



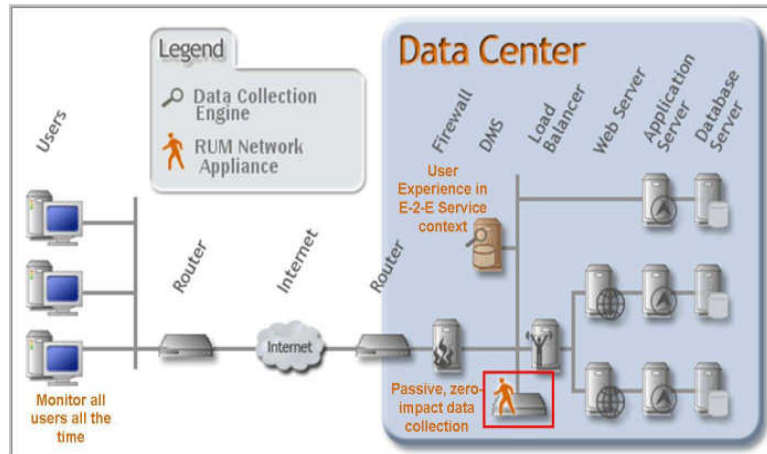
Real User Monitoring

For Application Performance and Service Level Management

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Nimsoft Real User Monitoring (RUM) is for organizations moving from reactive to proactive management. Nimsoft RUM is the only solution that leverages a single architecture capable of monitoring the entire service delivery chain. Furthermore, any and all data collection can be leveraged by Nimsoft's field-proven, functionality-rich product. Nimsoft makes quick deployments possible as it delivers valuable context to speed troubleshooting and low administration efforts for an IT organization already occupied with the workload of managing their complex business services.



RUM Deployment

Features

- Real time end-user experience monitoring
- Business process monitoring
- Powerful Web application performance analytics
- Discovery and management of Web Services
- Service model context to assess business impacts
- Root cause analysis
- Non-intrusive network data capture
- SLA management based on real user performance
- Best practice tests of key performance indicators (KPIs)
- Configuration wizard for user sessions, apps and locations
- CNS performance breakdown by user, application, location
- Historical analysis of user sessions
- Statistical performance baselines
- Intelligent alerting thresholds

Nimsoft takes a different, more effective approach by incorporating real-user monitoring metrics into a complete end-to-end view of the IT services hierarchy, including other Nimsoft measurements and performance data associated with any of IT's legacy infrastructure monitoring tools. This integration provides valuable supporting data that enables rapid root cause analysis and exploits the value of monitoring from the critical perspective of the end user. The example below shows monitoring of on-line life insurance transactions, indicating the usage rate (active page count) and errors occurring in the Web sessions supporting these transactions.

With Nimsoft RUM, IT organizations can:

- Track service quality to all users.
- Automatically identify performance exceptions and issues
- Quickly pinpoint problems and determine the root-cause
- Analyze prior user sessions to determine source of slow-downs or failures
- Monitor Web Services (SOAP) performance
- Tune performance with rich data analysis.
- Identify potential security concerns.

While most management products are architected for bottom-up event management and built piecemeal, one technology domain at a time, Nimsoft takes an all-in-one, proactive, service-performance approach that provides IT with valuable, lasting flexibility. It manages from the top (user-experience perspective), across and down into all domains.

Improving Service Quality for All Users

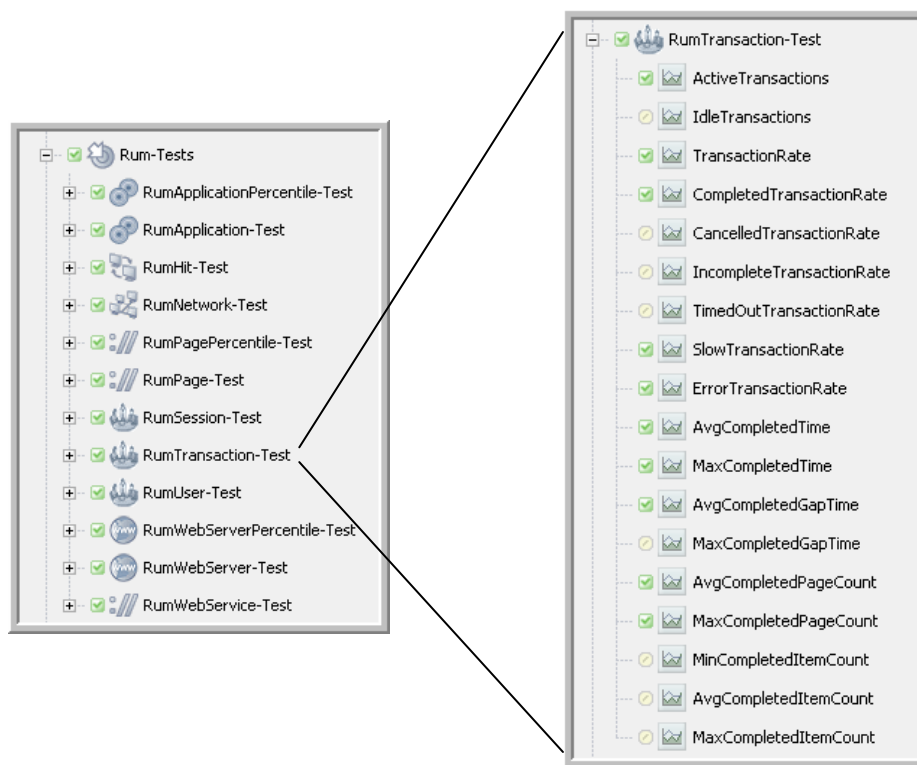
Nimsoft RUM monitors actual user sessions across different geographic locations, networks, applications and services including third parties'. Nimsoft RUM makes it possible to understand each and every user's service quality and generate truly predictive service level agreements (SLAs). Only Nimsoft monitors real-time SLA compliance using real-user performance measurements and IT infrastructure availability and correlates SLA performance with problems that require priority correction before users are impacted.

Identify Performance Exceptions Across All Users

Nimsoft provides immediate alerts for exception conditions, and does so with real-time monitoring of actual user experience relative to statistical baselines and multi-tier thresholds. Thanks to the power of the Indicative solutions' service model, performance issues are easily identified by location, named user, application or other logical structure, information that provides powerful context about where a problem lies and its relative importance in terms of service impact. Nimsoft RUM also detects application errors by inspecting the contents of pages being returned to users. A full range of tests is included with the RUM monitor to capture all aspects of real user performance. The figure below shows the standard test templates available for drag-and-drop deployment in the Indicative service model.

With Nimsoft RUM, nearly 100 valuable and unique measurements have been added to the existing library of 2000 measurement choices. Unlike alternative RUM products, only the Indicative solution includes performance measurements across all aspects of the service delivery chain, (not just Web applications), from the end-user to network, systems, servers, legacy applications and Web Services.

The RUM transaction Test example below illustrates the performance detail available from the standard test. Each of the default metrics shown can be monitored or un-monitored depending upon the user's need for KPI detail in troubleshooting and problem analysis.



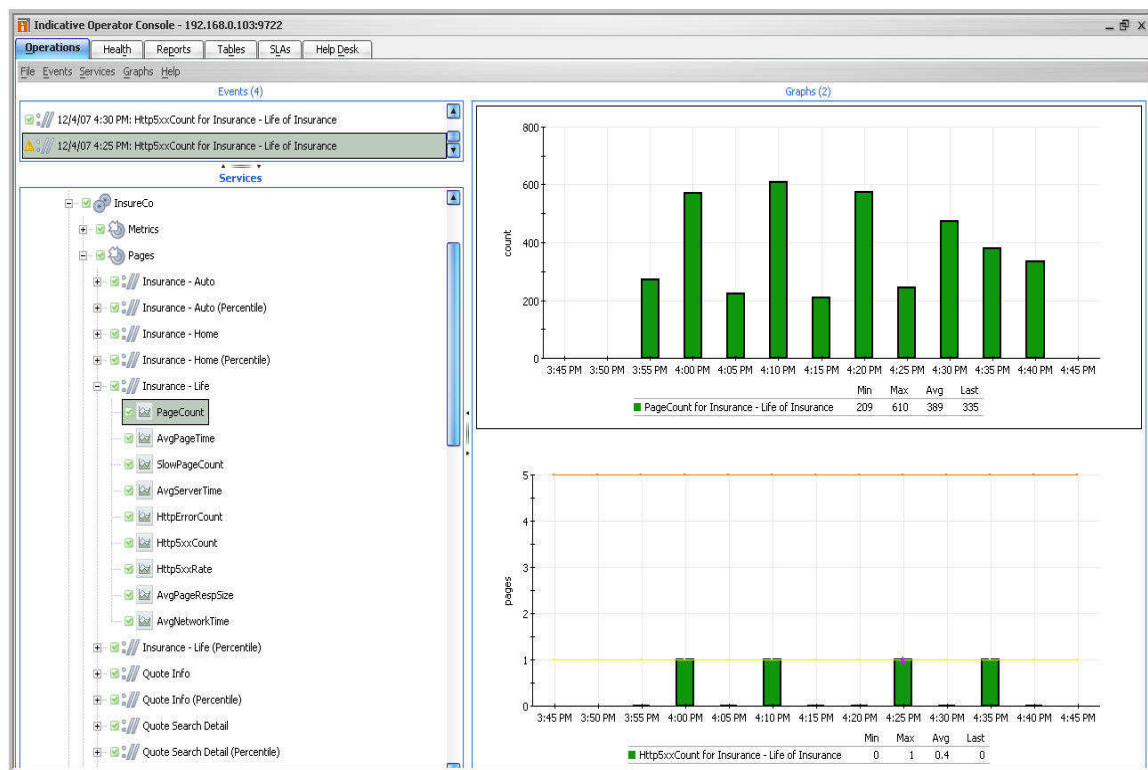
RUM Test Templates and Transaction Test Example

Pinpoint Problems

The Indicative solution not only quickly identifies arising issues, but rapidly identifies them in context and pinpoints their sources. For instance, Indicative correlates page download times with network metrics such as packet re-transmissions, TCP connection timing and number of application turns. There is also component-level timings (e.g. elements of HTTP page) and the capability to delineate the approximate network and server components of transaction response time in context of the service quality. These facilitate an understanding of whether the data center is the cause of performance issues as well as which component is causing the degradation.

For Web application issues, deep-dive capabilities are available by right-clicking on a particular measurement to bring up the RUM Analyzer within context. For instance, if a slow page count crosses a threshold, right-click on the measurement and select RUM Analyzer. From there, the administrator is brought to the corresponding slow page count measurement with details on the slow page, the hits within the page and the details of the selected hit. This level of context and granularity in a single console has never been seen before, and Nimsoft is the first to bring it to market.

For those distributed application environments that use Web Services (e.g. SOAP –*Simple Object Access Protocol* and associated standard services), Nimsoft provides powerful extended monitoring and troubleshooting capabilities.



User Experience in Service Context

Web Services Monitoring and Troubleshooting

As an integrated component of our service management solution, Nimsoft provides the capability to look inside the Web Services “Black Box” to track and analyze performance of services not previously visible to IT managers. Capabilities include:

- Protocol-level tracing – SOAP/HTTP(S), SOAP/JMS, etc. using Real User Monitoring (packet capture and traffic analysis)
- Dynamic discovery of web services within the RUM “Quickstart” configuration wizard.
- Integration of synthetic and RUM transaction tests in context of key applications within the SOA
- Pre-engineered test templates for RUM Web Services tests to speed deployment.
- Integration with Indicative Service Model provides the big picture of Web Services performance including:
 - Average response
 - Slow calls
 - Throughput
 - Load
 - Errors
- An associated RUM Analyzer wizard provides deep-dive analysis of Web Services performance including:
 - Slow performing Web Services
 - Drill-down to component-level Methods used by each Web Service
 - Specific application and linked web services performance issues

An example enterprise service model and integrated Web Services tests are shown on the next page.

Source of Data for High Impact Tuning Efforts

Nimsoft RUM has obvious benefits for production operations, but it is also very useful for supporting ongoing efforts of refining and tuning applications. Nimsoft RUM creates a rich data source for performance analysis – e.g. slow users, slow regions, slow times of day, slowest web pages, etc. It also captures the real load profile and application performance signature so that development teams can effectively define test plans and reduce cycle times.

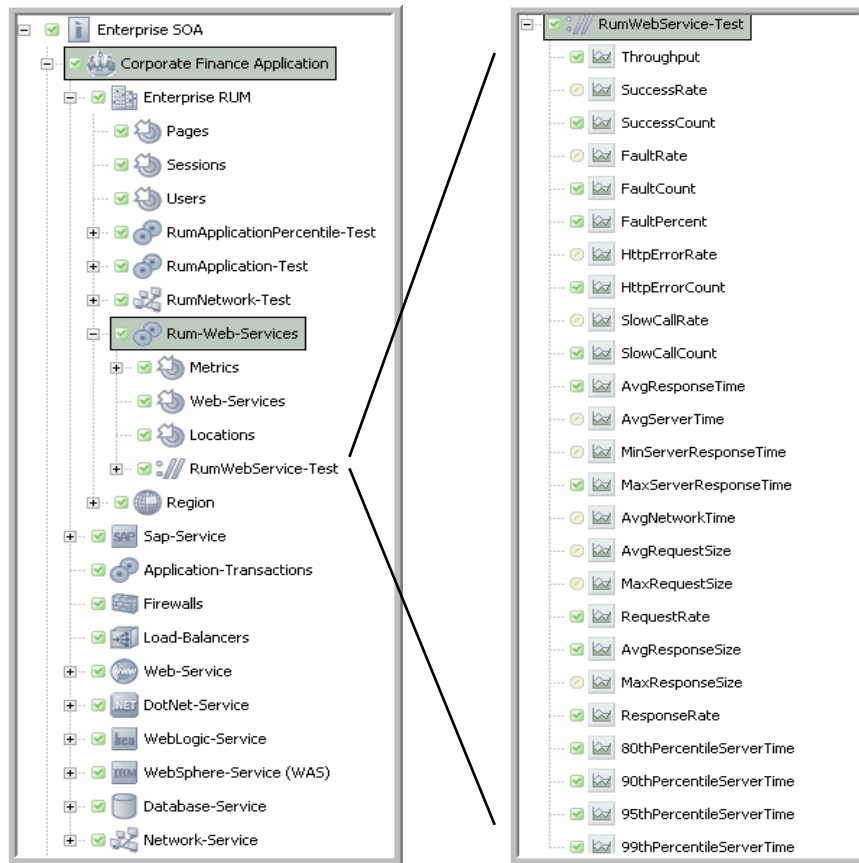
Complements Synthetic Transactions

Real-user monitoring is a critical component of service-level management, but it is not the only component necessary for true, proactive/service-level management. Synthetic or active monitoring is an essential capability that works to complement RUM. Synthetic monitoring proactively exercises business transactions in a repeatable and predictable manner whether or not users are on the system. It works to identify issues before they impact the business by identifying potential disruptions before users experience them. Nimsoft also includes other active testing such as database query and FTP request tests to exercise individual components and accelerate root cause determination.

Nimsoft Real User Monitoring Reports

Nimsoft includes a variety of analysis mechanisms, including real-time graphs with measurement overlays, point-and-click tabular reports, health history and Top N reports, live SLA summaries and pre-defined and ad hoc SQL reports. Out-of-the-box reports that are specific to Nimsoft RUM include:

- o Exceptions (e.g. slowest pages, slowest locations, errors)
- o Usage (e.g. top users, page downloads, most active locations)
- o Application performance (e.g. page, server)
- o Service performance (e.g. location, application, user)
- o Diagnostics (e.g. cause of slow pages, URL parsing)



Web Services Monitoring in an enterprise IT Environment

All data is stored within an embedded database with a configurable storage length. Export facilities are included. Example reports are shown below:

RUM Report - Workstation Page Performance Analysis for 192.168.180.84										
Report Filter: (Past hour) from 2007-11-12 08:08:11 to 2007-11-12 09:08:11, Application is Insurance										
Application	Location	Avg Page Time	Min Page Time	Max Page Time	Avg Server Time	Avg Network Time	Page Count	Slow Page Count	User Count	Percentile vs All Locations
Insurance	192.168.180.84	26.056s	0.092s	2m 13.250s	0.061s	25.904s	31	0	1	99.8%
Insurance	Manhattan	4.506s	0.065s	2m 13.250s	1.064s	3.368s	265	15	4	96.1%
Insurance	All Locations	1.006s	0.002s	2m 13.250s	0.554s	0.383s	9892	63	108	

UploadInfoSave.asp (worst performing page)											
Application	Location	Min Page Time	20 Percentile	50 Percentile	80 Percentile	Max Page Time	Avg Page Time	Percentile vs All Locations	Page Count	Slow Page Count	User Count
Insurance	192.168.180.84	2m 13.250s	2m 13.250s	2m 13.250s	2m 13.250s	2m 13.250s	2m 13.250s	100.0	6	0	1
Insurance	Manhattan	2m 13.250s	2m 13.250s	2m 13.250s	2m 13.250s	2m 13.250s	2m 13.250s	100.0	6	0	1
Insurance	All Locations	2m 13.250s	2m 13.250s	2m 13.250s	2m 13.250s	2m 13.250s	2m 13.250s	100.0	6	0	1

Detailed Info (second worst performing page)											
Application	Location	Min Page Time	20 Percentile	50 Percentile	80 Percentile	Max Page Time	Avg Page Time	Percentile vs All Locations	Page Count	Slow Page Count	User Count
Insurance	192.168.180.84	0.965s	0.965s	0.965s	0.965s	0.965s	0.965s	67.3	5	0	1
Insurance	Manhattan	0.954s	0.954s	0.954s	0.965s	0.965s	0.959s	64.8	11	0	2
Insurance	All Locations	0.141s	0.475s	0.894s	1.127s	4.404s	0.972s	68.9	280	0	32

Search Input (third worst performing page)											
Application	Location	Min Page Time	20 Percentile	50 Percentile	80 Percentile	Max Page Time	Avg Page Time	Percentile vs All Locations	Page Count	Slow Page Count	User Count
Insurance	192.168.180.84	0.260s	0.260s	0.260s	0.260s	0.260s	0.260s	68.7	5	0	1
Insurance	Manhattan	0.206s	0.206s	0.206s	0.260s	0.260s	0.230s	45.8	11	0	2
Insurance	All Locations	0.047s	0.123s	0.241s	0.338s	2.976s	0.305s	75.9	232	0	29

Options Export Data Launch in New Browser

Web Application Performance Analysis

RUM Report - Transactions												
Report Filter: (Past hour) from 2007-11-12 08:14:13 to 2007-11-12 09:14:13, Application is Insurance, Transaction is Modify Premium												
Application	Transaction Name	Location	Timestamp	Client IP	Server IP	Transaction Time	State	Step Count	Slow Step Count	Step Error Count	Item Count	
1	Insurance	Modify Premium	Dallas	2007-11-12 09:10:28.797	192.168.95.46	192.168.6.51	2m 32s	Complete	2	1	0	0
2	Insurance	Modify Premium	Dallas	2007-11-12 08:59:21.578	192.168.95.46	192.168.6.51	2m 32s	Complete	2	1	0	0
3	Insurance	Modify Premium	Dallas	2007-11-12 08:48:14.360	192.168.95.46	192.168.6.51	2m 32s	Complete	2	1	0	0
4	Insurance	Modify Premium	Dallas	2007-11-12 08:37:07.141	192.168.95.46	192.168.6.51	2m 32s	Complete	2	1	0	0
5	Insurance	Modify Premium	Dallas	2007-11-12 08:25:59.891	192.168.95.46	192.168.6.51	2m 32s	Complete	2	1	0	0
6	Insurance	Modify Premium	Dallas	2007-11-12 08:14:52.656	192.168.95.46	192.168.6.51	2m 32s	Complete	2	1	0	0
7	Insurance	Modify Premium	Dallas	2007-11-12 09:05:06.951	192.168.95.46	192.168.6.51	47s	Complete	2	1	0	0
8	Insurance	Modify Premium	Dallas	2007-11-12 08:53:59.733	192.168.95.46	192.168.6.51	47s	Complete	2	1	0	0
9	Insurance	Modify Premium	Dallas	2007-11-12 08:42:52.514	192.168.95.46	192.168.6.51	47s	Complete	2	1	0	0
10	Insurance	Modify Premium	Dallas	2007-11-12 08:31:45.264	192.168.95.46	192.168.6.51	47s	Complete	2	1	0	0

<< >> Options Export Data Default Sort Launch in New Browser

Real User Transaction Performance



RUM Report - Slow Web Services							
Report Filter: (Past hour) from 2007-11-12 08:13:34 to 2007-11-12 09:13:34							
	Application	Web Service Name	Location	Min Web Service Time	Max Web Service Time	Avg Web Service Time	Slow Web Service Count
1	Insurance - Web Services	DoSubmissionExecute	Peoria	1.580s	3.551s	2.797s	16
2	Insurance - Web Services	DoSubmissionSendToWins	Peoria	1.898s	1.898s	1.898s	6
3	Insurance - Web Services	DoDocumentTemplatePreviewDoc	Peoria	1.672s	1.672s	1.672s	6
4	Insurance - Web Services	ClearDNA	Peoria	0.576s	2.405s	1.259s	26
5	Insurance - Web Services	DoSubmissionSaveToDB	Peoria	0.592s	1.458s	1.084s	16
6	Insurance - Web Services	GetDocumentWithPageNo	Peoria	0.869s	1.142s	0.995s	12
7	Insurance - Web Services	GetPolicyLists	Peoria	0.974s	0.974s	0.974s	6
8	Insurance - Web Services	DoSubmissionRequiredRatingValidate	Peoria	0.888s	0.888s	0.888s	6
9	Insurance - Web Services	GetSubProducersDna	Peoria	0.522s	1.161s	0.779s	21
10	Insurance - Web Services	DoSubmissionRequiredRatingValidateAndSave	Peoria	0.753s	0.753s	0.753s	6

Web Services Performance Report

Architecture and Configuration

Nimsoft RUM is available as an optional capability within the Indicative solutions' all-in-one product. It requires an appliance for passive data capture, storage, and SQL reporting and deep-dive analysis. It includes a highly optimized, embedded database. Real-time performance data is communicated to the primary Indicative server side software residing on a separate system according to the parameters set. All administration is centralized and all performance data is available through the Indicative consoles according to user-defined domains. Deep-dive drilldowns of individual sessions, pages and hits involve a simple right-click to access RUM Analyzer.

Setup is through the Indicative administrative console. It utilizes proven best-practices templates and drag-and-drop service modeling. Configuration of real-user tests is highly automated to speed deployment. Data collection and views include multiple security provisions including password protection, encryption as well as data omission such as credit card numbers.

Summary

Nimsoft RUM is part of the Indicative solutions' cohesive architecture that delivers performance data in context while providing a single point of control and notification. It is a powerful complement to proactive synthetic and infrastructure health monitoring. By capturing real-user sessions from all user locations in real time, Indicative helps IT to swiftly isolate the cause of performance problems. Indicative provides excellent data for establishing and monitoring of SLAs based on actual performance levels users are encountering with their mix of usage patterns. It provides a breakthrough capability for IT management of complex Web Services environments. It also captures a rich set of performance and usability data for feedback into the test and development process. Ultimately Nimsoft provides you with a wise investment as RUM is an extensible platform for passive real-time analysis that will handle additional application types and protocols.

About Nimsoft

Nimsoft provides next generation performance and availability monitoring solutions for the complete physical and virtualized IT infrastructure. The Nimsoft solutions redefine the standards for ease of use and speed of deployment—providing outstanding return on investment and unparalleled customer satisfaction. Over 600 customers in 30 countries rely on Nimsoft solutions to monitor their IT based business applications and services. These customers include mid-market and global organizations, such as Barclays Capital, Amway Corporation, Archstone Smith Communities, Bay Area Rapid Transit, Ladbrokes, MTU Aero Engines, TriNet, TRW Automotive, and hundreds of leading managed service providers such as CDW Berbee, Easynet and Rackspace Managed Hosting. For more information, visit www.nimsoft.com.

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