Advanced Enterprise Network Architecture and Design Training Course



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4100 € (Per Person)

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Course Introduction / Overview:

In today's digitally transformed landscape, the enterprise network is the central nervous system of business operations, demanding architectures that are not only robust and scalable but also agile and secure. This course provides a comprehensive exploration of advanced enterprise network architecture and design, moving beyond fundamental concepts to address the complex challenges of modern IT infrastructure. Drawing upon established principles from seminal works like "Top-Down Network Design" by Priscilla Oppenheimer, participants will learn to translate business requirements into technical specifications for high-performance networks. We will delve into critical areas such as software-defined networking (SDN), hybrid cloud integration, and zero-trust security models. This program, offered by BIG BEN Training Center, is meticulously structured to equip professionals with the strategic thinking and technical expertise needed to design, implement, and manage next-generation network infrastructures that support business innovation and resilience. The curriculum balances theoretical knowledge with practical design methodologies, ensuring that participants can build networks that are prepared for the demands of tomorrow.

Target Audience / This training course is suitable for:

- Network Architects.
- Senior Network Engineers.
- IT Infrastructure Managers.
- Solutions Architects.
- Network Design Consultants.
- Systems Engineers responsible for network infrastructure.
- IT professionals aspiring to specialize in network architecture.
- Cybersecurity professionals involved in network design.

Target Sectors and Industries:

- Telecommunications and Service Providers.
- Financial Services and Banking.
- Healthcare and Medical Institutions.
- Technology and Software Development.
- Retail and E-commerce.
- Manufacturing and Industrial sectors.
- Government agencies and public sector organizations.
- Education and Research Institutions.

Target Organizations Departments:

- Information Technology (IT) Department.
- Network Operations Center (NOC).
- Infrastructure and Operations.
- Cybersecurity and Information Security.
- Cloud Engineering and Architecture.
- Research and Development.
- Enterprise Architecture.
- Solutions Design and Implementation.

Course Offerings:

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

- Develop a systematic approach to network design based on business goals and technical constraints.
- Design scalable and resilient campus and data center network architectures.
- Evaluate and integrate advanced routing protocols like BGP and OSPF for optimal traffic flow.
- Architect and implement modern Software-Defined WAN (SD-WAN) solutions.
- Design secure and efficient network connectivity for hybrid and multi-cloud environments.
- Implement robust network security architectures using zero-trust principles and micro-segmentation.
- Apply Quality of Service (QoS) policies to prioritize critical application traffic.
- Leverage network automation principles to enhance operational efficiency and reduce errors.
- Create comprehensive network design documentation and implementation plans.
- Analyze and troubleshoot complex network architecture problems.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to foster a deep, practical understanding of enterprise network architecture. This course emphasizes an interactive and participant-centered learning environment, moving beyond traditional lectures. We utilize a blend of expert-led instruction, detailed case study analysis of real-world network designs, and collaborative group workshops. Participants will engage in design challenges where they must develop architectural solutions for specific business scenarios, promoting critical thinking and problem-solving skills. Interactive sessions, Q&A panels, and peer-to-peer discussions are integrated throughout the program to encourage knowledge sharing and address specific participant queries. The curriculum focuses on applying theoretical concepts to practical situations, ensuring that attendees can translate their learning directly to their professional roles. Our approach is to build strategic design capabilities, not just technical configuration skills, empowering participants to architect resilient, scalable, and secure networks that align with organizational objectives.

Course Agenda (Course Units):

Unit One: Foundations of Enterprise Network Design

- Principles of structured network design and architecture.
- The PPDIOO network lifecycle approach (Prepare, Plan, Design, Implement, Operate, Optimize).
- Gathering and analyzing business and technical requirements.
- Developing a comprehensive network design topology.
- Mapping business needs to network capabilities.
- Understanding network scalability, availability, and performance metrics.
- Creating baseline documentation and network diagrams.

Unit Two: Advanced Campus and Data Center Architecture

- Designing hierarchical campus network models.
- Implementing high-availability techniques like stacking, VSS, and vPC.
- Advanced Layer 2 and Layer 3 switching design considerations.
- Spine-and-leaf data center architecture principles.
- Exploring data center interconnect (DCI) technologies.
- Network virtualization and overlay networks (VXLAN).
- Designing for network segmentation and traffic isolation.

Unit Three: Modern WAN and Cloud Connectivity

- Evolution of WAN technologies from MPLS to SD-WAN.
- Architecting and deploying SD-WAN for enterprise connectivity.
- Understanding Secure Access Service Edge (SASE) concepts.
- Designing for direct and private connectivity to public clouds (AWS, Azure, GCP).
- Strategies for hybrid and multi-cloud network integration.
- Optimizing application performance across the WAN.
- Implementing robust Quality of Service (QoS) policies for WAN traffic.

Unit Four: Enterprise Network Security Architecture

- Implementing the Zero Trust security model in network design.
- Designing secure network perimeters with next-generation firewalls.
- Network Access Control (NAC) and identity-based security policies.
- Micro-segmentation strategies for east-west traffic control.
- Designing secure remote access and VPN solutions.
- Intrusion prevention and detection system (IPS/IDS) placement.
- Ensuring network compliance with industry regulations.

Unit Five: Network Automation and Future Trends

- Introduction to network programmability and automation.
- Using Python for network automation tasks.
- Infrastructure as Code (IaC) for network provisioning with tools like Ansible.
- Leveraging APIs for network management and monitoring.
- The role of AI and machine learning in network operations (AIOps).
- Exploring Intent-Based Networking (IBN) concepts.
- Preparing network architecture for IoT and edge computing.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As network automation and AI become more prevalent, how will the role of the senior network architect evolve from a hands-on implementer to a strategic orchestrator of automated systems?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by adopting a strategic, top-down approach to network design, focusing on the 'why' behind architectural decisions, not just the 'how' of configuration. Unlike vendor-specific training that often centers on product features, our curriculum is vendor-agnostic, emphasizing universal principles of robust, scalable, and secure network architecture. We bridge the gap between traditional networking fundamentals and the transformative technologies shaping modern enterprises, including SD-WAN, cloud integration, and zero-trust security. The program is built around real-world case studies and design challenges, compelling participants to think like senior architects who must align technical solutions with business objectives, budget constraints, and future growth. It moves beyond isolated technical skills to cultivate a holistic understanding of the network lifecycle, from initial requirements gathering to automation and optimization. The emphasis is on developing strategic thinkers who can design resilient infrastructures that act as business enablers, rather than just technicians who manage network devices.