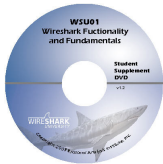




WSU03 [Self-Paced Course]

Troubleshooting Network Performance



Course Format

This course is available only in self-paced format (voice-over-video) taught by **Laura Chappell**. The course DVD includes videos, supplemental files (in PDF format) and reference/resource materials for the network analyst.

Course Content

This course focuses on the causes of poor network performance including packet-loss, retransmissions, high latency, low throughput rates, minimal bandwidth, application errors, configuration faults, resolution problems and protocol behavior problems.

- Section 1: Analyzer Placement
 - a) Analyzing Hubbed Networks
 - b) Analyzing Switched Networks
 - c) Analyzing Routed Networks
 - d) Analyzing WAN Links
 - e) Capturing in Stealth Mode

- Section 2: Normal Network Communications
 - a) When Everything Goes Right
 - b) The Multi-Step Resolution Process
 - c) Building the Packet

- Section 3: Causes of Performance Problems
 - a) Where Network Faults Occur
 - b) Time is of the Essence

- Section 4: Wireshark Functions for Troubleshooting
 - a) Using Pre-Defined Coloring Rules
 - b) Basic and Advanced IO Graphs
 - c) Use the Delta Time Value
 - d) Analyze Expert Information
 - e) Look Who's Talking
 - f) Graph Bandwidth Use, Round Trip Time and TCP Performance
 - g) Flow Graphing
 - h) Statistics (Various)

- Section 5: Latency Issues
 - a) The Five Primary Points in Calculating Latency
 - b) Plotting High Latency Times
 - c) Free Latency Calculators
 - d) Using the frame.time_delta Filter



- Section 6: Packet Loss and Retransmissions
- a) Packet Loss and Recovery – UDP v. TCP
 - b) Previous Segment Lost Events
 - c) Duplicate ACKs
 - d) TCP Retransmissions and Fast Retransmissions
 - e) Out-of-Order Segments
- Section 7: Misconfigurations and Redirections
- a) Visible Misconfigurations
 - b) Don't Forget the Time
- Section 8: Dealing with Congestion
- a) Shattered Windows
 - b) Flooded Out
- Section 9: Baseline Network Communications
- a) Your First Task When You Leave Class

[continued]



Recommended Course Prerequisites

This course focuses on the causes of poor network performance including packet-loss, retransmissions, high latency, low throughput rates, minimal bandwidth, application errors, configuration faults, resolution problems and protocol behavior problems.

Recommended prerequisite knowledge:

- Basic network components (hubs, switches, routers)
- Traffic flows (see Wireshark University Courses WSU01 and WSU02)
- IP network address structure
- Strong knowledge of Wireshark functionality and features (see Wireshark University Course WSU01)
 - Navigation
 - Packet detail tree expansion
 - Capture traffic
 - Display filtering on protocol or field
 - Create basic Wireshark graphs and tables (IO, conversations, endpoints)
 - Save packets based on filters, markers or range value
- Strong knowledge of TCP/IP protocol and application functionality
 - Port usage and resolution
 - Name resolution (network and hardware address)
 - Route resolution
 - ICMP functionality (packet structure, functionality)
 - TCP functionality (handshake, fault tolerance, recovery)
 - DNS functionality (address lookup, errors)
 - IP functionality (addressing, fragmentation)



Note:

If you cannot check off at 70% of the items listed in the prerequisite checklist, we recommend you take Wireshark University Courses WSU01 (Wireshark Functionality and Fundamentals) and WSU02 (TCP/IP Network Analysis).