

SL RTVIEW ENTERPRISE MONITOR

for
TIBCO EMS
TIBCO BusinessWorks
TIBCO BusinessEvents
TIBCO Hawk
and other **TIBCO users**



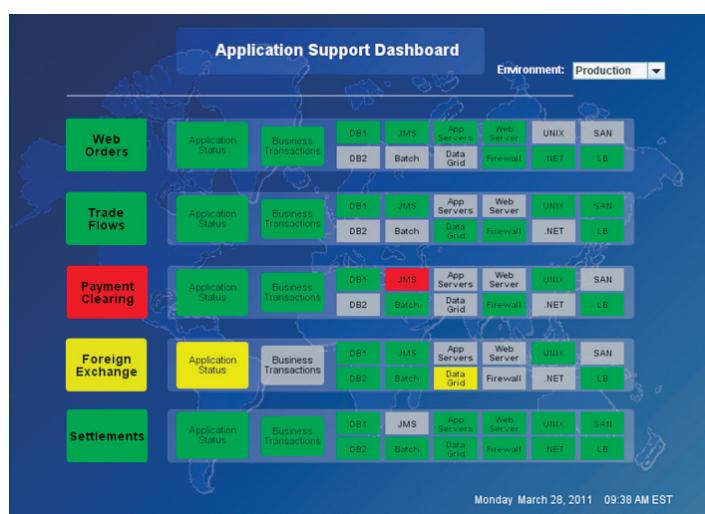
Introducing End-to-End Monitoring

Most large enterprises run complex business automation processes. These processes involve multiple stacks using several varieties and many instances of hardware and software. Ensuring the smooth operation of these IT resources is the task of End-to-End Monitoring, which provides “single pane of glass” views giving Operations and Management insight into the performance of their critical applications and environments. This single pane enables proactive monitoring of these resources through a holistic view across all systems, as well as visibility into both current and trending performance metrics. This is achieved by both out-of-the-box and customized, role-specific views for Operations at the user interface while enhancing, exploiting and coordinating existing and new monitoring assets at the back-end.

End-to-End Monitoring avoids the incomplete views of siloed monitoring tools, while requiring fewer skills to accomplish the monitoring of more system events. This means less reactive and more proactive monitoring that in-turn delivers a reduced risk of both downtime and poor performance.

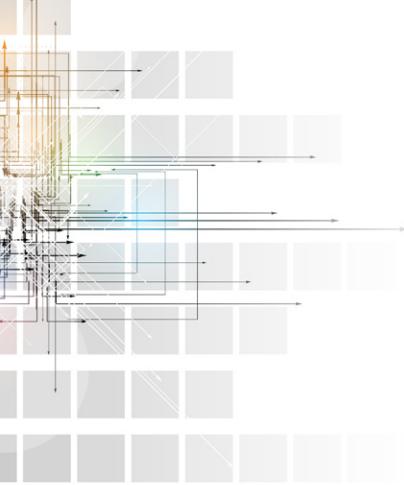
Organizations are increasingly embracing End-to-End Monitoring so as to benefit from the faster resolution of problems, increased uptime and better Service Level Agreement (SLA) coverage for their business. The ability to garner these benefits efficiently with more junior staff is important in reducing IT costs.

RTView Enterprise Monitor provides End-to-End Monitoring for TIBCO technologies including EMS, BusinessWorks, BusinessEvents and Hawk, and others through Hawk and JMX.



RTView Enterprise Monitor allows easy configuration of custom displays for varied users.

A top 20 bank provides real-time, role-based, multi-tier visibility across hundreds of custom applications, with drill-down capabilities into individual applications and infrastructure components.



RTView Enterprise Monitor provides both web-based and desktop dashboards, as well as interfaces to other systems. It also includes a powerful display builder capability.

RTView Enterprise Monitor allows the import of existing CMDB models.

Multiple data sources are provided with RTView Enterprise Monitor, either by default or included in optional Solution Packages.

Solution Packages also include default screens speeding time to deployment.

RTView Enterprise Monitor allows both agent-based and agent-less data gathering.

End-to-End Monitoring requires advanced monitoring technologies to provide flexibility of displays for different end-users, data-source accessibility across heterogeneous environments, high scalability across large environments, and ready support for the business IT stack.

Requirements for End-to-End Monitoring

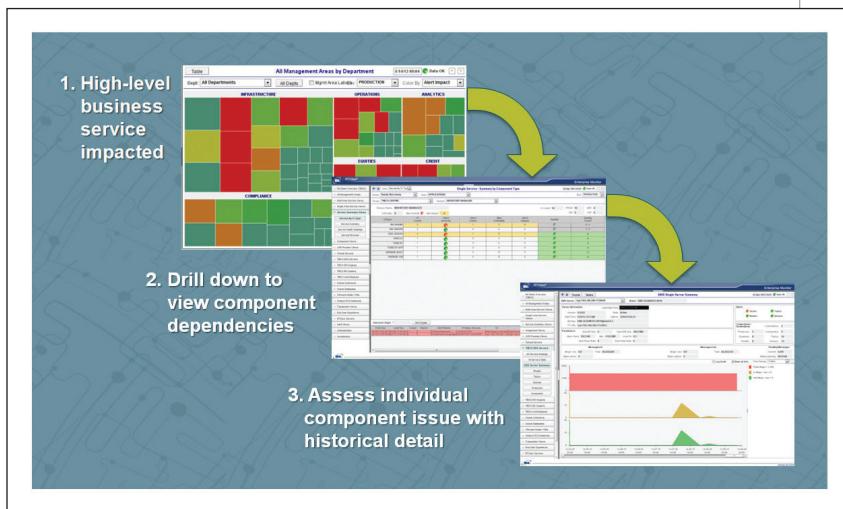
Operations Monitoring (and Management Monitoring) across systems has the goal of identifying “situations” – across multiple systems – quickly, and providing the information to help resolve them effectively. Such resolutions may be manual via helpdesk teams, or automated, or some combination of the two. Operations and Application Support teams need to be continuously kept aware of the status of their systems, along with any appropriate context information (such as data from related systems) and historical information (comparing past performance with current performance). Multiple information points need to be provided, and the teams need to be shielded from irrelevant or less important monitoring data with assistance in focusing on more important, prioritized events.

There are four main requirements for End-to-End Monitoring systems. These are:

- Situation visibility in real-time via a dashboard or other alerting interfaces or systems. This may involve automated responses, effective graphical metaphors such as “aim for green” heatmaps, trend and history comparisons, and custom visualizations.
- Alert event management for situation analysis involving control rules, specifying dependencies across systems, and prioritizing alerts for specific user roles. The results also need to be auditable for post-situational analysis.
- Specification of a Service Model to organize the system and service hierarchy for information drill-downs, as well as provide context for alert rules. These models can be defined either from existing CMDB resources, be custom defined, or discovered at runtime.
- Aggregation and correlation of varied information and sources from multiple levels such as platform, system, server, and application, that are all required to be monitored. Apart from specific (e.g.TIBCO) and generic (such as logs, databases and XML files) data sources, End-to-End Monitoring also requires both synchronous and asynchronous



data access methods, simple-to-use data transformation capabilities, and both agent and agentless monitoring capabilities.



End-to-End Monitoring involves navigating from high level alerts through to specific details, as easily as possible.

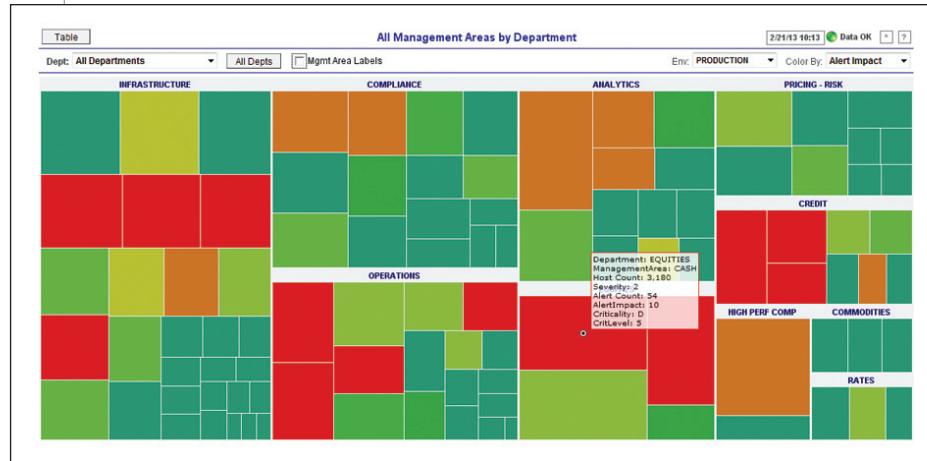
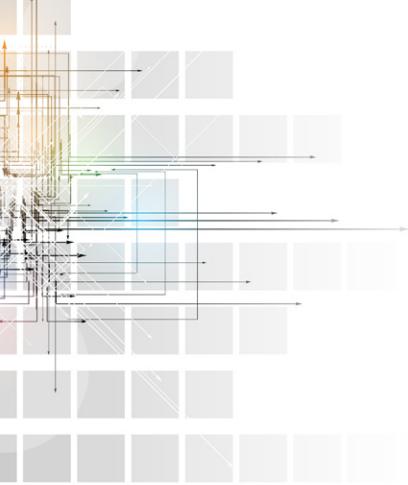
SL's RTView Enterprise Monitor (EM) is used enterprise-wide by hundreds of the world's largest organizations to provide this level of End-to-End Monitoring. Not only does RTView EM provide deep functionality in all four of the requirements outlined above, the extreme flexibility of the platforms ensures that the End-to-End Monitoring solution can continue to adapt to meet the evolving needs of the organization.

Real-Time Situational Visibility

The primary user interface in RTView EM is the real-time dashboard, providing current (and for comparison, historic) event metrics, typically as heatmaps for at-a-glance monitoring, and tables for complete information views. The interface is extensively navigable by users for quick access to required information. In addition to default displays, customizable displays are often needed to provide cross-system summary information or organization-specific views on a single pane.

Typically users will use color keys to be notified of aggregated issues, from which they can drilldown to identify the root cause of the alert and possible or potential fault conditions.

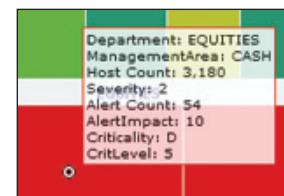
RTView Enterprise Monitor organizes the display of information in a drillable hierarchy of owner, area, group and service.



RTView Enterprise Monitor uses color coding to indicate overall alert impact (severity x criticality), severity (configured alarm level), count (number of alerts) and criticality (defined in service data model).

Heatmaps provide fast visual interpretation of status.

Heatmaps provide mouseover support for quick information viewing.



Owner	Area	Severity	Alert Count
Randy Morrissey	APPLICATIONS	🔴	36
Z. Anders Beleshnikov	MONITOR SYSTEMS	🔴	8
Z. Anders Beleshnikov	POC SAAS SYSTEMS	🟢	0
Infrastructure	Middleware	🔴	28
Infrastructure	UserExperience	🔴	2
Infrastructure	CustomArea	🟢	0
Infrastructure	Servers	🔴	10
Infrastructure	Processes	🔴	7

Tabular data shows details, allows easy filtering and sorting.



Trend Graphs provide time-based views for comparing metric trends.

For user interface control, single-sign-on and LDAP integration may be required.



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Situation Analysis

Situations in RTView EM are represented through alerts, which are used to specify situations of interest such as potential SLA violations and system health. The alerts are configured by rules and thresholds. Rules must be able to be specified for particular SLAs and technology-specific scenarios, as well as for particular system architectures to cater for the effects of load balancing. In addition, rules could also be specified across multiple inputs to handle interdependent chains of alerts as well as complex alert cascades.

Alert metadata is also important. For example alerts could be enriched with context information such as the source, and should comply to policies regarding duration, re-notification and escalation.

Ideally alerts should also be definable against external sources of data such as existing monitoring systems.

Alert management means users can take actions against alerts, such as suppressing false positives, closing alerts, or creating trouble or helpdesk tickets in an existing operations system.

First Occ	Last Occ	Count	Sup	Owner	Alert Name	Primary Service	CI	Description
10/14/13 17:02:37	10/14/13 17:02:37	1	<input type="checkbox"/>	BwServerCpuUsedHigh	BW_DEMO_SERVERS	slelf4-84(slmon)	High Warning Limit exceeded, current value: 64.5 limit: 60.0	
10/14/13 16:59:33	10/14/13 16:59:33	1	<input type="checkbox"/>	BwEngineMemUsedHigh	BW-ENGINE	slhpx11(slmon).dom...	High Warning Limit exceeded, current value: 50.0 limit: 50.0	
10/14/13 16:48:20	10/14/13 16:48:20	1	<input type="checkbox"/>	WlsServerMemoryUsageH...	OEM-DDE	SLDEMO-2-EMCG...	Server memory usage of 90.45 % is greater than the warning le...	
10/14/13 16:37:57	10/14/13 16:37:57	1	<input type="checkbox"/>	WlsServerCpuHigh	WLS	TestDomain.Managed...	High Warning Limit exceeded, current value: 20.49159802334	
10/14/13 16:36:06	10/14/13 16:36:06	1	<input type="checkbox"/>	BwEngineMemUsedHigh	ACCOUNTING	slelf4-84(slmon).domai...	High Warning Limit exceeded, current value: 64.0 limit: 50.0	
10/14/13 16:34:28	10/14/13 16:34:28	1	<input type="checkbox"/>	AowInstanceDiskReadOps...	ACW	i-3bd1f5f0	High Warning Limit exceeded, current value: 100.0 limit: 100.0	
10/14/13 16:33:40	10/14/13 16:33:40	1	<input type="checkbox"/>	AowInstanceCpuHigh	ACW	i-894eb0ba	High Alert Limit exceeded, current value: 58.80800000000000	
10/14/13 16:30:45	10/14/13 16:30:45	1	<input type="checkbox"/>	BwEngineMemUsedHigh	ACCOUNTING	slelf4-84(slmon).domai...	High Warning Limit exceeded, current value: 51.0 limit: 50.0	
10/14/13 16:10:30	10/14/13 16:10:30	1	<input type="checkbox"/>	BwEngineMemUsedHigh	COMPLIANCE	slelf4-84(slmon).domai...	High Warning Limit exceeded, current value: 5450.1820025	
10/14/13 16:09:06	10/14/13 16:09:06	1	<input type="checkbox"/>	BwEngineMemUsedHigh	ACCOUNTING	slelf4-84(slmon).domai...	High Warning Limit exceeded, current value: 61.0 limit: 50.0	
10/14/13 16:07:14	10/14/13 16:07:14	1	<input type="checkbox"/>	OsAvailableMemoryLowC...	MEDICAL RECORDS	SLDEMO-5-1	Low Warning Limit exceeded, current value: 79.817125889044	
10/14/13 16:02:19	10/14/13 16:02:19	1	<input type="checkbox"/>	AowInstanceDiskReadOps...	ACW	i-3bd1f5f0	High Warning Limit exceeded, current value: 101.0 limit: 100.0	
10/14/13 12:05:01	10/14/13 12:05:01	1	<input type="checkbox"/>	WasLiveSessionCountHigh	PLANTSBYWEBSPHERE-112	SLHOST12Node01C...	High Warning Limit exceeded, current value: 40.0 limit: 40.0	
10/14/13 09:48:57	10/14/13 09:48:57	1	<input type="checkbox"/>	VmVmCpuUtilizationHigh	TIBCO-BWMON	vSphere1_200803-SLH...	High Alert Limit exceeded, current value: 59.0 limit: 40.0	
10/14/13 01:14:45	10/14/13 01:14:45	1	<input type="checkbox"/>	OcCapacityLimitCircu...	MEDICAL RECORDS	SLDEMO-5-1-Distribut...	High Warning Limit exceeded, current value: 0.0125 limit: 1.0E	
10/14/13 01:05:05	10/14/13 01:05:05	5175	<input type="checkbox"/>	HawkAlert	BW_DEMO_SERVERS	SLHOST5(domain5)	System Uptime changed to 0 days, 16 hours, 1 minute from last	
10/14/13 01:01:38	10/14/13 01:01:38	5510	<input type="checkbox"/>	HawkAlert	BW_DEMO_SERVERS	SLHOST5(domain5)	System Uptime changed to 0 days, 17 hours, 1 minute from last	
10/14/13 00:20:08	10/14/13 00:20:08	1	<input type="checkbox"/>	HawkAlert	BW_DEMO_SERVERS	SLHOST5(domain5)	Service Print Spooler is running. No Action Required.	
10/14/13 00:14:45	10/14/13 00:14:45	1	<input type="checkbox"/>	HawkAlert	BW_DEMO_SERVERS	SLHOST5(domain5)	Service Print Spooler is running. No Action Required.	
10/14/13 00:08:56	10/14/13 00:08:56	1	<input type="checkbox"/>	EmsServerRouteState	EMS_DEMO_SERVERS	top/SLHOST10:7010	Medium Alert Value received, current value: 2x	

Alert tables provide the analyzed end-to-end view in a single place.

Field Filter:	<input type="text"/>	<input type="button" value="Clear"/>	<input type="radio"/> All	<input type="radio"/> Open	<input type="radio"/> Closed	<input checked="" type="checkbox"/> Alert Settings Conn OK
Search Text:	<input type="text"/>	<input checked="" type="checkbox"/> RegEx	<input type="checkbox"/> Owner Filter:	<input type="text" value="All"/>	<input type="button" value="Clear CMDB Filter"/>	
CMDB Filter:	<input type="text" value="Owner = * Area = * Group = * Service = * Env = PRODUCTION"/>					
Total 72	Critical <input checked="" type="checkbox"/> 42	Warning <input checked="" type="checkbox"/> 30	Suppressed <input type="checkbox"/> 5			

Comprehensive filtering and search options are necessary for alert management.

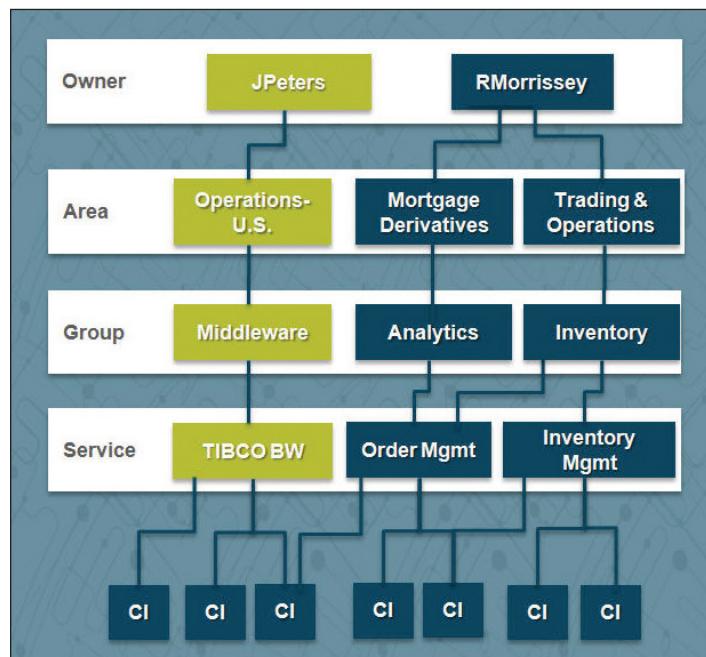
RTView Enterprise Monitor allows the combination of CMDB import, manual Configuration Item configuration, and programmatic Configuration Item discovery. For example it can use TIBCO Hawk to discover the TIBCO BusinessWorks engines and services available.

Service Models

The Service Model of the IT assets being monitored is typically described in RTView EM via a Configuration Management Data Base (CMDB) with the IT instances as Configuration Items (CIs). CMDB information should be re-used in the End-to-End Monitoring application if available; otherwise, the Configuration Items can be custom defined.

Where possible, the active technology components can be discovered and updated automatically. This means the view of the system is refreshed automatically and always displays the current state of the system and the performance impact of new instances.

This Service Model provides the hierarchy of IT assets that can be navigated through the dashboard or used in alert specifications. In addition, it is used to specify the criticality of issues against the Configuration Items and their parents in the hierarchy: alert criticality, as well as the criticality of a Configuration Item or Service, is used to calculate the impact of system performance on the business.



A CMDB can provide the Service Model for Operational Monitoring.



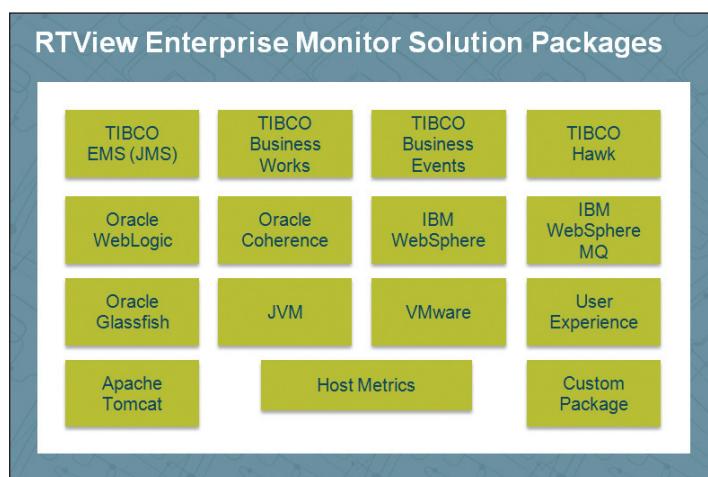
Varied Information Sources

RTView EM can involve operational data from all the various levels of the IT stack (platform, system, server and application or service), either through polling (synchronous data access) or listeners (asynchronous data access). Different types of information sources use multiple formats, requiring data transformations to be configured as required.

Certain metadata is also required for End-to-End Monitoring; for example it would be useful to know if servers are in a state of active, inactive or standby, and filter by these in the dashboard.

Configuring new types of information sources (such as a new server technology) can be time consuming, so predefined plug-and-play Solution Packages can help by configuring the new data source(s), sample alert rules, and dashboard screens. Such Solution Packages may be included, optional or user-defined.

RTView Enterprise Monitor Solution Packages are available for EMS, BusinessWorks, BusinessEvents and Hawk. These include data source definitions and default dashboard configurations.

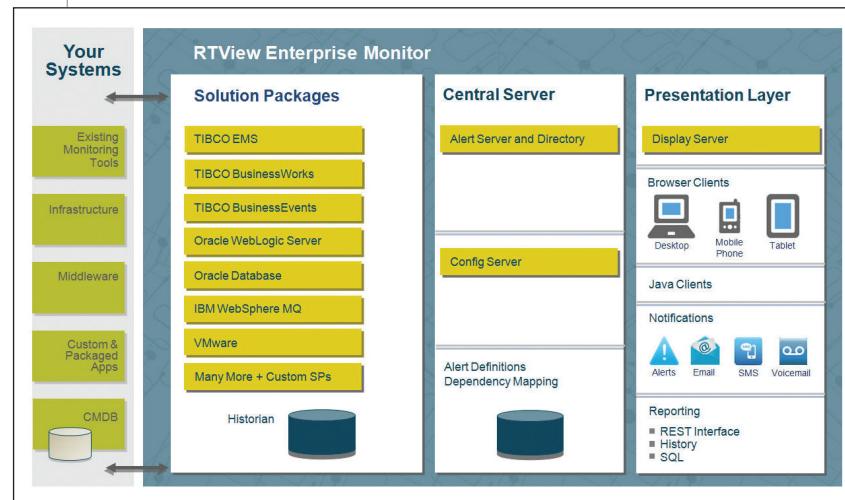


Solution Packages include interfaces to extract monitor data and events from multiple technologies.

RTVIEW ENTERPRISE MONITOR FOR END-TO-END MONITORING

RTView Architecture

In order to provide best-of-breed monitoring solutions, RTView EM relies on a high performance and distributed architecture using technologies such as caching and messaging. RTView EM can use agentless data gathering but will exploit agent-based data and event collection services if they are required for security or performance reasons. Such agents are termed Smart Agents as they can also aggregate metrics from multiple hosts, minimizing data connections to the central server.



Configuration and runtime architecture for RTView Enterprise Monitor.

RTView Enterprise Monitor Solution Package for TIBCO Hawk allows Hawk agent / microagent data to be consumed by, alerted from, and historically analyzed within RTView. In this use case, Hawk is a supporting monitoring tool for RTView.

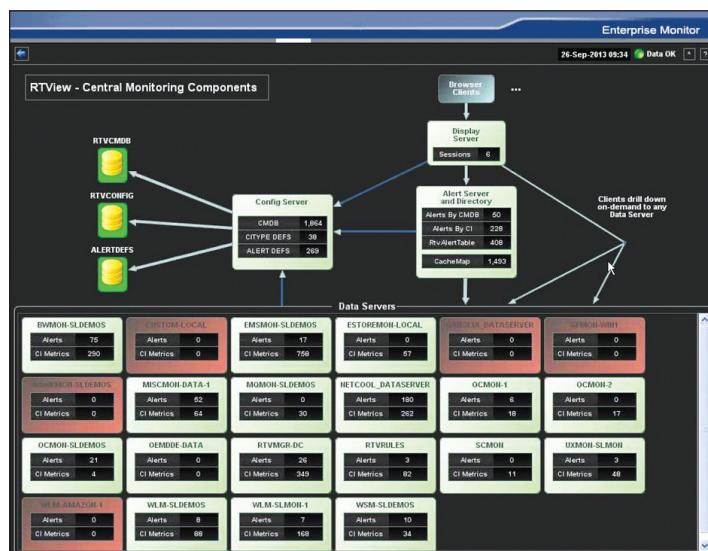
There are 3 main servers providing End-to-End Monitoring:

- Display Server, working in conjunction with an application container (e.g. Tomcat) to provide the real-time visibility and dashboard services.
- Central Server(s), providing the Alert and Configuration services, plus data interfaces:
 - Alert Server
 - Configuration Server manages the Service Data Model (CMDB) service
 - Database services include configuration information, alert settings and access to existing CMDB information



- Data Collection Server(s), hosting the Solution Packages for data collection, management of historical data in caches and databases, and rule execution services.

In addition, RTView EM allows for self-monitoring to ensure itself, as a service, is operating efficiently.



RTView Enterprise Monitor is self-monitoring: the runtime architecture is one of the default dashboard screens.

Implementation Options and Benefits

RTView EM provides “good citizenship” through re-use of any existing or local monitoring mechanisms, while also supporting Enterprise Management tools. No “rip and replace” is necessary from a monitoring infrastructure perspective, and RTView installations can usually be set up alongside working existing siloed and legacy monitors which are often kept running for particular users.

Where specific technology requirements require custom monitor components, RTView EM supports the development of custom Solution Packages enabling re-use across multiple monitoring environments.

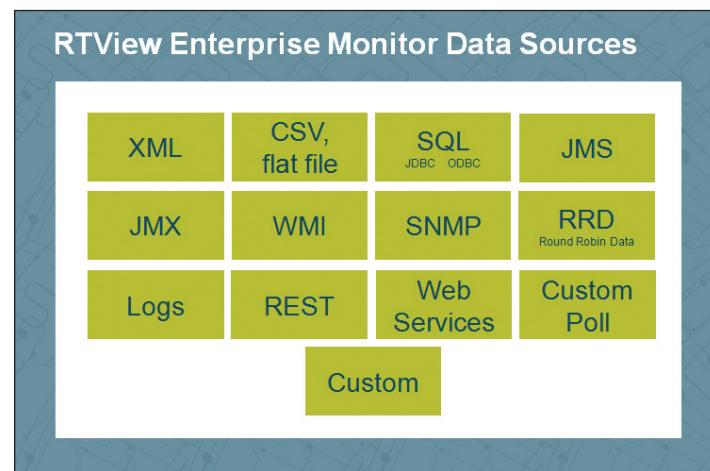
Extensibility is provided through all four levels of End-to-End Monitoring. Examples of ways that RTView EM Monitoring can be extended include:

- Dashboard customization and new screens, including links to other system screens, as well as external Authorization and Authentication sources for user log-on control

Existing RTView BW Monitor and EMS Monitor implementations can be readily integrated with RTView Enterprise Monitor.

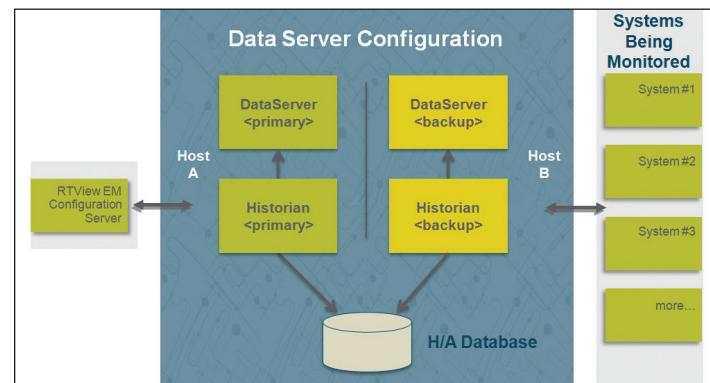
TIBCO Spotfire can be used for analytics on operations data via RTView Enterprise Monitor’s SQL interface.

- Historic event data may be accessed through a REST interface or via SQL, allowing predictive analytics tools to assist with capacity planning or fine-tuning alert thresholds
- Alerts may also be exported to external alert sources such as a helpdesk system or the audit trail exported for workflow analysis
- Dynamic configuration to detect new IT assets being monitored, and integration into existing CMDB systems
- External event data



Multiple data sources are accessible with RTView Enterprise Monitor data interfaces.

Depending on the host environment, fault tolerant configurations are usually recommended with warm back-up servers providing High Availability.



HA requires primary and backup systems for Central Servers and Solution Packages.



Typical Implementations

RTView EM solutions utilize varied combinations of Solution Packages and differing levels of customized dashboards for specific use cases.

RTView users are often large enterprise organizations with a high maturity level in monitoring. Typically these already have some monitoring capabilities, CMDBs, complex organization charts and multiple roles for support and operations. These users typically need to provide End-to-End Monitoring for a critical business unit or suite of services and applications, often have many more than 1,000 hosts, and will use existing monitors, appropriate Solution Packages and corporate LDAP.

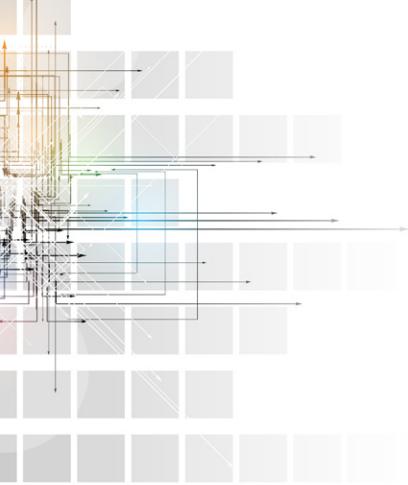
Medium size organizations also find great value in RTView EM. While they may have fewer than 1,000 hosts, they exploit RTView Enterprise Monitor both to fill gaps in their monitoring approach in a single toolset, and to build their Service Model.

Because of the modular architecture of RTView EM, it can scale from a very small footprint where all monitoring services are on one host or virtual machine, to worldwide organizations that have many data centers and geographically disperse support teams.

RTView Enterprise Monitor Solution Package for TIBCO EMS would be used where EMS is providing the corporate or application backbone.

RTView Enterprise Monitor Solution Package for TIBCO BusinessWorks would be used wherever BW is providing EAI functions, usually in conjunction with EMS.

RTView Enterprise Monitor Solution Package for TIBCO BusinessEvents would be used wherever BE is providing CEP and business event processing, usually in conjunction with EMS.



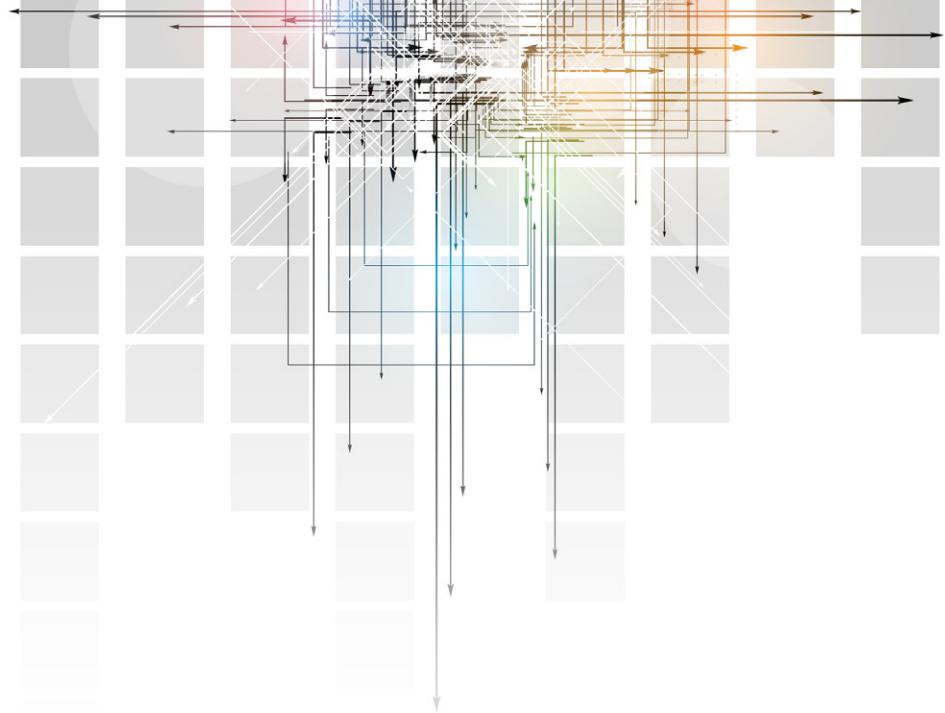
SUMMARY

SL's RTView Enterprise Monitor is an end-to-end visibility and control system that incorporates infrastructure, middleware and application performance data and events. Tailored to the needs of application support teams, the platform provides filtered alerting and deep analysis with historical context to ensure the fastest response to threats before they impact critical applications and business services.

SL's RTView is complementary to most every other monitoring solution already deployed. RTView can incorporate events and performance metrics from any existing system into RTView's high-level, single-pane-of-glass views, aggregating this information with application and service performance monitoring data to provide the most complete picture of application health.

With RTView Enterprise Monitor, you see only the events that matter to you, with enough context to show why they matter. RTView EM enables you to:

- Provide access to end-to-end, time-correlated monitoring data for faster troubleshooting
- Deliver custom, real-time, holistic views of application configuration, dependencies and data flows for more intuitive understanding of application performance
- Automate manual processes such as health checks, and stop and start scripts to work faster and reduce errors
- Understand and predict capacity issues with clustered technologies with access to all historical information from a single interface



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