BLACKBIRD FOR TRAINING

Advanced Network Troubleshooting with Wireshark and NetFlow

25 – 29 January 2027
Barcelona (Spain)



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Introduction

Modern organizations rely heavily on digital networks as the backbone of their operations. As these networks become more complex and interconnected, troubleshooting and maintaining optimal performance have become mission-critical tasks.

Tools like Wireshark and NetFlow have emerged as indispensable for diagnosing issues, analyzing data traffic, and identifying bottlenecks within enterprise networks.

This course provides participants with advanced knowledge and hands-on skills in network diagnostics using professional-grade tools. It focuses on deep packet inspection, flow analysis, and advanced techniques for identifying the root causes of performance degradation and connectivity problems.

Course Objectives

By the end of this course, participants will be able to:

- Understand advanced concepts of network troubleshooting and diagnostics.
- Use Wireshark to capture, filter, and analyze network traffic.
- Apply NetFlow for traffic flow monitoring and performance evaluation.
- Identify and resolve latency, congestion, and packet loss issues.
- Correlate packet-level data with flow-level analytics.
- Create detailed performance and troubleshooting reports.
- Implement best practices for proactive network monitoring.
- Strengthen operational reliability through effective troubleshooting strategies.

Course Outlines

Day 1: Advanced Principles of Network Troubleshooting

- Overview of network troubleshooting methodologies.
- Common causes of network failures and connectivity issues.
- The structured approach to root-cause analysis.
- Overview of essential diagnostic tools and their use cases.
- Understanding how configuration and architecture affect performance.
- Practical exercise: identifying connectivity issues using traffic analysis.



Day 2: Deep Packet Analysis with Wireshark

- Introduction to Wireshark's interface and key functionalities.
- Techniques for capturing, filtering, and saving network packets.
- Understanding communication protocols and packet structures.
- Detecting errors, retransmissions, and delays within sessions.
- Case studies of real-world troubleshooting scenarios using Wireshark.
- Practical lab: analyzing live packet captures for issue identification.

Day 3: Network Flow Analysis with NetFlow

- Introduction to NetFlow concepts and data flow architecture.
- Collecting and analyzing flow data for network visibility.
- Identifying top talkers, bandwidth hogs, and congestion points.
- Comparing flow-based vs. packet-based monitoring techniques.
- Using NetFlow data to measure performance and detect anomalies.
- Hands-on lab: analyzing multi-flow data and building performance insights.

Day 4: Combining Wireshark and NetFlow for Comprehensive Analysis

- Integrating packet-level and flow-level data for full visibility.
- Correlating traffic patterns to pinpoint root causes of network issues.
- Advanced session correlation across multiple systems.
- Performance optimization through data-driven analysis.
- Identifying abnormal activities and potential security incidents.
- Workshop: combined analysis using both Wireshark and NetFlow tools.

Day 5: Applied Troubleshooting and Reporting

- Developing a structured troubleshooting workflow.
- Creating detailed technical and management-level reports.
- Measuring pre- and post-resolution performance metrics.
- Implementing proactive monitoring for early issue detection.
- Review of key learnings and best practices.
- Final assessment: simulated troubleshooting project.



Why Attend this Course: Wins & Losses!

- Master advanced techniques for identifying and resolving network issues.
- Gain hands-on experience using Wireshark and NetFlow for real analysis.
- Understand both packet-level and flow-level monitoring for better insight.
- Improve network uptime and reduce mean time to resolution MTTR.
- Enhance service quality and infrastructure stability.
- Strengthen your ability to produce actionable analytical reports.
- Build proactive monitoring systems for ongoing optimization.
- Boost your technical competence and troubleshooting efficiency.

Conclusion

Advanced Network Troubleshooting with Wireshark and NetFlow is a vital skill set for professionals aiming to maintain robust and high-performing network environments.

By combining packet-level and flow-level analysis, this course enables participants to uncover hidden issues, enhance operational visibility, and implement data-driven optimization strategies.

Through practical labs and structured methodologies, participants will gain the expertise to handle complex troubleshooting scenarios with confidence — ensuring network reliability, performance, and efficiency.

