



Quality of Line Monitoring

The Problem: Network Line Congestion = Customer Unhappiness

When networks become congested, customers can experience a slow down or even loss of network connection. The problem may reside in the **traffic conditions** being experienced by the network (**rather than network device failure**). Service providers have historically used SNMP to poll line conditions thereby reducing the user's bandwidth. Typically for SNMP to find out about the problem it must send more SNMP traffic onto the link which is already congested, further reducing the user's bandwidth. The network slows down as it continues to search for the problem.

The Solution: Real-time remote monitoring that provides traffic information without adding to network traffic

Metrobility's patent-pending Radiance technology enables RMON data to be transmitted from a remote site in real-time through a dedicated management channel on the Ethernet link. The technology requires no IP address or SNMP stack and it has no impact on user bandwidth. The gathering of RMON statistics from the remote site in this manner does not cause increased network congestion found in SNMP polling. Yet, all statistics are available through the management card using SNMP.

Remote **MON**itoring: Extensions to the Simple Network Management Protocol (SNMP) that provide comprehensive network monitoring capabilities. In standard SNMP, the device has to be queried to obtain information. RMON is proactive and can set alarms on a variety of traffic conditions, including specific types of errors.

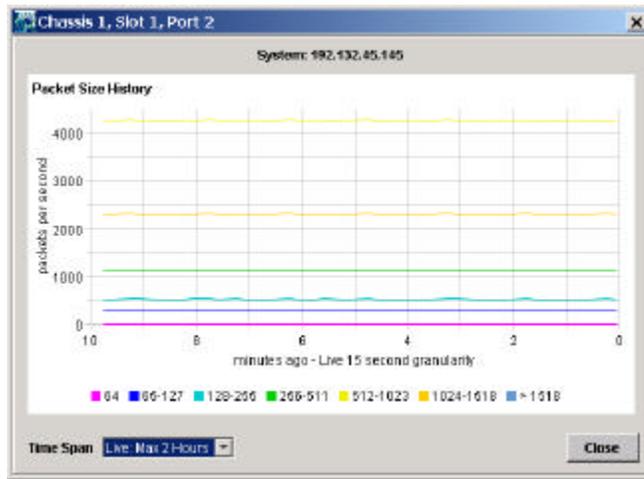
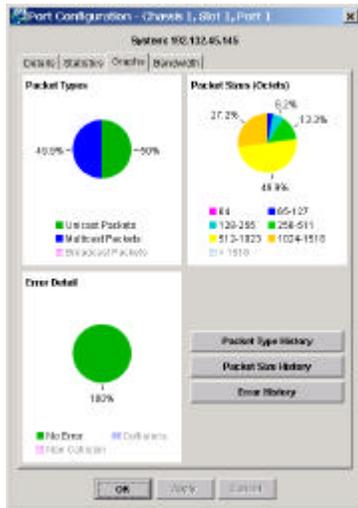
TechEncyclopedia
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Port Configuration - Chassis 1, Slot 1, Port 1
System: 192.132.45.145

	Totals	Deltas
Octets	1,193,807,659	0
Packets of All Types	1,049,419,294	9,732,919
Broadcast Packets	0	0
Multicast Packets	524,718,350	4,865,838
Packets, 64 Octets	444,265	4,121
Packets, 65-127 Octets	32,341,770	299,955
Packets, 128-255 Octets	65,572,044	608,142
Packets, 256-511 Octets	139,940,349	1,297,894
Packets, 512-1023 Octets	524,865,220	4,865,975
Packets, 1024-1518 Octets	208,455,666	2,858,732
Error Packets of All Types	0	0
Collisions	0	0
Non-Collisions	0	0
Receive Blocked Octets	720,256,758	0
Receive Blocked Packets	22,010,934	4,172,508
Transmit Blocked Octets	0	0
Transmit Blocked Packets	0	0

NetBeaconä Element Manager, Metrobility's remote element management technology, offers RMON reporting through an industry standard SNMP management system. Each port on an Access Line Card supports the complete RMON Group 1 statistics outlined in RFC 1757 as listed below.

EtherStatsOctets
 EtherStatsPkts
 EtherStatsBroadcastPkts
 EtherStatsMulticastPkts
 EtherStatsCRCAlignErrors
 EtherStatsUndersizePkts
 EtherStatsFragments
 EtherStatsJabbers
 EtherStatsCollisions
 EtherStatsPkts64Octets
 EtherStatsPkts65to127Octets
 EtherStatsPkts128to255Octets
 EtherStatsPkts256to511Octets
 EtherStatsPkts512to1023Octets
 EtherStatsPkts1024to1518Octets
 EtherStatsOversizePkts



The data provided by the SNMP manager can also be displayed in an easy-to-read graphical format, or as a histogram through the database option offered in NetBeacon 3.0.1. Using the database, trends can be easily identified.

The Benefit: Proactive real-time QoL information = Happy Customers

No SNMP polling that consumes user bandwidth

Service providers need to identify the problems without adding more burden to the network. With Radiance no SNMP/IP stack is required at the remote location. Unlike SNMP, which has long polling delays that can increase based on the size of the network, Radiance technology does not utilize any user bandwidth, there is no latency and service providers don't have to worry about polling times. Since remote customer sites do not require an IP address, the service provider has fewer IP addresses to manage. In addition, network security is greatly improved by preventing hackers from illegally attacking the network.

Better Packet Error Rate (PER)

The technology is also very tolerant of error conditions, much more than a standard IP packet. Radiance technology utilizes smaller packets which have a better packet error rate than larger SNMP packets because of the signal-to-noise ratio. Because it uses short management packets, it is more immune to noise.

With Radiance the service provider can be proactive in identifying potential line congestion rather than waiting for a customer to complain. But it doesn't stop at just collecting information. Through remote loopback testing, commands can be sent through the optical link to identify errors on the link between the service provider and the customer premise. Service providers can plan maintenance and eliminate or minimize truck rolls, and reduce network downtime and dramatically reduce overall network operation costs.

Product Information

Quality of Line Monitoring is available with Metrobility's Access Line Cards that provide copper-to-fiber and fiber-to-fiber media conversion as well as distance extension from 2km segments to 100km segments. Access Line Cards also provide remote optical loopback and bandwidth provisioning in 1Mbps increments.

Access Line Cards

R231-13	100M TX to FX MM/SC
R231-14	100M TX to FX SM/SC
R231-15	100M TX to FX MM/ST
R231-16	100M TX to FX SM/ST
R231-17	100M TX to FX SM/SC LH (40km)
R231-1J	100M TX to FX SM/SC ELH (100km)

Chassis Configurations

R5000-17HS	17 Slot Chassis with Two Bays for Optional AC and/or DC Load-Sharing Power
R1000-AAF	2 Slot Chassis with Two Fixed, Load-Sharing, Front Facing AC Power Supplies
R1000-AAR	2 Slot Chassis with Two Fixed, Load-Sharing, Rear Facing AC Power Supplies
R1000-ADF	2 Slot Chassis with One Each Fixed, Load-Sharing, Front AC and DC Power Supplies
R1000-ADR	2 Slot Chassis with One Each Fixed, Load-Sharing, Rear AC and DC Power Supplies
R1000-DDF	2 Slot Chassis with Two Fixed, Load-Sharing, Front Facing DC Power Supplies
R1000-DDR	2 Slot Chassis with Two Fixed, Load-Sharing, Rear Facing DC Power Supplies
R400-02HS-1A	2 Slot Chassis with One External AC Power Supply, Standalone

NetBeacon Element Manager is required for reporting data. NetBeacon's database option requires NetBeacon 3.0.1 and an R502-M management card.

For additional information on Quality of Line monitoring, NetBeacon and supported modules and line cards, contact Metrobility Optical Systems at 1.877.526.2278 or 1.603.880.1833, or visit us at www.metrobility.com.