

Datacenter Infrastructure: Servers, Storage & Virtualization Fundamentals

Duration

3 Days (Instructor-Led)

This agenda provides a balanced mix of theory and hands-on practice suitable for a **3-day bootcamp**, giving participants a solid foundation across Datacenter, Server, Storage, and virtualization technologies without requiring prior expertise in any specific vendor platform.

Target Audience

- Infrastructure Engineers
- System Administrators
- Datacenter Engineers
- Technical Support Engineers
- IT Operations Teams
- Pre-sales and Solution Architects (Foundational Level)

Day 1 – Datacenter Fundamentals & Server Infrastructure

Module 1: Introduction to Modern Datacenters

- Evolution of Datacenters
- Traditional vs Modern Datacenters
- Enterprise IT Infrastructure Overview
- Physical vs Virtual Infrastructure
- Datacenter Components

Module 2: Datacenter Architecture

- Compute
- Storage
- Networking
- Power & Cooling
- Rack Design
- Redundancy and High Availability

Module 3: Server Fundamentals

- Tower, Rack and Blade Servers
- Server Components

- CPU
- Memory
- Motherboard
- RAID Controllers
- NICs
- Power Supplies
- Server Hardware Management
- Firmware and BIOS/UEFI

Module 4: Server Deployment

- Operating System Installation
- Boot Process
- Hardware Monitoring
- Remote Management (iLO, iDRAC, XClarity)

Hands-on Lab

- Explore Server Hardware
 - Configure RAID (Trainer Demo)
 - Install an Operating System
 - Initial System Configuration
 - Access Remote Management Console
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Day 2 – Storage Technologies

Module 5: Storage Fundamentals

- Why Storage Matters
- DAS
- NAS
- SAN
- Object Storage
- Block vs File Storage

Module 6: Storage Architecture

- HDD vs SSD
- NVMe
- RAID Levels
- Storage Controllers
- Storage Pools
- Thin vs Thick Provisioning

Module 7: SAN Technologies

- Fibre Channel

- iSCSI
- NVMe over TCP (Overview)
- Multipathing

Module 8: Backup & Disaster Recovery

- Backup Types
- Snapshots
- Replication
- Recovery Objectives (RPO/RTO)

Hands-on Lab

- Create Storage Partition/Volumes
 - Configure iSCSI Storage
 - Connect Storage to a Server
 - Create Snapshots
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Day 3 – Virtualization & Modern Datacenter Operations

Module 9: Virtualization Fundamentals

- Hypervisors
- Virtual Machines
- Resource Allocation
- Templates
- Cloning

Module 10: Virtual Infrastructure

- Shared Storage
- High Availability
- Live Migration
- Resource Pools
- Datastores

Module 11: Datacenter Operations

- Monitoring
- Capacity Planning
- Performance Optimization
- Security Best Practices
- Patch Management

Module 12: Emerging Datacenter Technologies

- Hyperconverged Infrastructure (HCI)

- Software-Defined Datacenter (SDDC)
- Hybrid Cloud
- Private Cloud
- Green Datacenters

Capstone Lab

- Deploy a Virtual Machine
 - Connect to Shared Storage
 - Configure High Availability (Conceptual)
 - Monitor Resource Utilization
 - Troubleshoot Common Infrastructure Issues
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Learning Outcomes

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

- Understand modern Datacenter architecture and components.
- Identify different server platforms and their hardware components.
- Explain storage technologies including DAS, NAS, SAN, and object storage.
- Understand RAID, storage provisioning, and backup concepts.
- Describe virtualization concepts and virtual infrastructure.
- Perform basic server, storage, and virtualization administration tasks.
- Apply Datacenter best practices for availability, security, and operations.