BLACKBIRD FOR TRAINING

The 5G Network Security

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Introduction

The advent of 5G networks marks a transformative shift in global connectivity, enabling faster speeds, lower latency, and enhanced capacity. However, with this increased connectivity comes a heightened risk of cyber threats. The 5G network is set to support an exponentially growing number of connected devices, including IoT devices, necessitating robust 5G security solutions to safeguard against emerging 5G security threats. This course is designed to provide an in-depth understanding of the security landscape surrounding 5G technology, including the latest security protocols, vulnerabilities, and the measures required for comprehensive 5G network protection.

Participants will gain a solid understanding of 5G security architecture, the risks and challenges associated with 5G network vulnerabilities, and the benefits of 5G networks. This knowledge is essential for businesses deploying 5G-connected devices, ensuring that they are equipped with the tools and insights necessary to mitigate potential 5G security risks and maintain a secure, efficient network.

Course Objectives

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

- Understand the 5G network and its components, including the enablers that support this next-generation technology.
- Describe key 5G security protocols and how they work to safeguard the network.
- Identify the common 5G security risks and the security vulnerabilities specific to 5G networks.
- Explore advanced security technologies, including Software Defined Monitoring SDM and LiFi technology, for enhancing 5G network security.
- Understand the relationship between 5G security solutions and the growing need for IoT security.
- Gain insights into 5G network architecture and how it influences network security.
- Learn the security considerations involved in positioning technologies, mobile cloud security, and customer edge security.
- Explore real-world scenarios, such as MVNO security, cloud security, and MEC Mobile Edge Computing security in the context of 5G networks.



Course Outlines

Day 1: Introduction to 5G Networks and Systems

- What is the 5G network and how does it differ from previous generations 2G, 3G, 4G?
- Overview of 5G communications and the roles of channels and carriers.
- Understanding 5G access techniques, services, and the architecture of 5G network protection.
- Principles of 5G NR New Radio and 5G FDD/TDD CA.

Day 2: Cellular System Generations and Security Landscape

- A deep dive into the evolution of cellular networks: from 2G to 5G.
- Exploring 5G requirements, enabling technologies, and 5G security protocols.
- Identifying the security challenges in the mobile security lifecycle, including physical layer security.
- Understanding 5G-WiFi security, 5G-WLAN interoperability, and network security in 5G.

Day 3: LiFi-5G Network Interoperability and Security

- Introduction to LiFi as a potential complement to 5G networks.
- 5G-LiFi security challenges and the architectural design considerations.
- Evaluation of customer edge switching CES and the CES security framework.
- In-depth look at Software Defined Security Monitoring in 5G and the future of 5G network monitoring.

Day 4: 5G Device and User Security

- IoT security in the context of 5G networks and challenges to ensuring device security.
- User privacy, identity management, and trust models in the 5G network environment.
- Understanding 5G positioning technologies: passive vs. active, and outdoor vs. indoor systems.
- Cryptographic techniques for security and privacy in 5G networks.

Day 5: 5G Cloud and Virtual Network Security

- MVNO security in the 5G era and the transition to cloudified networks.
- Exploring NFV Network Functions Virtualization and its implications for 5G network security.
- 5G cloud and MEC Mobile Edge Computing security: Understanding challenges, architecture, and regulatory impacts.
- Legal frameworks and security regulations in 5G networks, focusing on privacy and data protection.



Why Attend This Course: Wins & Losses!

- Comprehensive understanding of the security landscape surrounding 5G networks, including key 5G security protocols and emerging security threats.
- Practical knowledge on how to implement 5G network protection strategies to mitigate security risks and vulnerabilities.
- A deeper understanding of IoT security requirements in the 5G era and how to address device security challenges.
- Insights into the integration of LiFi and WiFi-5G interoperability for enhanced 5G network security.
- Expertise in Software Defined Monitoring SDM techniques and cloud security solutions within the context of 5G networks.
- Access to real-world case studies and solutions for securing 5G virtual networks and MVNO environments.

Conclusion

This course offers a comprehensive overview of the key aspects of 5G network security, preparing participants to address the security challenges and risks posed by the new 5G technologies. With the rapid expansion of IoT devices and the move towards cloud-based infrastructures, understanding how to secure 5G networks is vital for businesses and organizations. By participating in this course, you will gain the skills necessary to implement effective 5G security protocols, address emerging 5G security threats, and ensure that your organization is prepared for the future of 5G network security.

Whether you are a network engineer, IT professional, or security expert, this course will provide you with the tools to safeguard your network against evolving threats and ensure the integrity of your 5G network infrastructure.

