Faysal Aziz

Edge Computing

A 2-day comprehensive overview

FA-0181 · 2-day

DevOps, Cloud & Infrastructure

Introduction

This course is designed to provide participants with an in-depth understanding of Edge Technology and Multi-access Edge Computing (MEC). It aims to cover critical aspects of edge computing, including its integration with existing network infrastructures like 4G and 5G, architecture, security concerns, and the role of edge computing in enabling innovative applications and services. Additionally, the course will delve into the CAMARA Project's contributions towards standardizing Edge/MEC, focusing on network/service APIs, API management, and security.

Learning outcomes

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

- Explain the fundamentals of Edge Cloud technology and the requirements of Edge applications.
- Understand the architecture of Edge and MEC, including its components and functionalities.
- Identify the security challenges associated with Edge computing and MEC, and propose mitigation strategies.
- Discuss the integration of Edge computing with 4G/5G networks, fixed networks, and network slicing.
- Describe the principles of end-to-end orchestration in Edge computing environments.
- Understand the CAMARA Project's role in Edge/MEC, including its approach to network/service APIs, API management, and API security.

Prerequisites

- Good knowledge of cloud computing concepts and architectures.
- Deep understanding of network fundamentals, including IP networking and mobile networks (4G/5G).
- Experience with cybersecurity principles and practices.

Training outline

1. Introduction to Edge Technology & MEC

- Definition and Evolution of Edge Computing
- Key Drivers and Applications of Edge Computing
- Introduction to Multi-access Edge Computing (MEC)
- Differences and Similarities between Edge Computing and MEC

2. Understanding Edge Cloud Technology

- Core Components of Edge Cloud Infrastructure
- Requirements and Challenges of Edge Applications
- Edge Computing vs. Central Cloud Computing: Use Cases and Decision Criteria

3. Edge Computing Architecture

- Overview of Edge Computing Architecture
- Components and Layers of Edge Architecture
- Role of Edge Nodes and Edge Data Centers

4. Integration with Networks

- Edge Computing in 4G/5G Networks
- Integration with Fixed Networks
- Network Slicing and Its Importance in Edge Computing
- Challenges and Solutions in Network Integration

5. Security in Edge Computing and MEC

- Security Threats and Vulnerabilities in Edge Environments
- Data Privacy and Protection Strategies
- Secure Architecture Design and Best Practices
- Encryption and Authentication Mechanisms

6. End-to-End Orchestration

- Principles of End-to-End Orchestration in Edge Computing

- Automation and Management of Edge Resources
- Role of SDN (Software Defined Networking) and NFV (Network Functions Virtualization)

7. The CAMARA Project: Standardizing the Edge

- Overview of the CAMARA Project
- Network/Service APIs in Edge/MEC
- API Management: Principles and Tools
- API Security: Challenges and Strategies

8. Case Studies and Real-World Applications

- Industry-Specific Applications of Edge Computing and MEC
- Success Stories and Lessons Learned
- Future Trends and Emerging Technologies in Edge Computing

9. Hands-On Labs and Workshops

- Setting up a Basic Edge Computing Environment
- Implementing a Simple MEC Application
- Security Implementation and Testing in Edge Environments
- Network Integration and Orchestration Exercises

10. Conclusion and Future Directions

- Recap of Key Learnings
- Discussion on the Future of Edge Computing and MEC
- Open Q&A Session

This comprehensive course structure is designed to equip participants with the knowledge and skills needed to navigate the rapidly evolving landscape of Edge Technology and Multi-access Edge Computing. Through a blend of theoretical insights and practical exercises, attendees will gain a holistic understanding of how Edge and MEC technologies can be leveraged to drive innovation and efficiency in various industry sectors.

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