HP Internet Advisor—LAN
FDDI

HP Internet Advisor — LAN problem solving series — No. 10

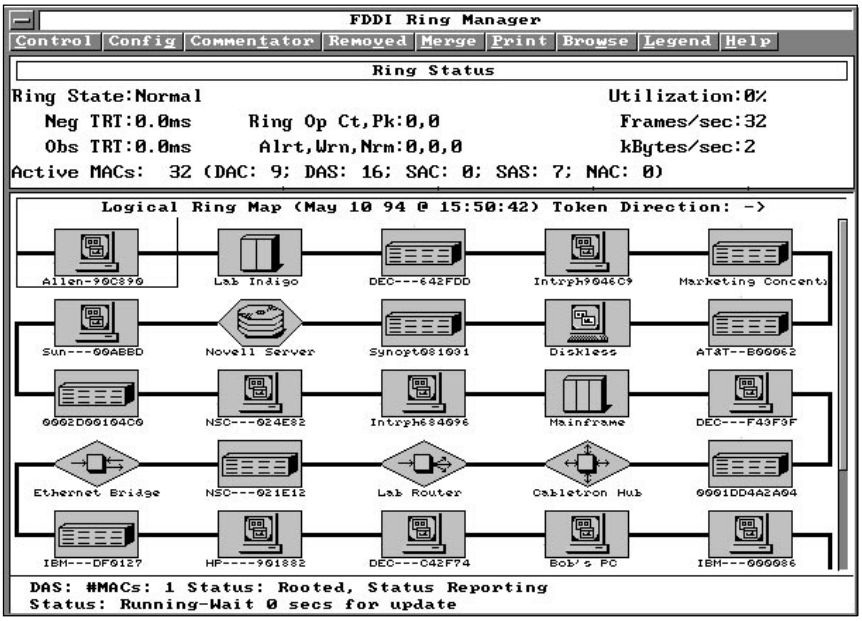
The HP Internet Advisor can help you install, configure, maintain, and troubleshoot FDDI network equipment and software. You can send and receive FDDI frames at maximum FDDI rates (as high as 450,000 fps). Statistical information always reflects your entire traffic load.

In the Internet Advisor for FDDI, the Ring Manager provides a graphical presentation of your ring, along with ring status. Clicking on a station icon brings up all the detailed SMT-based information available for that station. The Commentator, built into the Ring Manager, automatically follows the SMT protocol and alerts you to any potential problems or actual problems as they occur.

The Internet Advisor for FDDI provides you with complete decodes of FDDI Station Management (SMT) processes, including connection management, ring management, and SMT frame services information. Detailed configuration data for negotiated and observed token rotation time (TRT), and the station address setting the negotiated TRT, are readily accessible through Ring Status.

FDDI measurements, running from either the line in real time or from buffer data, include the following LAN measurements from the HP Internet Advisor:

- Commentators and Vital Signs for TCP/IP, Novell, and DECnet
- Protocol Statistics
- All decodes
- Novell server lists
- SNMP trap application
- Node Discovery



The FDDI Ring Manager indicates ring status and either a logical or physical display of the ring. Clicking on a station icon automatically brings up the station information window.

Real-time displays
Front Panel LEDs: Current line state for A and B ports (idle, active, halt, master, noise, or quiet)

Status Icons Information:
station type (DAS, SAS, etc.)
CMT port status for both ports:
(OK, ISO [isolated], or WP [wrapped])

Hardware
Analysis processor: AMD 29030 @ 20 MHz
FDDI chip set: Motorola with 68332 processor for SMT
Data capture capability: >450,000 fps, 100% network load
Data transmit capability: >450,000 fps

User selectable setup parameters
Target token rotation time (TTRT)

Connection mode: (in single and dual attach)
- Station: The Internet Advisor for FDDI functions as an active node and follows the SMT 7.2 protocol.
- Repeater: The Internet Advisor for FDDI functions as a PHY repeater. Frames enter the capture buffer and the traffic generator functions as in station mode.
- Monitor: Internet Advisor for FDDI receives frames as normal. The out-going bit stream does not use the PHY chip set, but is clocked based upon the incoming data. The instrument will work on a signal splitter in repeater or monitor modes.

Decodes and tools
LLC and above — All HP Internet Advisor for LAN decodes available.
See HP Internet Advisor — LAN problem solving series — No. 4, "Protocol Decodes."
Full MAC layer decode showing:
- Preamble length
- Frame control field
- Source and Destination addresses
- Frame status indicators include:
  - Valid frame check sequence
  - Error in preamble or frame length
  - Error in info field or frame termination
  - Receipt of specific violation symbols
  - Count of symbols in control indicator field

Full SMT decode of 6.2 and 7.2 SMT frame types
- Frame class and types
- NIF, SIF ECF, RAF, RDF, SRF, PMF, ESF
- Version, transaction and station ID
- Info field length and parameters

Capture filters
Tokens, void frames and stripped frames filtered out by default (can override).

47 predefined filters for: MAC, SMT, SNAP, and 802.2 encapsulated LLC frames.

Filters can be based upon source or destination MAC addresses, frames types, frame attributes, or user selected hex data.

Frame types include: MAC, LLC, SMT, Reserved, Void and Tokens

Frame attributes include: Good/bad FCS, combinations of E/A/C indicators set/reset, stripped frames, and format errors.

Performance analysis and statistics
Statistics available via dashboard display, graphical trends, or tabular display.

The following network counts are maintained by the front-end hardware; they are accurate and absolute under all load conditions:

Utilization (% over time)	Frame rate (frames/sec)
Byte counts	Frame types (pie chart)
Tokens	LLC frames
Stripped frames	MAC frames
Other (SMT and void frames)	
Token rotation time (current value)	

The following error conditions are counted:

Bad FCS	Beacons (gauge)
E-bit set	Violations
PDU too long	Claim frames (gauge)

The following counts are maintained off a sampled population from the network traffic and displayed in the summary, graphical trends, and tabular trends displays:

- Percent broadcast, multicast, and unicast
- Most used layer 3 protocols
- Distribution of selected stations in sampled traffic

When the Internet Advisor for FDDI is in the participating mode, the node-card SMT software maintains node specific counts for the analyzer itself. It records:

- MAC ring op count
- Link error monitor (LEM) count
- LEM reject count
- SMT transmitted errors

Traffic generator
The FDDI traffic generator is based on HP's Ethernet/token-ring traffic generator, with password security to prevent unauthorized access.

The FDDI traffic generator is based upon a symbol mode generator implemented in hardware; traffic does not have to go through the FDDI chip set, so 100 percent loading can be achieved with the ability to send errored frames or customized symbol streams.

The user can follow the FDDI rules or override them; i.e., grab the token, start transmitting and release the token, or transmit without waiting for the token or without sending a new token.

The traffic pattern may be specified as the number of times a set of messages are to be transmitted each time the Internet Advisor for FDDI gets the token. Alternatively, the user may specify the traffic as a percent utilization.

Up to 32 messages may be user-defined and/or copied form the capture buffer. Thirty two predefined messages are included.

One of three possible frame types may be specified: MAC, LLC, or SMT. Source and destination addresses may be entered in hex or specified from a node list. Preamble and starting delimiter fields allow complete control of up to 80 symbols to be sent before the actual frame.

Other user definable frame fields and attributes include:
Frame type (from a list of pre-defined MAC, SMT and LLC frames
Frame control
Source and destination addresses
Preample
User data
Ending delimiters
Frame length
Starting delimiter
Terminating control

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Data Subject to change
Printed in U.S.A. 8/95

5964-2186E