

HP Internet Advisor for LAN Network Vital Signs and Commentators

Internet Advisor for LAN problem solving series — No. 3.

Isolating a LAN problem or tuning a network often means searching through hundreds, even thousands, of captured frames — most of which are insignificant or irrelevant. You lose valuable time processing this information manually and by trying to decide what is important and what is not. Even a highly skilled troubleshooter can be quickly overwhelmed. Vital Signs and Commentators increase your productivity and save time by automating this process. Think of Vital Signs as indicating the "what" of the problem and Commentators as the "who," "how," and the "why."

Vital Signs provide a statistical picture of the Ethernet and tokenring MAC layer, and Novell, TCP/ IP, and DECnet protocol stacks, which can be used to identify problems or to assist in optimizing the configuration of network helping you get the most out of your network. Vital Signs shows current, average and peak sample values for each statistical parameter, along with user-configurable thresholds which can be set dynamically to allow automatic detection of intermittently occur-



Novell Vital Signs and Commentators provide a simple to use expert troubleshooting and network optimization process for your local area network.

ring events. Thresholds that are exceeded get recorded in the event log and can be used to stop the capture process, so you can analyze events leading up to the problem at your leisure. Vital Signs are the first step in an expert process which also uses Commentators and specific frames stored in the capture buffer to detect and resolve your networking problems. Commentator is an expert troubleshooter which monitors data traffic, follows the protocols, and reduces hundreds of frames to a handful of significant events. Each event in the list is completely described, time-stamped and rated in terms of its severity: normal, warning or alert. Normal events are those which are noteworthy but not likely to significantly impact network operation, such as File Open in Novell. Warning events usually leave the network operational but may indicate a configuration or performance problem, for example, Delay Packets. Alert events indicate a serious network problem, for example, Down File Server.

Unlike other analyzers, Vital Signs and Commentators in Internet Advisor for LAN operate in real time, interpreting data traffic as it occurs. Thresholds can be set to stop the capture process automatically when significant events occur, allowing you time to analyze the problem.

All protocol Commentators appropriate to a given media can be run, either simultaneously or selected individually, during measurement configuration. The frame numbers of the frames causing the Commentator events are listed as part of the comments so that specific frames may be viewed to help further define and resolve network problems.

The following is a list of statistics measured by the five Vitals Signs measurements:

Ethernet Vitals

Network Utilization (%)	Frames
Local Collisions	Remote Collisions
Late Collisions	Remote Late Collisions
Runts with good FCS	Jabbers
Jabbers with bad FCS	Dribble Frames
Broadcasts	Multicasts
Token-Ring Vitals	
Network Utilization (%)	Frames
Code Violations	Aborts
Receiver Congestion	Burst Errors
Line Errors	Soft Errors
Beacons	Claim Tokens
Ring Purges	
TCP/IP Vitals	
Network Utilization (%)	IP Utilization
Network Packets	IP Packets
IP Broadcasts	IP Fragments
ICMP Redirects	ICMP Unreachables
Low TTL	IP Packet Size
SNMP Packets	DNS Packets
ARP Packets	Low Window
Routing Packets	
Novell Vitals	

Nov

Network Utilization (%)	IPX Utilization
Network Packets	IPX Packets
Local Tx Rate	Remote Tx Rate
Burst Mode	RIP Packets
SAP Packets	Read Request Pa
Write Request Packets	Busy Server

Packets

DECnet Vitals

Network Utilization (%) **DRP Utilization (%)** LAT Utilization (%) **MOP Utilization (%)** LAVC Utilization (%) Packet Count **DRP** Packet Size **DRP** Data Messages **DRP Control Messages DRP RTS Packets DRP High Visit Count Packets NSP** Fragments NSP Retransmission Connect Initiates **DEC V Utilization (%) DEC V Packet Size CLNP Error PDU DEC V Data PDU DEC V Low Lifetime DEC V Low Credit TP Error PDU DEC V Fragments Missed Frames**

The following is a representative (though not complete) list of the kinds of events observed and interpreted by the Commentators:

TCP/IP Commentator

IP: Broadcast Storm, Low Time-To-Live, Zero Time-To-Live, Duplicate Address

TCP: Low Window, Excessive Retransmission, Close Connection, Open Connection

RIP: Router Identified, Routing Information Reply, Routing Information Request

IGRP: Router Identified

OSPF: Router Identified

Novell Commentator

Burst Mode: Connection Reply, Connection Request, File Close, File Read, File Write, Transfer rate

File: Create, Open, Read, Reading, Writing, Transfer rateCreate Service ConnectionDelay/Busy ServerDestroy Service ConnectionDown File ServerWatchdog Request/Reply PacketsFailed Reply PacketNegotiate Buffer SizeTransaction TrackingRouting Information Request/Reply PacketsService Advertising Request/Reply Packets

DECnet Commentator

Level 1 and 2 Router MessageRouter IdentifiedEthernet Router Hello MessageHigh Visit CountLevel 1 and 2 Change MessageReturn to Sender PacketDuplicate Network AddressIncorrect Hello timerConnection Initiated, Rejected, Aborted, and ClosedExcessive Retransmitted Connect Initiates



Excessive Retransmission Flow Control Stop and Resume Data Messages LAT Virtual Connection Initiated, Aborted, and Closed LAT Service Connection Initiated, Aborted, and Closed Excessive LAT Retransmission DAP Slow File Transfer DAP File Open/Create, Open Error, Close, and Close Error **DEC V Low and Zero Lifetimes** DEC V Connection Initiated, Rejected, Closed, and Aborted **CLNP and TP Error PDUs** DEC V Low Credit and Low Credit Recovered **DEC V Excessive Retransmission**

Token-Ring Network Commentator

- **Ring Purge Inserting Station** Successful Insertion Station Removal New Active Monitor Beaconing **Isolating Soft Errors** Non-Isolating Soft Errors **Ring Resetting** Neighbor Notification Failure
- Active Monitor Error NAUN Change **Ring Purging** Beacon Streaming Beacons **Request Station Removed Monitor Contention** Failed Insertion Catastrophic Error

IBM LAN Manager Commentator (Remote and Local Token-Rings)

Report Ring Error Monitor Status Receiver Congestion Report Bridge Status Remote Ring Soft Error - Pre-Weight Exceeded Remote Ring Soft Error - Weight Threshold Exceeded **Remote Non-Isolating Soft Error - Threshold Exceeded Beaconing Condition on the Ring Beaconing Condition Recovered** Bridge Performance Threshold Exceeded Single Route Broadcast Status Change

ICMP Network Commentator (Ethernet only)

Unreachable Hosts Unreachable Networks **Protocol Not Supported** Unattainable Port Fragmentation Needed Bad Source Route Destination Host Unknown **Destination Network Unknown** Source Host Isolated Congested Device **Time-To-Live Count Exceeded** Fragment Lost Parameter Problem **Required Option Missing Destination Network Administratively Prohibited Destination Host Administratively Prohibited** Network Unreachable for Type of Service Host Configured with Poor Network Route Host Configured with Poor Host Route Poor Type of Service and Network Route Poor Type of Service and Host Route Substantial Subnet Mask Requests **Excessive Ping and Ping Replies** Substantial Timestamp Requests

Error Rate Decaying **Receiver Congestion Ended** Bridge Counter Report

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