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ETS

Course Profile

Network Analysis and Troubleshooting

ETS306

Duration:

2 days

Objectives:

Introduce the tools and techniques available for the analysis of network data flows.

Understand the structure of protocol architectures and the format of the protocols within them.

Discuss the everyday problems of an operational network and how they may be detected and overcome.

Understand the diagnostic utilities provided with network operating systems.

Capture and view real protocol exchanges in both normal and error conditions.

Troubleshoot TCP/IP exchanges.

Troubleshoot MS Windows network configurations.

Who should attend:

The course is open to network support personnel and anybody requiring a good understanding of network analysis and troubleshooting.

Prerequisites:

Familiarity with network protocols and network operations.

Follow-on courses:

Any other advanced networking course.

Course style:

The course is presented as a mixture of discussion, teaching sessions, demonstrations, and hands-on exercises.



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Key contents:

Protocol Architectures	Troubleshooting LANs
Protocol Formats	Network Design
Protocol Analysis	Troubleshooting Switches
Hardware Analyzers	Troubleshooting Routers
Software Analyzers	Troubleshooting Bridges
Microsoft's 'Netmon'	Troubleshooting WANs
Basic Network Configuration	Troubleshooting Cables
TCP/IP Network Utilities	Troubleshooting Interfaces
Microsoft Network Utilities	
Cisco Network Utilities	
Other Commercial Network Utilities	



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Detailed contents:

Physical Interfaces

LAN Interfaces

- Cable Types and Connectors

WAN Interfaces

- Cable Types and Connectors

Troubleshooting Physical Problems

Troubleshooting Tools

- Break-out Boxes
- Cable Testers
- Interface Testers

Protocol Architectures

Sub-network Layers

- Ethernet LAN
- IEEE 802.3 LAN

Upper Layers

- TCP/IP
- Microsoft

Protocol Formats

Standard Formats

- Ethernet v2
- IEEE 802.2
- IEEE 802.3
- SNAP
- DOD IP v4
- ICMP v4
- TCP
- UDP
- BootP/DHCP



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Detailed contents continued:

Protocol Analysis

Principles

Hardware Analyzers

- One
- Two
- Three

Software Analyzers

- Ethereal
- XRay
- Netmon

Basic Network Configuration

Parameters

- TCP/IP
- Routing
- Microsoft

Network Design

Basic Principles

Physical Design Rules

Practical (Make Routed Network)

Packet Sizing

Timing Limitations

Network Diameter / Velocity of Propagation

Equipment Delays

Comprehensive Rules to Network Design

Including Switches, Bridges and Routers



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Detailed contents continued:

Basic Troubleshooting

Essential Rules
Common Problems and how to Identify Them
Diagnostic Analyser
Practical – on Test Network
Timing Problems
Performance Problems
Addressing Problems
Use of an Analyser
Switch and Bridge Related Problems
Router Related Problems

Network Utilities

TCP/IP Network Utilities

- Arp
- Ping
- Netstat
- Route
- Traceroute
- Others

Microsoft Network Utilities

- IPConfig
- NSLookup
- Netsh
- Others

Cisco Network Utilities

Other Commercial Network Utilities

- WS-Ping ProPack
- Visual Route
- Others



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To book this course, or to obtain more information, contact:

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This information is provided in good faith to represent the typical contents of the course material. The course will change as required to keep pace with technology changes and learning styles, as a result the exact contents may differ from those specified here. The benefit of instructor led training is that it will evolve to suit the needs of any specific class, therefore no warranty is given that any specific course will cover the subjects outlined here to any implied level of detail.

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