BLACKBIRD FOR TRAINING

Software Defined Networking (SDN) and Network

22 – 26 August 2027
Cairo (Egypt)



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Introduction

In the rapidly evolving digital landscape, organizations demand more flexible, scalable, and intelligent network infrastructures. Software Defined Networking SDN and Network Automation have emerged as key enablers of this transformation, allowing centralized control, programmability, and real-time adaptability of network operations.

This course provides participants with an in-depth understanding of how SDN separates the control plane from the data plane, enabling greater efficiency and agility. It also explores how network automation reduces human error, optimizes performance, and supports digital transformation initiatives.

Through a balanced mix of theory and practice, participants will learn to design, implement, and manage modern network architectures that are dynamic, secure, and capable of evolving with business needs.

Course Objectives

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

- Understand the core principles and architecture of Software Defined Networking.
- Differentiate between traditional and software-driven network structures.
- Design programmable network infrastructures managed through centralized controllers.
- Apply automation principles to streamline network configuration and operations.
- Implement tools for real-time monitoring, analytics, and optimization.
- Enhance network security and policy enforcement using software control.
- Improve organizational efficiency by reducing manual network management.
- Build strategies for integrating SDN and automation into enterprise infrastructure.

Course Outlines

Day 1: Introduction to Software Defined Networking

- Overview of the evolution from traditional to software-defined networks.
- Understanding the concept of control and data plane separation.
- Key components of SDN architecture.
- Advantages of centralized control and programmability.
- Use cases and benefits of adopting SDN in enterprise environments.
- Hands-on exercise: exploring the structure of a basic SDN model.



Day 2: SDN Architecture and Core Components

- Layers of SDN: application, control, and infrastructure.
- How the SDN controller manages communication between layers.
- Role of APIs Application Programming Interfaces in network programmability.
- Introduction to open standards and open-source SDN controllers.
- Designing network policies through centralized control.
- Practical lab: Configuring network flows using a software controller.

Day 3: Network Automation and Resource Management

- Definition and purpose of network automation.
- The benefits of automation in reducing errors and improving efficiency.
- Steps for developing and deploying automated workflows.
- Integrating monitoring tools for proactive management.
- Using analytics for decision-making and performance optimization.
- Workshop: Creating an automated script to manage network operations.

Day 4: Security and Policy Management in SDN

- Security architecture of software-defined networks.
- Common vulnerabilities and mitigation strategies.
- Centralized policy enforcement through SDN controllers.
- Data protection and traffic segmentation in programmable networks.
- Real-world case study: implementing secure SDN environments.
- Exercise: developing an automated network security policy.

Day 5: Practical Applications and Final Assessment

- Integration of SDN with cloud and virtualization environments.
- Automating network operations in hybrid infrastructures.
- Future trends in SDN and network automation.
- Discussion of best practices for deployment and scalability.
- Capstone project: designing a complete enterprise network automation strategy.
- Course evaluation and summary of key takeaways.



Why Attend this Course: Wins & Losses!

- Gain a comprehensive understanding of SDN and network automation technologies.
- Develop hands-on skills to design, configure, and manage programmable networks.
- Reduce operational complexity and increase network agility.
- Improve efficiency by automating repetitive configuration tasks.
- Strengthen control over data flow and policy enforcement.
- Support digital transformation through intelligent network design.
- Enhance security, reliability, and performance across the infrastructure.
- Prepare for advanced roles in modern network engineering and operations.

Conclusion

The Software Defined Networking SDN and Network Automation course represents a major step toward mastering next-generation networking.

By shifting from traditional static architectures to dynamic, programmable environments, organizations gain the agility, security, and scalability necessary to thrive in the digital era.

Through this course, participants will learn to design intelligent, policy-driven networks that adapt automatically to operational needs — creating a foundation for innovation, cost reduction, and long-term technological resilience.

