5G Non-Terrestrial Networks (NTN)

TPR1059x | Expert-Led Live | 5G Core | Expert
Course Duration: 4 hours

Non-Terrestrial Network (NTN), introduced in 5G Release 17, leverages satellite infrastructure to provide 5G services over sea and land where terrestrial coverage is absent. This training sketches an end-to-end network architecture of NTN of 5G, identifies capabilities and challenges of NTN, steps through life of a 5G device in a 5G NTN and list key deployment use cases.

Intended Audience

This course is intended for planning, engineering, operations, and systems performance teams.

Objectives

After completing this course, the learner will be able to:

- Define satellite based 5G Non-Terrestrial Network (NTN)
- List capabilities, design considerations, and limitations of NTN
- Sketch an end-to-end architecture of 5G Non-Terrestrial Network (NTN)
- Step through the life of a 5G device in NTN
- Identify use case scenarios such as NTN-TN interworking, roaming

Course Prerequisites

5G NR Air Interface

Outline

1. What and Why 5G Non-Terrestrial Network (NTN)
1.1 What is 5G NTN and Why?
1.2 NTN requirements
1.3 Capabilities and challenges of NTN
1.4 NTN use cases overview

2. Non Terrestrial Network Architecture
2.1 Satellite based 5G NTN architecture
2.2 Transparent and Regenerative NTN architecture
2.3 Impact of delay and timing on 5G NR air interface
2.4 Overview of a link budget for NTN
Exercise: Build Non-Terrestrial Network

3. Non Terrestrial Network Operations
3.1 NTN NR air interface and related protocols
3.2 Life of 5G UE in NTN
3.3 Interworking scenarios of NTN and Terrestrial Network
3.4 Roaming scenarios
3.5 Beam management
Exercise: NTN call flow

4. Deployment Considerations of NTN
4.1 Role of LEO, MEO, and GEO satellites in NTN
4.2 NTN NR constraints and Services considerations
4.3 Security considerations
4.4 Deployment use cases

Putting It All Together

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