



nGenius™ Instrumentation Overview

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Rev. 5/00

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Welcome

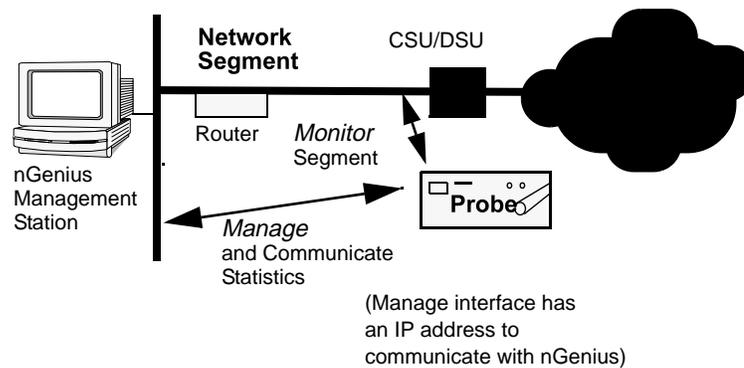
The *nGenius Instrumentation Overview* is designed to provide background information on Remote Monitoring (RMON) and on setting up NetScout probes. This guide addresses the following:

- Key monitoring device concepts, refer to page 1
- Overview of device setup process, refer to page 4
- Contacting NetScout Systems, refer to page 7

Part I: Before You Begin

How Monitoring Devices Fit into the Network

Before you begin using nGenius™, you should understand how the nGenius performance management system, NetScout probes, and the network all interact to reflect a current picture of all network activity and traffic. The following diagram shows an example of a monitored network.



In a monitored network, the monitoring device (probe or switch) collects data on behalf of the nGenius performance management system. The monitoring device summarizes traffic into a variety of types of statistics, which could include the amount of traffic seen on the network in all seven Open Systems Interconnection (OSI) layers. The collected statistics display in real-time views and are available in a database for 31 days.

To collect the statistics, nGenius supports many types of devices that implement RMON (Remote MONitoring) agents. These devices include but are not limited to:

- Probes that collect statistics on behalf of Ethernet, Token Ring, Fast Ethernet, HSSI, FDDI, WAN, ATM, and Frame Relay topologies.

Frame Relay probes can discover activity associated with individual DLCIs, which can help you manage trunks, verify CIR availability, and isolate faults on WAN links. NetScout multi-port probes can also monitor virtual interfaces such as Fast EtherChannel links, ATM PVCs, and VLANs.

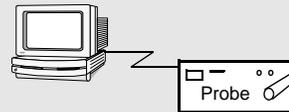
- Switches that collect port, FEC and VLAN statistics, Mini-RMON, and in some cases RMON1 and RMON2 statistics.

To accurately reflect all activity present in enterprise networks, switch definitions let nGenius examine individual switch ports. The spanning feature lets you apply full RMON analysis to port traffic by mirroring the desired port to the port where a probe is attached. With spanning, you can apply NetScout monitoring and troubleshooting resources exactly when and where they are needed.

How nGenius Tells Monitoring Devices What to Collect

After you gain access to the probe through nGenius, you can then assign global settings and templates to the device. Global settings control the type of information that monitoring devices collect regarding your network. Templates control the range of information to be logged to the database. Templates can also manage the implementation of alarms and short- and long-term history.

Global Settings and Templates in nGenius tell devices what to collect, when to collect it, and what portion to log to the database.



Collected information includes:

- Amount of traffic generated per protocol and application
- Logging per RMON level

Remote Monitoring According to Standards

Devices communicate with NetScout network management stations via Simple Network Management Protocol (SNMP) commands. All NetScout monitoring devices implement the RMON1 and RMON2 standard MIB for storing statistics. nGenius uses SNMP to poll monitoring devices for information. The RMON standard lets technology from many different vendors work together seamlessly to monitor your network.

Different RMON levels

RMON statistics are the basis for all nGenius applications. You can always be assured that the RMON data collected, retrieved, and displayed by nGenius accurately reflects the state of your network.

RMON1 and RMON2

Statistics display in nGenius based on all layers defined in the seven-layer OSI model. The groups that make up the RMON1 MIB are:

- Statistics
- Host
- Filter
- TokenRing
- History
- HostTopN
- Capture
- Alarm
- Matrix
- Event

RMON2 groups include:

- ProtocolDir
- NIHost
- AIMatrix
- ProtocolDist
- NIMatrix
- UsrHistory
- AddressMap
- AIHost
- ProbeConfig

RMON standards are very powerful because they help you remotely monitor the traffic on your network.

Mini-RMON

Mini-RMON is a subset of the RMON1 standard, and it is made up of these MIB groups: Statistics, History, Events, and Alarms. Mini-RMON is often embedded in switches.

RMON Extensions

NetScout Systems offers numerous extensions to the RMON standards, allowing you to use nGenius with popular network topologies and configurations, including Fast Ethernet, Frame Relay, HSSI, FDDI, NetFlow, Fast EtherChannel, ATM, T1/E1, and Channelized T1/E1.

Part II: Setting Up Monitoring Devices

If you already have monitoring devices (probes or switches) set up on your network, turn to the *nGenius Installation Guide* and get started installing the nGenius performance management system.

If you need to set up monitoring devices on your network, this section provides an overview of device setup procedures.

Probe Setup Prerequisites

Before you set up your system's probes, you should be aware of the following information about connection and configuration. For more information, refer to the *NetScout Probe Agent Administrator Guide* and the *NetScout Probe Hardware Guide*.

Connection Guidelines

- All communications with the probe pass through the probe management interface. In the most typical deployment, one of the probe's LAN network interface cards is the management interface.
- The probe gathers information about the network using the probe monitor interface. The type of cable to use for this connection depends on the probe type. For information on choosing the appropriate cable, refer to the *NetScout Probe Hardware Guide*.

Configuration Requirements

- You need to have a null-modem serial cable. Attach one end of the serial cable to the probe's serial port, and attach the other end of the serial cable to the local ASCII terminal.
- You should also know the IP address of the nGenius management station.

Probe Setup Procedure

- 1 Unpack the probe, attach the power cord to the probe, and plug the other end of the cord into your power source.
- 2 Connect the probe's management port (Ethernet or Token Ring) to a network segment.
- 3 Connect any tap(s) supplied by NetScout Systems into the probe monitor interface(s).
- 4 Connect the probe or tap to the network link you want to monitor.
- 5 Use a null-modem cable to connect an ASCII terminal to the probe's Console port.
- 6 Turn on the ASCII terminal.

- 7 Turn on the probe and ensure that the red fault light on the LCD panel is off.
- 8 Ensure that the terminal parameters use the following settings:
 - Baud Rate **9600** bps
 - Bits per character **8**
 - Stop Bit **1**
 - Parity **No (N)**
- 9 Press any key to access the Agent Configuration Utility menu.
- 10 Assign the following information to the probe using the Agent Configuration Utility menu:
 - IP address
 - Net mask
 - Gateway address
 - Read and write community names

For more information, refer to the *NetScout Probe Agent Administrator Guide*.
- 11 Using the same menu, enter the IP address of the nGenius management station as the server address. (The device uses this address to reload its configuration files whenever it is reset.)
- 12 If you plan to use a probe agent software option and the probe you are using contains agent hardware that is earlier than version 4.7, install the license of that software option. Refer to the documentation that accompanied the software option coupon.
- 13 On WAN probes, configure the following in the agent menu for each monitor interface on the probe:
 - Select **Interface [8]** and set the type of interface. (On all probes with multiple interfaces, monitor interfaces are numbered 3 and higher.)
 - Select **Encapsulation [7]** and set it to your desired encapsulation type.
 - Select **Interface Speed [6]** and ensure that the network speed setting matches that of the segment to be monitored.
 - If the WAN segment does not utilize a Frame Relay management protocol such as LMI or Annex D, select which DLCIs you want to monitor. If the segment does utilize Frame Relay management protocol, DLCI interface creation is automated. For more information refer to “DLCI Virtual Interfaces on WAN Probes” in the *NetScout Probe Agent Administrator Guide*.
- 14 In Agent Configuration Utility menu, select **Reset Agent [12]** and confirm your choice [**y**]. The probe reboots. Your changes take effect.

To identify default probe interface settings, refer to the “Probe Interfaces” appendix of the *NetScout Probe Hardware Guide*. For more information on other probe agent configuration issues, refer to the *NetScout Probe Agent Administrator Guide*.

Contacting NetScout Systems

nGenius Community

Web Site Address: www.netscout.com/ngeniuscomm

Customer Support

Telephone: In the US, call **888-357-7667**; outside the US, call **978-614-4000**. Phone support hours are 8 a.m. to 8 p.m. (EST).
When calling, know the following:

- Type of network platform
- Software and firmware versions
- Probe model number
- License number and your organization's name

Email: support@netscout.com

Sales

Call **800-357-7666** for the sales office nearest your location.

E-Services

Web Site Address: www.netscout.com/support

From the Support page, log in using your account password (or follow the instructions to create a new account) to access the following pages:

Online Support Center — For FAQs and known issues

Software Downloads — (MasterCare Contract holders) For downloads, patches, updates, and customer-specific information

Documentation — For NetScout product documentation (pdf format).

Training

For end-user and partners training information, and online course listings, access the web site Training link .

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