



MCNS Training Program

5G NR NSA to SA migration workshop

5G NETWORK
FASTER THAN EVER

5G NR NSA to SA migration workshop

5G NR NSA to SA migration workshop will offer delegates a good and deep understanding on 5G NR architectures and the migration steps from NR NSA to NR SA network deployment

COURSE REVIEW

This 5G training course introduces the audience into the existing **5G NR NSA** and **SA architectures**, emphasizing on the network transformation to properly accommodate the transformation from NSA to SA deployment. It explains the NSA architecture, the **5G core** transformation from **5G EPC to 5GC**, the **5G RAN** evolution from **centralized** NR RAN architectures to **virtual** RAN architectures and the final network topology deployment.

The transport network topology is also discussed with emphasis on back-haul deployment. The course is purely theoretical based on slide presentations.

AIMED AT

5G NR NSA to SA migration workshop is mainly aimed at a technical audience. It is suitable for technical professionals, **RAN operators**, **Radio planning engineers**, **Technical managers** who currently are or will be involved in 5G NR RAN transformation to SA deployment.

Prerequisites: Those wishing to take this course should have a good and solid understanding of 5G network overview.



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Course Benefits for individuals (Professionals)

- Understanding NSA and SA requirements and potentials
- Explore **NSA to SA migration** steps and requirements
- Understand the main differences between **NSA and SA architecture**
- Explore the **5G EPC and 5GC architectures** and differences
- Understand the centralized RAN migration towards the v-RAN and O-RAN
- Learn how to prepare your network for NSA to SA migration

Course Benefits for your Organization

- Equip organization engineers with the necessary knowledge to accomplish difficult and complex tasks related to **5G NSA to SA transition**
- Keep ahead of competitors in preparing your network for **SA architectures**
- Prepare for future network expansions and quality performance optimization

Training Format

Instructor-Led Training
On-Site Classroom: 2 days
Web delivered (Virtual): 2 days
Excellent and descriptive course material (pdf file) will be provided

Customer Tailored!

We can tailor the included topics, tech level, and duration of this course right to your team's technical requirements and needs

Section 1: 5G Core Network Architectures

Course Program Outline

Module 1: 5G EPC Review

- Overview of 5G EPC architecture
- 5G EPC nodes review
- 5G EPC interfaces review
- 5G EPC QoS
- 5G EPC authentication and security

Module 2: 5GC network review

- 5GC standardization
- Overview Next Generation 5G Architecture
- Evolution of Architectures and Evolved Packet Core
- Control and User Plane Separation (CUPS) in 5GC
- Service Based Architecture vs. Reference Point Architecture
- 5GCQoS
- 5GC authentication and security
- 5GC and 5G EPC tight interworking



Section 1: 5G Core Network Architectures

Course Program Outline

Module 3: 5GC to RAN interfaces review

- Transport Network Topologies
- N2 and N3 Interfaces and Application Protocols
- N2 and N3 Control Procedures
- GTP and SCTP Protocol
- Xn Interface

Module 4: EPC signaling in 5G

- 5G EPC signaling overview for NSA traffic
- EPC NSA traffic cases and signaling analysis
- Wi-Fi calling analysis
- CSFB in NSA solution
- VoLTE support in NSA
- User equipment capabilities



Section 2: 5G RAN NR topologies

Course Program Outline

Module 5: NSA vs. SA architecture

- Standalone vs. Non-Standalone Radio Network
- CU-DU split support—vendor implementations
- F1 and E1 interfaces
- Dual Connectivity with LTE as Master Node on 5G EPC
- Dual Connectivity with eLTE or 5G as Master Node on 5GC
- Impact on Interfaces and Mobility

Module 6: D-RAN Deployment

- Distributed (D-RAN) deployment requirements
- Back-haul transport network requirements
- Optical fiber throughputs and capacity
- MW-Link throughput and capacity
- Exercise: capacity estimation using Excel spread-sheet calculator



Section 2: 5G RAN NR topologies

Course Program Outline

Module 7: C-RAN Deployment

- Centralized (C-RAN) deployment requirements
- Passive (RRU) vs. Active Antenna Unit (AAU) requirements
- CPRI and eCPRI standards and requirements
- Front-haul transport network requirements
- Back-haul transport network requirements
- Optical fiber throughputs and capacity
- MW-Link throughput and capacity
- Exercise: capacity estimations using Excel spread-sheet calculator

Module 8: v-RAN Deployment

- virtual (v-RAN) or cloud RAN deployment requirements
- CU-DU split architectures and deployment scenarios
- Passive (RRU) vs. Active Antenna Unit (AAU) requirements
- CPRI and eCPRI standards and requirements
- F1 interface requirements
- E1 interface requirements
- Optical fiber throughputs and capacity
- MW-Link throughput and capacity
- Exercise: capacity estimations using Excel spread-sheet calculator



Section 3: Network Slicing and Virtualization

Course Program Outline

Module 9: Network Slicing

- What is Network slicing
- ETSI Network Function Virtualization
- Voice in NSA ENDC
- Voice over NR on EPS fallback
- Voice over NR support in 5GS

