Course Number H7211B
Opt. 341
Dedicated

FDDI Network Analysis

Overview

Gain in-depth understanding of FDDI fault isolation and analysis techniques

Course Overview
In this class, you will learn how to design, maintain and troubleshoot FDDI networks using a **live classroom network. Hands-on labs** will include configuring and troubleshooting problems on a network of Cisco routers, concentrators and FDDI/Ethernet switches running real IP traffic. Students will use an Agilent FDDI Internet Advisor to perform the hands-on labs.

What You Will Learn
- Quickly Discover and Document Network Topologies
- Understand and Correct Topology Problems
- Troubleshoot Network Problems
- Capture and Analyze NIF and SIF Frames to Understand how Logical and Physical Maps are Created in the *Ring Manager*
- Proactively Manage Your FDDI Network to Minimize Downtime
- Find Out if Your FDDI Network is Healthy
- Configure Routers, Concentrators and Switches in Various Network Configurations
- Analyze Bridged and Routed Traffic
- Get the Most Out of the Measurements in the Agilent FDDI Internet Advisor!

Specifications

Course Type
User/Application Training

Audience
Network engineers, private network managers, or network consultants that need to design, maintain, or troubleshoot FDDI network problems with an Agilent LAN Internet Advisor.

Prerequisites
Previous experience with the Agilent LAN Internet Advisor (Ethernet, TokenRing, or FDDI). FDDI networking experience.

Course Length
3 days

Course Format
This course combines lecture with extensive hands-on labs on a live classroom network. FDDI fundamentals and practical troubleshooting techniques are presented using the Agilent FDDI *Ring Manager*. This approach provides maximum exposure to real networking equipment and reinforces concepts necessary to quickly and effectively use the Agilent FDDI Internet Advisor to solve FDDI network problems.

Delivery Method
Dedicated (at customer site) using customer's equipment.

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Detailed Course Agenda
Introduction to FDDI
- Why We Need to Proactively Manage FDDI Networks?
- FDDI Basics
- Why use FDDI?
- Recommended Readings and References
- FDDI Layers
- FDDI Standards

Designing Reliable FDDI Networks
- Introduction to a Typical Network Design
- Dual Ring Topologies
- Claim Process
- Attachments to the Dual Ring
- Concentrators
- Optical Bypass
- Dual Homing
- Connection Rules
- A survey of Network designs

Logical and Physical Ring Maps
- Introduction to a Large Network Design
- Benefits of Mapping Your Network
- Logical Mapping
- What it Displays
- What are NIFs?
- How Does Logical Mapping Work?
- Example of Logical Mapping

Lab 1 - Logical Ring Mapping
- Physical Mapping
- What it Displays
- Multilevel Concentrator Layout: Logical vs Physical Views
- What are SIFs?
- How Does Physical Mapping Work?
- Example of Physical Mapping
- Case Study of a Large Network

Lab 2 - Physical Ring Mapping

Lab 3 - Dual Homing
- Troubleshooting Topology Problems
- Trunk vs Tree Network Connections
- Wrapped Rings
- What are Wrapped Rings?
- How Can They Occur?
- How Can They be Detected and Prevented?
- When are Wrapped Conditions Acceptable as a Network Topology?

Lab 4 - Wrapped Rings
- Twisted Rings
- What are Twisted Rings?
- How Can They Occur?
- How Can They be Detected and Prevented?
- Other Topology Problems
- Wrapped and Twisted Ring Examples

Lab 5 - Twisted Rings
- FDDI Cables and Media
- A Quick Review of Cable and Transmission Media Commonly Used to Construct FDDI Networks
- Multi-Mode Fiber
- Single-Mode Fiber
- Copper Media: TP-PMD and CDDI
- Optical Power Losses
- Troubleshooting Cable and Physical Layer Problems
- Cable and Connector Faults
- Clocking Problems (Elasticity Buffer Errors)
- Link Errors
- LEM Counter - Link Errors
- LEM Reject Count - Connection Rejections
- Obtaining Error Unit Information From the Network
- Troubleshooting Link Errors & Problem Isolation
- Optical Power Level Problems
- Link Error Case Study

Lab 6 - Link Errors
- FDDI Frames - MAC Layer Problems
- MAC Layer Functions
- Frame Formats
- MSB and Canonical (Ethernet) Addressing Formats
- Frame Status Indicators
- Claims and Beacons
- Selecting TTRT Values
- MAC Counters and Timers
- Frame Errors: FCS Errors, Lost Frames, and Not Copied Frames
- Ring Op Count
- Duplicate MAC Addresses
- Case Study
- FDDI Bridging
- Encapsulating Bridges
- Translational Bridges
- Orphan Frames
- Void Purgers
- Encapsulation Techniques

Lab 7 - Bridged IP Traffic

Lab 8 - Void Purgers
- FDDI Routing
- Bridging vs Routing
- Subnets
- Arp Caches

Lab 9 - Routed IP Traffic
- FDDI Switches
- Virtual LANs

Lab 10 - VLAN Configurations

For the latest information on class schedules and locations, visit our website:
http://agilent.com/comms/education

For more assistance with your test & measurement needs go to http://agilent.com/find/assist

Or contact the test and measurement experts at Agilent Technologies (During normal business hours)

United States:
(tel) 1 800 452 4844
http://agilent.com/comms/learn

Canada:
(tel) 1 877 894 4414
(fax) (905) 206 4120

Europe:
(tel) (31 20) 547 2000

Japan:
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Latin America:
(tel) (305) 269 7500
(fax) (305) 269 7599

Australia:
(tel) 1 800 629 485
(fax) (61 3) 9272 0749

New Zealand:
(tel) 0 800 738 378
(fax) 64 4 495 8950

Asia Pacific:
(tel) (852) 3197 7777
(fax) (852) 2506 9284

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