



Enterprise Storage Management and Backup: SAN, NAS, Snapshots and Restore Testing



Enterprise Storage Management and Backup: SAN, NAS, Snapshots and Restore Testing

Introduction:

Enterprise storage management and backup decide whether application data stays fast, available and recoverable. Arrays fill without warning when thin pools are overcommitted, zoning mistakes expose LUNs to the wrong hosts, and backup jobs report success while restores fail. This Core Concept course trains infrastructure staff to size RAID groups, present block and file storage over SAN and NAS, schedule snapshots and replication, and run backup policies with immutable copies. In hands-on labs participants build a Storage and Backup Design with Restore Test Plan for a case organisation.

Course Objectives:

- Match application workloads to disk and flash media, RAID levels and block, file or object storage by IOPS, latency and throughput
- Configure SAN fabrics and NAS shares using Fibre Channel zoning, iSCSI targets, LUN masking and NFS or SMB exports
- Provision volumes with thin pools, storage tiering, snapshots and synchronous or asynchronous replication
- Operate backup schedules using full, incremental and differential jobs, the 3-2-1 rule, retention and deduplication
- Protect backup copies against ransomware with immutable WORM targets, air gaps and scheduled restore verification
- Produce a Storage and Backup Design with Restore Test Plan including capacity forecasts and monitoring thresholds

Target Audience:

- Staff who administer disk arrays, storage pools and volumes for server and virtualisation platforms
 - Engineers who configure Fibre Channel and iSCSI fabrics, zones and host bus adapters
 - Administrators who manage NAS file shares, quotas and NFS or SMB permissions
 - Operators who schedule, monitor and troubleshoot backup jobs, media and restore requests
 - Infrastructure team members who forecast capacity and report storage consumption
-

Course Outline:

Day 1: Storage Media, RAID and Workload Profiling

- Workload Profiling: IOPS, Latency, Throughput and Read-Write Mix
- Hard Disk, SATA SSD and NVMe Flash Media Characteristics
- RAID 1, 5, 6 and 10 Parity, Rebuild Time and Write Penalty
- Block, File and Object Storage Access Models Compared
- Storage Estate Inventory and Utilisation Baseline Worksheet

Day 2: SAN and NAS Architecture and Storage Networking

- Fibre Channel Switched Fabric, WWN Addressing and Zoning
- iSCSI Initiators, Targets and Dedicated Storage VLANs
- LUN Masking, Multipathing and Host Bus Adapter Settings
- NAS Filers and Scale-Out NAS with NFS and SMB Exports
- Object Storage Buckets, Erasure Coding and S3-Compatible Interfaces

Day 3: Provisioning, Snapshots and Backup Operations Lab

- Thick and Thin Provisioning with Pool Overcommit Ratios
- Automated Tiering Between Flash and Capacity Disk
- Copy-on-Write and Redirect-on-Write Snapshot Scheduling
- Full, Incremental and Differential Backup Job Configuration
- 3-2-1 Rule Retention Schedules and Deduplication Ratios

Day 4: Ransomware-Resistant Copies, Replication and Capacity Control

- Immutable WORM Backup Targets and Air-Gapped Vault Copies
- Synchronous and Asynchronous Array Replication Trade-offs
- Hybrid Backup to Cloud Object Tiers and Egress Planning
- Thin Pool Exhaustion, Rebuild Failures and Silent Corruption Diagnosis
- Capacity Forecasting, Alert Thresholds and Storage Monitoring Dashboards

Day 5: Lab Capstone: Storage and Backup Design with Restore Test Plan

- Case Organisation Storage Requirements and RPO and RTO Capture
 - Array, RAID and Fabric Layout Drafting for the Case Estate
 - Backup Policy Matrix: Frequency, Retention and Copy Locations
 - File-Level, Volume and Bare-Metal Restore Drills with Timing Logs
 - Storage and Backup Design and Restore Test Plan Peer Review
-

Skills You Will Gain:

- Storage Workload Sizing
- RAID Group Design
- Fibre Channel Zoning
- NAS Share Administration
- Snapshot and Replication Scheduling
- Backup Policy Configuration
- Immutable Backup Protection
- Storage Capacity Forecasting

Why Attend This Course:

- Return with a Storage and Backup Design with Restore Test Plan drafted on a case organisation's estate
- Catch overcommitted thin pools, zoning errors and failed restore paths before they cause outages
- Explain RAID, SAN, NAS and backup choices to application owners and procurement colleagues in plain terms
- Compare array, fabric and backup practice with administrators from other sectors and organisations

Conclusion:

Reliable storage rests on matching media and RAID to workloads, presenting capacity safely over SAN and NAS, and keeping backup copies that can actually be restored. The week moves from workload profiling and media, through Fibre Channel, iSCSI, NFS and SMB, to provisioning, snapshots, backup jobs, immutable copies, replication and capacity control. The final day applies each step to a case organisation, and every participant completes a Storage and Backup Design with Restore Test Plan ready for review with their infrastructure team.
