

*Technical white paper from
FireScope and
Gambit Communications*

MIMIC[®] Simulator helps testing of Business Service Management Products

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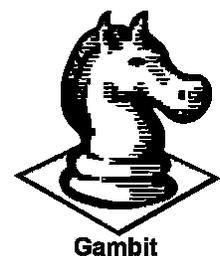


Table of Contents

Executive summary	3
Background	4
Problem statement	5
Solution – MIMIC Simulator	8
Benefits	10
Summary	11
About Authors.....	12

Executive summary

It is frustrating to make multiple, disparate management systems work together. It is even more challenging to form a comprehensive understanding of the current security, availability, performance and compliance conditions of the entire infrastructure. The FireScope Business Service Management Solution offers organizations a single solution that provides a real-time view of the health of IT operations.

FireScope was presented with the daunting task to make sure that the **BSM solution** can collect the data from thousands of sources and correlate them to generate actionable intelligence. **FireScope chose Gambit Communications' MIMIC Simulator to ensure the scalability and handling of the load** from every type of networked asset, and to make sure that BSM can process every different type of event in real-time.

Background

FireScope BSM delivers a single point of consolidation of all infrastructure event and metric data, combined with key business metrics to help manage IT Operations in a way where the focus is on the outcome, not the technology. It collects and processes security, performance and availability data from nearly any application, database, server, router, security point solution or other networked device.

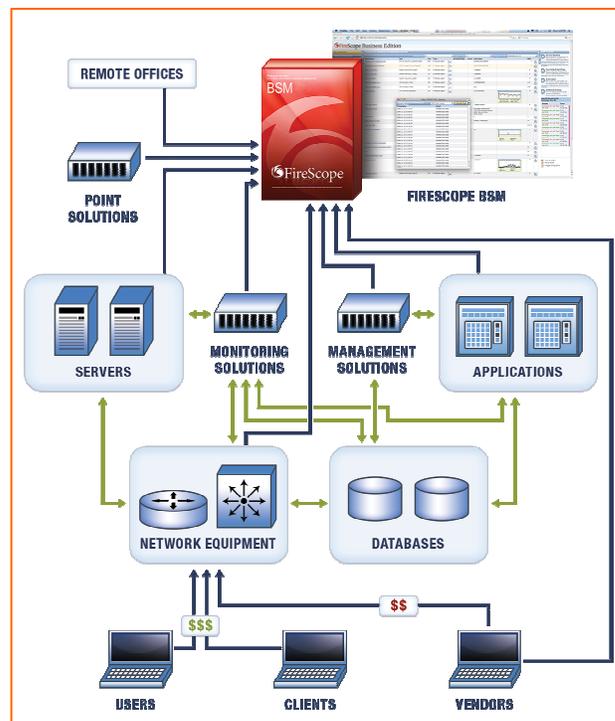


Figure 1: High level view of the BSM Solution

With FireScope, everyone from C-Level officers to system administrators can track up-to-the-second key performance metrics, business metrics, spot

emerging trends and make faster, more accurate IT operations decisions. By combining application aggregation, analytics, end-user dashboards and tools for collaboration in one plug-and-play appliance, FireScope can be deployed at a cost that is at least 80% less than other approaches to Business Service Management and IT Operations Management.

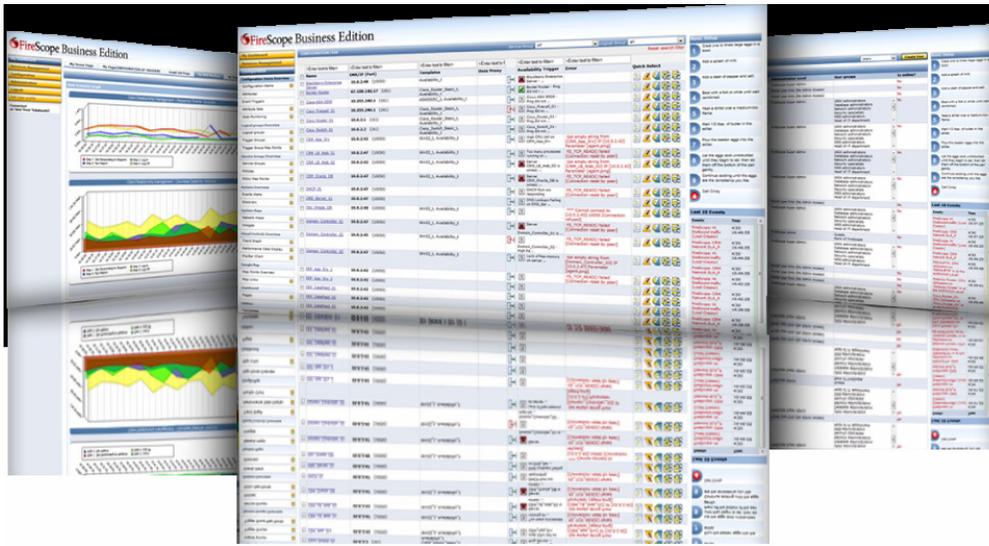


Figure 2: BSM Dashboard

Problem statement

FireScope clients are deploying FireScope Business Service Management appliances in some of the most demanding technology environments on the planet, generating millions of transactions a day from data centers spread out across the globe. No two clients are using exactly the same technologies; nor do they use the same criteria to report on the business impact of events and performance of their infrastructure. The real time management of all these end points is extremely difficult.

It is even harder to perform good quality assurance because this task requires a variety of devices of different types available to collect data from, have these devices generate many pathological conditions, and to make sure that the BSM solution can identify the right events from those volatile conditions. It is a difficult task to create real life situations such as multiple data centers, various traffic patterns, generating events and network delays for each of the managed devices in the test lab. It costs a lot of time and money to setup and maintain such a lab, but even after that the testing process is a never-ending cycle.

To be effective, Business Service Management software has to take into consideration the unique challenges of the dynamic and complex nature of the enterprise and business networks. Here are some of the challenges that FireScope's testing group has to address:

Real-time aggregation

- **Tested with over 5,000 data sources**, multi-site capability can link up to 1,000 FireScope appliances or Sentinels, aggregated into central dashboards.
- **Thousands of transactions per second** analyzed for event and policy violations.
- Over 11 data collection methods including direct data connectivity, web services, agents, SNMP, Syslog, Web Application Simulation and more
- All data collected is stored in a SQL database

Service and dependency configuration

- Logically group networked assets by the Business Service they contribute to
- Configurable auto-discovery wizard
- Based on IP range
- Based on ICMP ping

- Based on running TCP services
- Based on returned values for operating system and application name
- Different templates for different types of discovered devices
- SNMP Walk capability
- Free Service Modeller (FireScope Workbench) to model service before deployments

Agent-less monitoring options

- **Support for SNMP v1,2,3**
- **SNMP traps**
- Syslog Aggregation
- Step-by-step scenarios for simulating web applications (login, perform transaction, logout)
- Webservices
- Custom API connectivity
- User-defined scripts for enhanced performance testing
- WMI/Perfmon

Agent-based data collection features

- All standard platforms supported (UNIX, Windows, NovellLinux)
- Any operating system metric accessible (CPU, memory, drives)
- Operating System specific metrics such as page file usage
- Application specific metrics such as transactions per second, memory usage and error messages, including proprietary or legacy applications
- Aggregation and correlation of log files
- Sentinel application aggregates metrics and events from boutique-size remote locations, each capable of managing up to 15 systems from a single instance

FireScope spends thousands of hours of testing and verifying that the solution functions as designed. They continuously need to create a high degree of dynamic behavior and complex scenarios. They need to test BSM against a variety of manufacturers and with many types of devices. To achieve that kind of diversity and scale using traditional physical labs proved cost prohibitive. Even after spending all that money, setting up and creating different scenarios was extremely time-consuming. They had some tools to generate traffic, but nothing for SNMP based devices. They turned to MIMIC Simulator to create a simulated test lab with variety of data sources. MIMIC made it easier for them to create test environments for their solution at a much reduced cost, as well as made it easier to manage.

Solution – MIMIC Simulator

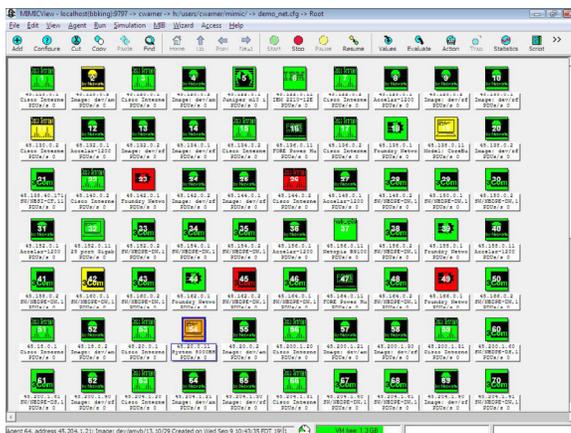


Figure 3: MIMIC simulating a large network

It was impractical to create the real world environment with thousands of diverse data sources in a physical lab environment. So FireScope chose MIMIC

Simulator from Gambit Communications to setup a simulated network in a virtual lab in order to make sure that they had tested every possible condition, and that each release of the product was thoroughly tested before being released to their clients.

The MIMIC Simulator consists of SNMP simulation software that can simulate up to 20,000 devices from a single workstation. Each device can have its own device type, IP address and run-time parameters. The devices can be configured independently or in a group. They can be simulated to be geographically local or remote. Configuration and run-time changes can be performed interactively using the MIMIC GUI, or programmatically using scripts.

FireScope simulated many types of devices – Routers, Switches, Hubs, Specifically Cisco equipment, Security systems, Linux & Windows Servers and Fax/Printers. The QA team wrote many scripts to construct complex scenarios. They created many negative situations, e.g. Mis-configuring a router, increasing and decreasing traffic patterns etc. They also generated thousands of SNMP traps including a large variety of events with distinct parameters. They also combined MIMIC Simulated traffic with the data collected from other physical devices and applications to interpolate different events.

MIMIC is currently used 24/7 by the development and testing groups. The engineers can create simulations of devices which otherwise would not only be expensive, but also hard to acquire or not ready for testing. They use MIMIC Recorder to record their lab. MIMIC device and network libraries provide out-of-the-box a vast selection of devices and network topologies.

Testers can do large-scale simulation and test all the features in a variety of network topologies. They simulate 300 to 500 devices and have 30 appliances poll numerous OIDs from each of them at 5-10 second intervals.

The MIMIC action and timer scripts simulate many conditions by dynamically creating various events and metric data, changing router configurations and generating thousands of events like linkUp and linkDown notifications. Overall MIMIC provided the needed testing environment with a high degree of dynamic behavior and complex scenarios, while not introducing increased workload for the testers.

Benefits

MIMIC saved both time and money, since the testers could get their hands on the devices which otherwise would have been cost prohibitive. In addition, they gained complete control of the test environment. This guaranteed high customer satisfaction with the released BSM solution.

The flexibility of the MIMIC software allowed them to test all types of real and pathological conditions without the use of traffic generators, analyzers or any other tools. They could even create scenarios that are almost impossible to setup with a physical test lab. For example, changing the configuration of a router, specifically mis-configuring, takes a long time to create and reset. With MIMIC they could do it in a few seconds.

With the use of MIMIC, time can be managed more efficiently. The engineers can record bad conditions and play them back as needed. They don't have to spend a lot of time creating different faults or setting up the network. Having multi-user access to the virtual lab means they don't have to worry about sharing the devices like in real test labs. Each engineer can configure their own lab at any time and in any way they want, without worrying about disrupting anybody else's testing.

MIMIC satisfied the test team's requirement to test against variety of manufacturers and with many types and quantities of devices. With a highly scalable scenario, they can generate the thousands of events, which can occur in normal working conditions and in disaster situations, like a network brownout in a geographic region.

FireScope is also planning to include MIMIC's IPMI and Cisco IOS simulation capabilities in future tests.

FireScope's sales representatives can now confidently tell the customers that their software is highly scalable and will work in a variety of faulty conditions.

The best part is that all the test conditions they have created are stored so they can be shared among different testers. They can also run those regression tests every time there is a new release, and incrementally keep adding new test scenarios.

Beyond testing, FireScope also started using MIMIC simulated networks for the tradeshow demos. It saved them from the trouble of carrying many devices and cost associated with it. Now they just need to carry MIMIC software in their demo laptop. All the scenarios are supplied from the development and testing groups.

Summary

What FireScope has created with their BSM solution is a one of a kind. It enables C-Level officers and system administrators to make sense out of potentially unpredictable enterprise environments and correlate the impact to the business from changing conditions. FireScope's BSM solution has the

capacity to provide granular monitoring of any networked asset, while requiring a fraction of the effort and cost of traditional solutions.

Gambit's MIMIC allows FireScope to exercise the BSM Solution thoroughly to make sure that all real-world environments and conditions are tested. MIMIC gives more control over the test environment and makes testing a lot more efficient. It enhances their ROI many folds by simulating a real world network in their lab, capable of duplicating the required conditions at a fraction of the cost and effort.

About Authors

Ryan Counts is the marketing director at FireScope, Inc. To learn more about FireScope Business Service Management Solutions, and download a fully-functional 28-day trial, visit www.firescope.com.

Pankaj Shah is the CEO and co-founder of Gambit Communications, Inc. In order to learn more about **MIMIC Simulator** and how to create a "virtual lab", please visit www.gambitcomm.com.

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