Security in 5G Networks

TPR1054x | Expert-Led Live | 5G Core | Expert
Course Duration: 4 hours

5G networks provide connectivity to a massive number of devices, enabling many vertical industries to provide wireless connectivity anytime anywhere. This poses security threats from many sources. 5G network security needs to include wireless, transport and IT network security approaches. This course provides a broad technical overview of 5G network security.

Intended Audience

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

Objectives

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

- Identify various security threats to 5G networks
- Sketch the security framework in 5G RAN, core, transport and interconnect networks
- Identify common security techniques between 5G security and IT networks
- Step through very high-level 5G operations of authentication, encryption, ciphering, etc.
- List key 5G-specific security enhancements

Course Prerequisites

Welcome to 5G

Outline

1. Security Needs for 5G Network
1.1 5G enhancements over 4G
1.2 Key 5G security challenges
1.3 Types of threat (STRIDE Model)
1.4 Security threats for RAN, Core, Transport
Exercise: Match threat with its impact

2. Security Framework for 5G Networks
2.1 End-to-end security framework
2.2 Authentication framework
2.3 End-to-end encryption and ciphering
2.4 Security for service-based interfaces
Exercise: Match security function with its role

3. 5G Security Procedures
3.1 Security life of a UE in 5G network
3.2 Authentication procedure
3.3 Ciphering procedure
3.4 Security for roaming and interconnect

4. Infrastructure Security
4.1 Physical infrastructure security
4.2 Virtual workload security
4.3 RAN and Transport security - an example

Putting it all together

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