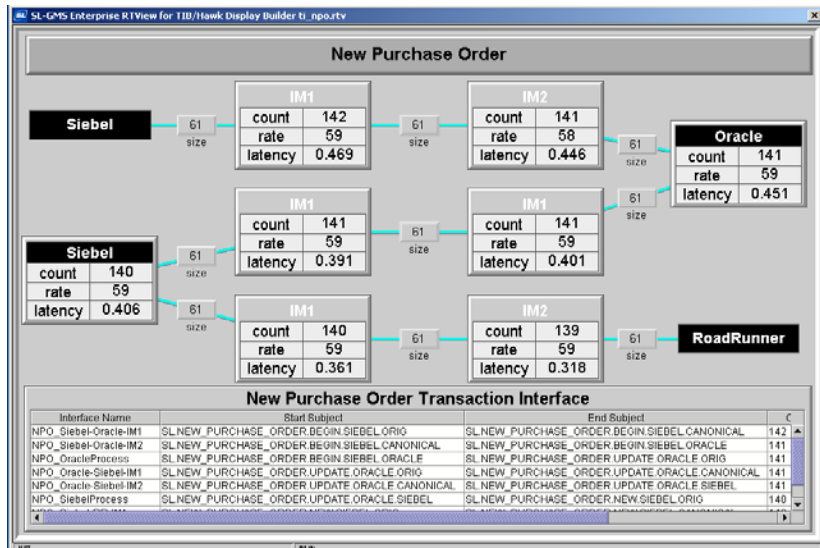
- Archive these metrics in the RTView Historian for trend analysis
- Detect transaction latencies with the RTView Transaction Monitor
- Consolidate TIBCO monitoring – dashboards from all TIBCO messaging products can be combined into one console to monitor multiple products

TIBCO Transaction Message Monitoring

The Transaction Message Monitor can monitor transactions that consist of JMS messages, TIBCO Rendezvous messages or both. RTView is designed to subscribe to specific JMS and TIBCO Rendezvous messages and display their current values. The Transaction Monitor expands this capability by enabling you to monitor critical business or infrastructure performance indicators by tracking and summarizing information on a sequence of related JMS or TIBCO Rendezvous messages, known as **transactions**. The Transaction Monitor can subscribe to any number of user-defined transactions, perform various calculations on commonly used metrics (rate, latency, count, size) and output the resulting data to an XML file. The XML file output by the Transaction Monitor can be attached to objects in RTView displays and archived to a database by the Historian.

This component within RTView for TIBCO enables users to monitor EMS and Rendezvous transaction messages by tracking metrics at each message step in a user-defined transaction. These metrics may include message count, rate, and latency, with the option of triggering alerts at capacity warnings and critical levels. Using the Historian, data can be stored to any

SQL database to provide a record of message transaction throughput and associated metrics. This archived information can be used for analyzing trends, validating Service Level Agreements, and troubleshooting. Optionally, an application/transaction monitor can allow for online control such as message re-routing or other interactive problem resolution.



The Transaction Monitor provides unprecedented visibility into infrastructure performance, enabling users to identify potential trouble spots and respond proactively before performance issues negatively impact the business.

Dynamic Portal Content for JSR-168-Compliant Portals and TIBCO PortalBuilder

Displays created with RTView for TIBCO can be deployed in JSR-168 Portals including TIBCO ActivePortal. Portlets created with RTView are able to inter-communicate and are dynamic. The advantage of this approach is to provide easily customizable real-time portal displays that automatically update without manually refreshing the portal page.

Conclusion

To be competitive today, the enterprise needs to be agile and responsive to the shifting daily needs of customers, internal operations, sales channels, and marketing. The complex architecture required to support these business processes means that important business information can reside in a variety of disparate locations. Each role in the enterprise needs its own specialized, aggregated set of that information to make timely business decisions for their areas of responsibility. Requirements within the enterprise can change daily and necessitate that each group of inter-related job roles are able to configure views into that data and distribute that information to their colleagues, suppliers or customers.

RTView provides TIBCO users with a cost-effective, quickly implemented, and flexible solution for aggregating disparate enterprise data. Enterprise infrastructure information can not only be configured to monitor a specific sub-system of the enterprise, but also be tailored to fit a specific business role and provide daily information specific to the needs of that role. The information is there. Making it immediately accessible in an easily recognized form dramatically enhances business practices.

About SL Corporation

Over the past 24 years, SL Corporation has become the most knowledgeable and responsive provider of real-time monitoring, analytics, and visibility solutions. SL's flagship product, RTView, addresses a broad spectrum of operational visibility challenges spanning business activity monitoring (BAM), business services management (BSM), and infrastructure monitoring. RTView also has become the de facto standard for extending the visualization of complex event processing (CEP) engines, TIBCO messaging middleware, Oracle Coherence data grids, and custom applications. SL's exclusive focus on real-time visibility solutions, commitment to customer success, and partner-centric culture are why thousands of industry leaders have chosen to work with SL to support their most critical applications and businesses. SL Corporation can be reached at +1 415-927-8400 or on the web at www.sl.com.



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