



# 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 NTNExercise: 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 managementExercise: 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