Strategic Telecom Network Planning and Optimization Training Course



22 - 26 Nov 2026

Manama

4400 € (Per Person)

Ref: #TEL3154_238712

Course Introduction / Overview:

In today's hyper-connected world, the performance and reliability of telecommunication networks are paramount to economic growth and societal progress. This course provides a comprehensive exploration of the principles and practices of strategic telecom network planning and optimization. It is designed to equip professionals with the skills needed to design, deploy, and manage robust, efficient, and future-proof network infrastructures. Drawing on foundational concepts from leading academics like Theodore S. Rappaport and seminal texts such as "Wireless Communications: Principles and Practice," the curriculum delves into the entire network lifecycle. Participants will move from fundamental planning principles to advanced optimization techniques for 4G/LTE, 5G, and beyond. At BIG BEN Training Center, we understand that effective network strategy is a blend of technical expertise and business acumen. Therefore, this program integrates technical modules on Radio Access Network (RAN) planning, core network design, and performance management with strategic considerations like cost optimization, spectrum management, and navigating the evolving landscape of network virtualization and AI-driven operations. This holistic approach ensures that graduates can not only solve complex technical challenges but also contribute to the strategic vision of their organizations, driving innovation and maintaining a competitive edge in the dynamic telecom industry.

Target Audience / This training course is suitable for:

- Telecommunications Engineers.
- Network Planning and Design Specialists.
- RF (Radio Frequency) Engineers.
- Network Optimization Engineers.
- Telecom Project Managers.
- Network Operations Center (NOC) Managers and Staff.
- Solutions Architects in Telecommunications.
- Technical Managers overseeing network infrastructure.
- Regulatory and Policy professionals in the telecom sector.
- IT professionals involved in network convergence projects.

Target Sectors and Industries:

- Telecommunication Service Providers (Mobile, Fixed, and Satellite).
- Internet Service Providers (ISPs).
- Network Equipment and Infrastructure Vendors.
- Large Enterprises with private network infrastructures.
- Government, Public Safety, and Defense agencies.
- Utilities and Energy sectors (for smart grid communications).
- Transportation and Logistics (for connected vehicle networks).
- Consulting firms specializing in technology and telecommunications.

Target Organizations Departments:

- Network Engineering and Planning.
- Network Operations and Maintenance.
- Radio Access Network (RAN) Engineering.
- Core Network Strategy and Architecture.
- Technology Strategy and Innovation.
- Project Management Office (PMO).
- Capital Planning and Budgeting.
- IT and Network Infrastructure.
- Quality Assurance and Performance Management.
- Regulatory Compliance.

Course Offerings:

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

- Master the fundamentals of the telecom network planning lifecycle.
- Develop strategic plans for 4G/LTE and 5G network rollouts.
- Conduct detailed RF planning, including site selection and capacity dimensioning.
- Design resilient and scalable core network and transport architectures.
- Implement advanced network optimization techniques to enhance QoS and user experience.
- Analyze network performance data using key performance indicators (KPIs).
- Evaluate the impact of network virtualization (NFV/SDN) on network planning.
- Formulate strategies for spectrum management and technology migration.
- Integrate AI and machine learning concepts for predictive network optimization.
- Develop business cases and cost-benefit analyses for network expansion projects.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, practical, and engaging, ensuring that participants can immediately apply their learning in a real-world context. This course moves beyond traditional lectures to foster a dynamic learning environment. Sessions will be a blend of expert-led presentations, in-depth technical discussions, and collaborative group workshops. A significant emphasis is placed on case study analysis, where participants will dissect real-world network deployment and optimization challenges, debating strategies and proposing innovative solutions. Interactive simulation exercises will allow attendees to practice network planning and resource allocation in a controlled environment, reinforcing theoretical concepts. Team-based projects will encourage peer-to-peer learning and the development of problem-solving skills relevant to complex telecom projects. Throughout the course, there will be continuous opportunities for Q&A sessions and direct feedback from the instructor. This hands-on, participant-centered approach ensures a deep understanding of both the technical and strategic aspects of telecom network planning and optimization, empowering attendees with actionable skills and a comprehensive perspective.

Course Agenda (Course Units):

Unit One: Foundations of Strategic Network Planning

- Introduction to Telecommunication Networks and Services.
- The Network Planning and Development Lifecycle.
- Key Principles of Strategic Technology Planning.
- Market Analysis and Demand Forecasting Techniques.
- Regulatory Frameworks and Spectrum Management Fundamentals.
- Developing a Business Case for Network Investments.
- Introduction to Network Economics and Cost Modeling.

Unit Two: Radio Access Network (RAN) Planning and Design

- Fundamentals of Radio Propagation and Cellular Concepts.
- 4G/LTE RAN Planning and Dimensioning.
- 5G New Radio (NR) Architecture and Planning Considerations.
- Site Selection, Surveying, and Acquisition Strategy.
- RF Planning Tools and Propagation Model Tuning.
- Capacity and Coverage Planning for Voice and Data Services.
- Interference Analysis and Mitigation Strategies.

Unit Three: Core Network and Transport Infrastructure Planning

- Evolution of Core Network Architectures (EPC to 5G Core).
- IP Network Planning, Addressing, and Routing for Telecom.
- Transport Network Technologies (Microwave, Fiber, IP/MPLS).
- Backhaul and Fronthaul Planning and Design.
- Network Synchronization and Timing Strategy.
- Planning for Network Resilience, Redundancy, and Disaster Recovery.
- Interconnection and Peering Strategies.

Unit Four: Network Performance Optimization and Management

- Key Performance Indicators (KPIs) for Network Quality.
- Quality of Service (QoS) and Quality of Experience (QoE) Frameworks.
- Drive Testing and Post-Processing for RAN Optimization.
- Parameter Tuning and Feature Optimization for LTE/5G.
- Traffic Engineering and Congestion Management Techniques.
- Root Cause Analysis for Network Performance Issues.
- Leveraging Big Data Analytics for Network Insights.

Unit Five: Future Technologies and Advanced Strategic Topics

- Network Function Virtualization (NFV) and Software-Defined Networking (SDN).
- Cloud-RAN and Edge Computing in Network Architecture.
- Introduction to AI and Machine Learning for Network Automation and Optimization.
- Planning for IoT and Massive Machine-Type Communications (mMTC).
- The Path to 6G: Emerging Technologies and Research Trends.
- Green Telecommunications and Energy Efficiency in Networks.
- Capstone Project: Developing an End-to-End Network Strategy Plan.

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:

Considering the massive capital investment required for 5G and future 6G rollouts, how can strategic planning balance technological advancement with economic viability and return on investment?

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

This training course distinguishes itself by offering a uniquely holistic and forward-looking perspective on network planning and optimization. While many courses focus narrowly on either RF engineering or specific vendor equipment, this program integrates the technical, strategic, and economic dimensions of network management into a single, cohesive curriculum. It bridges the critical gap between engineering design and business objectives, teaching participants not just how to build a network, but why certain architectural and technological choices are made. The curriculum is meticulously structured to address current challenges in 4G/LTE optimization while providing a deep dive into the strategic planning required for 5G, IoT, and the emerging 6G landscape. Another key differentiator is the emphasis on future-proof skills, including the application of AI/ML for predictive optimization and the strategic implications of network virtualization. Rather than just teaching tool-based procedures, the course cultivates a strategic mindset, enabling participants to develop robust, long-term network evolution plans that align with corporate goals, regulatory demands, and market dynamics. The practical, case-study-driven approach ensures that learning is grounded in real-world applicability, preparing professionals to lead, innovate, and excel.