



LAB TESTING SUMMARY REPORT

June 2002
Report 030602

Product Category:
**Test and Analysis
Tools**

Vendor Tested:

**Gambit
Communications,
Inc.**

Product Tested:

MIMIC[®] Simulator



Performance Verified

Key findings and conclusions:

- Demonstrated support for up to 10,000 concurrent device simulations on a Linux platform and up to 2,000 on a Windows platform
- Responded to over 1,500 SNMP requests per second, including SNMP v1, v2 and v3
- Demonstrated immediate dynamic response to randomly generated SNMP traps
- Installed quickly and was easy to use

Gambit Communications engaged Miercom to evaluate its MIMIC™ Simulator suite, which includes MIMIC SNMP Agent Simulator, MIMIC Cisco IOS® Simulator and MIMIC Cable Modem Simulator. We examined a beta version, 5.40, which has since been released (in early June). The product was evaluated in Miercom's test-lab environment, which is designed to evaluate high-end networking equipment such as routers, switches, voice-over-IP equipment and network management systems. The goal of testing was to evaluate how well the MIMIC Simulator met advertised performance claims. An evaluation of features and functionality was also included.

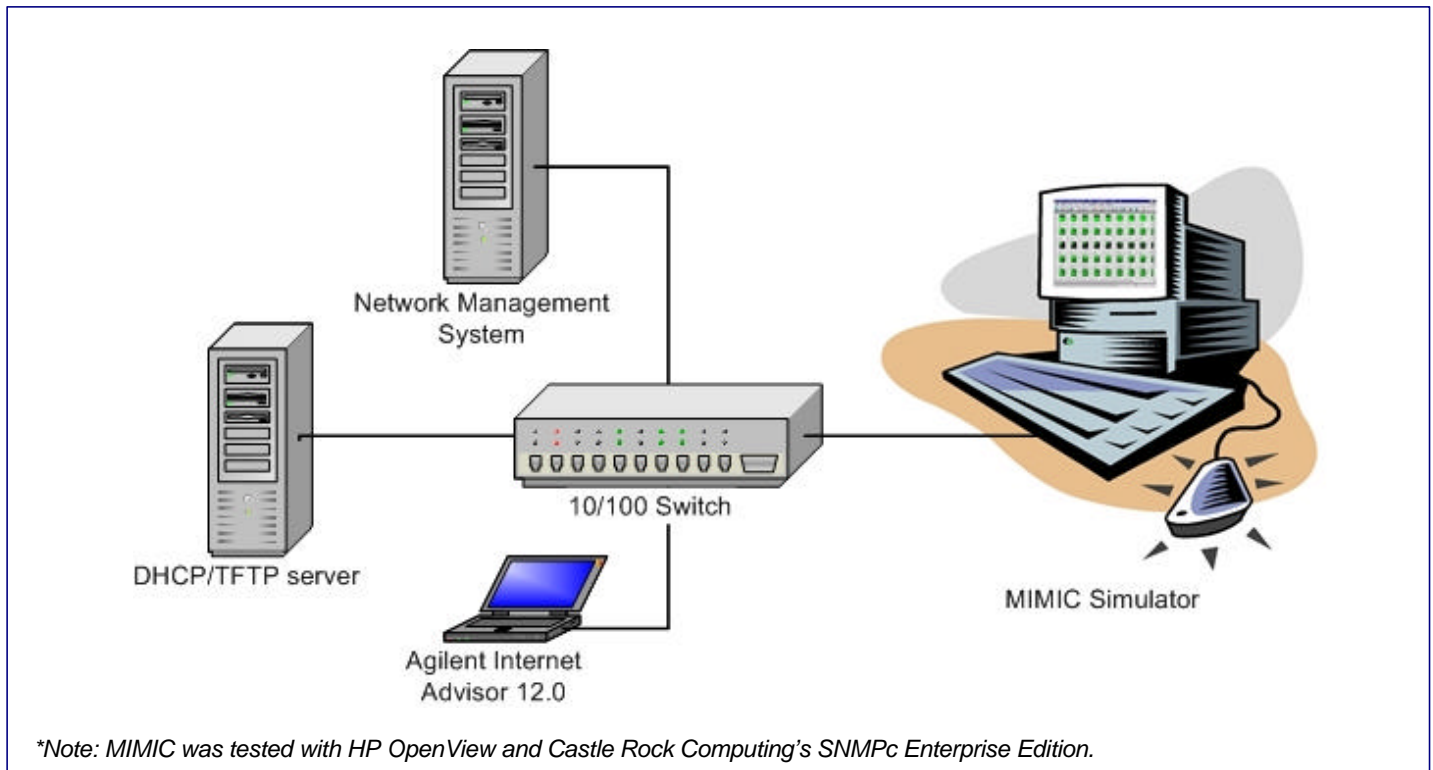
Performance

We tested the MIMIC's claimed 2,000 device simulation capabilities on a Windows platform by duplicating a Cisco Systems WS-C5000

MIMICView Graphical User Interface

| Index | address | Host Name | CPU | Description |
|-------|----------------|-----------|-----|---|
| 55 | 45.127.8.2 | public | 4 | pad40b - Version 4.1.11 (Build 6) by Release_Buster Fri 8/24/2000 11 Stopped |
| 56 | 45.127.8.3 | public | 0 | Foundry Networks, Inc. Router, IOSlike Version 06.6.87753 Imploded or Stopped |
| 57 | 45.127.8.4 | public | 4 | Accelast-1200 (2.0.5) - ssa-45.127.0.4.random.1 Stopped |
| 58 | 45.128.8.1 | public | 4 | Foundry Networks, Inc. Router, IOSlike Version 06.6.87753 Imploded or Stopped |
| 59 | 45.128.8.293 | public | 5 | IP STREET MULTI-EMIPAREMENT:ROM A.03.00,ETH0RECV,IP14,EEPROM A.03.00 Stopped |
| 60 | 45.128.8.253 | public | 0 | Accelast-1200 (2.0.5) - ssa-45.128.0.253.random.1 Stopped |
| 61 | 45.128.8.284 | public | 0 | Foundry Networks, Inc. Router, IOSlike Version 06.6.87753 Imploded or Stopped |
| 62 | 45.128.12.22 | public | 1 | linux ubuntu@ 2.2.14-5.8 #1 Tue Mar 7 21:50:41 EST 2000 sparc64 - ssa Stopped |
| 63 | 45.128.12.24 | public | 2 | NetApp Release 5.2.060 Thu Jan 27 13:08:07 PST 2000 - ssa-45.128.12.1 Stopped |
| 64 | 45.128.12.97 | public | 04 | linux ssa@ber.linux.orfcorp.net 2.2.14-5.0 #12 Sun Apr 16 09:17:31 EDT Paused |
| 65 | 45.128.14.101 | public | 2 | Xcode@: ssa Family 6 Model 6 Stopping 10 AT/AT COMPATIBLE - Software Paused |
| 66 | 45.128.154.10 | public | 3 | NewsPOINT-11 VS.30 EM-SSTL228593 VS.20 - ssa-45.128.154.10.random.1 Paused |
| 67 | 45.128.238.110 | public | 4 | Foundry Networks, Inc. FastEon Switchgroup Switch, Ixos Software Paused |
| 68 | 45.128.238.111 | public | 5 | Micro Server MICRO-9L-UE 218.8.3 Build #1: Wed Jul 24 14:42:19 EDT 1 Stopped |
| 69 | 45.128.238.1 | public | 0 | Foundry Networks, Inc. Router, IOSlike Version 06.6.87753 Imploded or Stopped |
| 70 | 45.128.238.253 | public | 0 | Accelast-1200 (2.0.5) - ssa-45.128.238.253.random.1 Stopped |
| 71 | 45.128.238.254 | public | 0 | Foundry Networks, Inc. Router, IOSlike Version 06.6.87753 Imploded or Stopped |

Test bed Set-up



About the testing...Gambit supplied one copy of the MIMIC Simulator 5.40 SNMP simulation tool for evaluation. Software and optional modules included: 1) an SNMP agent simulator for simulating SNMP v1, v2 and v3 devices, as well as RMON 1 and 2 devices by playing back created or recorded network simulations; 2) a Cisco IOS simulator that emulates a terminal connection to a Cisco device; and 3) a DOCSIS 1.0-compliant cable modem simulator. A telnet server module is provided to connect to the Cisco IOS simulators. DHCP, TFTP and ToD client modules are provided, adding functionality to enhance cable-modem simulations. An MGCP/NCS module is available for Linux installations to enhance cable-modem simulations and enable simulated agents to act as media gateways. (The latter were not tested.)

We installed MIMIC Simulator 5.40 software on a server with dual Pentium III 866 MHz processors, and 1 GB RAM, running Windows 2000 Server. In addition, we installed Mimic 5.40 on another machine running Red Hat Linux version 6.2 with a 500 MHz processor and 128 MB of RAM. For Network Management Stations (NMS) we used Castle Rock Computing's SNMPc Enterprise Edition, version 5.1.1b, and Hewlett-Packard Company's HP OpenView Network Node Manager, version B.06.20, which were also installed on servers with dual Pentium III 866 MHz processors and 1 GB of RAM, running Windows 2000 Server. We also employed Agilent Internet Advisor Software Edition, version 12 (a protocol analyzer) to monitor traffic between the NMS and simulated agents. A DHCP/TFTP server was added to test the DHCP and TFTP client functionality.

Performance

simulation (included with the MIMIC software) several times to create 2,000 devices. MIMIC successfully ran all 2,000 devices simultaneously, generating and responding to several PDUs at the same time. To test the claimed 10,000 device simulation on a Linux platform, we duplicated the same agent (Cisco WS-C5000) 10,000 times and then ran 3,500 agents simultaneously (a limitation of our processor speed and RAM allocation, not the MIMIC simulation software).

We also tested MIMIC's ability to record and play back SNMP activity on a network. We set up several SNMP-enabled devices on our test network, generated SNMP activity between the network management system (NMS) and the devices, while discovering the network view via the MIMICView GUI. We successfully recorded and replayed the activity of all these devices.

To test response times, we used a network simulation of over 200 devices that were recorded via the MIMIC recorder at N+I 2000,

Performance – continued

which was held in Las Vegas. The NMS systems (HP OpenView and Castle Rock's SNMPc) then polled several of the agents, and the MIMIC tool successfully generated and responded to over 1,500 physical data units (PDUs) per second, including SNMP v1, v2 and v3 PDUs. To test the MIMIC Simulator's dynamic response ability, we randomly generated traps on several of the devices. These traps were immediately viewed on the Agilent Internet Advisor, proving that they were not only successfully generated, but also immediately detected and displayed.

We then added a TFTP and DHCP server to the test bed to examine TFTP and DHCP client functionality of simulated devices. We successfully obtained an IP address from the DHCP server and downloaded a file from the TFTP server.

Included in the MIMIC suite are a cable modem simulator (including an NCS/MGCP module) and ToD clients, which were not tested.

Installation and Ease of Use

The Gambit MIMIC Simulation Suite of products is easy to install and get up and running within a short amount of time. Set up consisted of running an installation executable file from the CD-ROM and following on-screen prompts and entering license codes on the proper screens. We rated the level of technical expertise needed to install the product at about a "3" on a scale of 1 to 10, with 10 the most difficult.

Once installed, most of the MIMIC Simulator tasks can be easily accomplished via the MIMICView GUI for the MIMIC suite of products, including any product upgrades.

MIMICView also includes several "wizards" that simplify several common tasks accomplished through the MIMIC suite of products. This includes importing and compiling MIB files, adding and removing devices, discovering and recording existing networks, creating and modifying trap series, creating new simulations, updating software, and diagnosing problems that might occur while using MIMIC products.

Gambit Communications MIMIC Simulator: Key Features

| | |
|--|--|
| Applications included | MIMIC SNMP Agent Simulator, MIMIC Cisco IOS Simulator, MIMIC Cable Modem Simulator |
| Platforms supported | Windows, Solaris and Linux operating systems |
| Maximum concurrent device simulations | Up to 10,000 on a Linux or Solaris platform; 2,000 on Windows platform |
| Protocols supported | DHCP, TFTP, Cisco IOS, SNMP, DOCSIS, ToD, Telnet and MGCP/NCS |
| SNMP versions supported | SNMPv1, v2, v3; RMON 1, 2 |
| API support | C++, Tcl, Java and Perl |
| Network management support | HP OpenView, CiscoWorks, Castle Rock SNMPc and others |
| Pricing (US list) | Ranges from \$1,000 to \$60,000 depending upon options |

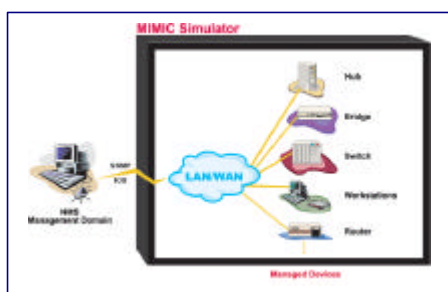
Features and Functionality

The MIMIC Simulator allows creation and running of SNMP device, Cisco IOS and cable modem simulations, which can export MIB object instances and values just as an actual network device would. Because these simulations act as they would in an actual network, reacting dynamically to changes in network activity, they allow users to modify them on a very granular level, including the ability to "fast forward" and "rewind" various instances to assess reactions. Devices can be easily added to or deleted from any simulation and can be configured independently in real time. Since the simulations export actual MIB instances and objects, they work with any NMS, including HP OpenView, CiscoWorks, Castle Rock's SNMPc, etc.

The Gambit MIMIC Simulation Suite offers a full complement of features that facilitate evaluation of management applications and policy scripts prior to deployment in a "live" network, operator training, conducting and practicing disaster preparation and recovery, and planning for future infrastructure growth.

Conclusions

Miercom recently evaluated the Gambit Communications MIMIC Simulator, v5.40, which demonstrated that it could successfully support up to 10,000 concurrent device simulations on a Linux platform and 2,000 on a Windows platform and generate and respond to over 1,500 SNMP v1, v2 and v3 PDUs per second. The Gambit MIMIC Simulator also demonstrated that it could quickly respond to dynamic changes in configuration, such as generating problem notifications. Quickly and easily installed and easy to use, the Gambit MIMIC application is an ideal tool for simulating very large networks, preparing for disaster preparation and recovery, training staff and planning for future infrastructure growth.



MIMIC Simulator



Gambit

Gambit Communications, Inc.
76 Northeastern Blvd., Suite 30B
Nashua, NH 03063
Phone: 603-889-5100
Fax: 603-889-5005
www.gambitcomm.com

About Miercom's Product Testing Services...

With hundreds of its product-comparison analyses published over the years in such leading network trade periodicals as *Business Communications Review*, *Network World*, and *Internet Week*, Miercom's (formerly MIER Communications') reputation as the leading, independent product test center is unquestioned. Founded in 1988 by Edwin E. Mier, formerly managing editor of *Data Communications* magazine and a practicing network consultant for over 20 years, the company has pioneered the comparative assessment of networking hardware and software, having developed methodologies for testing products from ATM switches to VoIP gateways and IP PBXs. Miercom's private test services include competitive product analyses, as well as individual product evaluations. Products submitted for review are typically evaluated under the "NetWORKS As Advertised™" program, in which networking-related products must endure a comprehensive, independent assessment of the products' usability and performance. Products that meet the appropriate criteria and performance levels receive the "NetWORKS As Advertised" award and Miercom Labs' testimonial endorsement.



410 Hightstown Road, Princeton Junction, NJ 08550
609-490-0200 • fax 609-490-0610 • www.mier.com

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