Basics of Linux, NGINX, Monitoring, Containers and Cloud

Duration: 10 Days (Total 80 Hours)

Lab: Koenig-DC and Azure LOD

Module 1: Ubuntu Linux Administration

- Introduction to Ubuntu
- Installation and configuration
- Basic commands and filesystem structure
- User and permission management
- Networking basics in Ubuntu
- Package management with APT
- System updates and security best practices

Module 2: Nginx Web Server

- Introduction to Nginx
- Installation and configuration
- Understanding the Nginx architecture
- Setting up virtual hosts
- Configuring SSL with Let's Encrypt
- Load balancing with Nginx
- Round-robin and least connections methods
- Nginx as a reverse proxy

Module 3: Virtualization with Proxmox

- Introduction to Proxmox VE
- Installation and initial setup
- Overview of the Proxmox web interface
- Managing virtual machines (VMs)
- Creating, cloning, and backing up VMs
- Networking in Proxmox
- Storage Integration
- Overview of storage types: DAS, NAS, SAN
- Configuring NAS with NFS and Samba **– Overview only**
- Using SAS storage in Proxmox**– Overview only**
- Creating and managing storage pools**– Overview only**
- High availability storage setups**– Overview only**

Module 4: Load Balancing Techniques

- Exploring Load Balancing Fundamentals
- Different Types of Load Balancers
- Comparing Hardware and Software Load Balancers
- Layer 4 vs. Layer 7 Load Balancing

- Configuring Load Balancers Using NGINX and HAProxy
- Monitoring the Performance of Load Balancers
- Establishing a Load Balancer Between an Existing Production Server and a DR Server

Module 5: Web Monitoring Tools

- Importance of web monitoring
- Overview of popular web monitoring tools
- Prometheus
- Grafana
- Zabbix
- Nagios
- Setting up monitoring for Nginx
- Configuring alerts and notifications

Module 6: Best Practices and Troubleshooting (Overview)

- Best practices for system performance and security
- Common issues and troubleshooting techniques
- Log management and analysis
- Backup and recovery strategies

Module 7: Hands-On Projects

- Configuring a load balancer for high availability
- Implementing a monitoring solution with Grafana and Prometheus
- Integrating NAS and SAS storage in Proxmox **– Overview only**

Module 8: Containerization and Orchestration

- Introduction to Docker
- Building and managing containers
- Overview of Kubernetes
- Deploying and managing applications in clusters
- Comparing VMs and containers

Module 9: Cloud Computing Basics

- Introduction to cloud services (AWS, Azure, GCP)
- Hybrid cloud concepts and Proxmox **– Overview only**
- Integrating on-premises infrastructure with cloud services

Module 10: Disaster Recovery and Business Continuity (Overview)

- Creating a disaster recovery plan
- Backup strategies for VMs and applications
- Testing recovery procedures
- Business continuity planning