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Data Centre Management Essentials: Design and Operations

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Data Centre Management Essentials: Design and Operations

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Data centre management is the discipline of designing, running and protecting the facilities and IT infrastructure that keep an organisation's systems available. This 1-week essentials course is for IT infrastructure and facilities staff moving into data centre responsibility, and delegates finish with a data centre operations and resilience plan covering availability targets, capacity, change control and recovery.

Introduction

The course rests on three references. ITIL 4 is the service management framework used here for change enablement, incident and problem management. TIA-942 is the infrastructure standard that sets out data centre topology, cabling and redundancy ratings. ISO 22301 specifies a business continuity management system, used here to frame recovery planning. The level is practitioner, covering the core competencies in one week rather than in full depth, and teaching uses scenario exercises drawn from banking, healthcare and telecoms data centres.

Course Objectives

- Define availability, SLAs and core data centre roles in terms that operations staff and service owners share
- Distinguish N+1 from 2N redundancy and select a design level that matches an availability target
- Apply capacity planning and PUE measurement to plan storage, compute, power and cooling growth
- Apply ITIL 4 change enablement to approve and schedule changes without disrupting critical services
- Compare public, private and hybrid cloud placement and justify where a given workload should run
- Interpret RTO and RPO requirements to set redundancy, failover and recovery arrangements

Target Audience

- IT infrastructure and operations staff taking on data centre duties who must decide which changes are safe to schedule
- Facilities and building services staff supporting IT rooms who must judge whether power and cooling capacity can absorb growth
- Service delivery and SLA owners who must decide which availability commitments the facility can realistically meet
- Network, storage and systems administrators who must choose between on-site, colocation and cloud placement for workloads
- Business continuity and IT risk staff who must judge whether recovery arrangements meet RTO and RPO targets



Course Outline

Day 1: Data Centre Roles, Service Levels and Availability Terms

- Data Centre Architecture: Facility, Compute, Storage and Network Layers Explained
- Data Centre Manager Responsibilities: Operational Functions, Roles and Escalation Lines
- SLA vs OLA: Customer Service Commitments Compared With Internal Support Agreements
- Availability Metrics: Uptime Percentage, MTBF and MTTR in Practical Terms
- IT Strategy Alignment: Linking Data Centre Objectives to Organisational Priorities

Day 2: Design, Capacity Planning and Energy Efficiency

- TIA-942: Infrastructure Standard for Data Centre Topology, Cabling and Redundancy
- Capacity Planning and Resource Allocation: Storage, Compute, Network, Power and Cooling
- N+1 vs 2N Redundancy: Spare Component Compared With Fully Duplicated Systems
- Energy Efficiency and PUE: Measuring Facility Power Overhead Against IT Load
- Data Lifecycle Management: Retention, Archiving and Disposal Under Compliance Requirements

Day 3: Daily Operations, Monitoring and Change Control

- Daily Operations Routines: Shift Checks, Rounds and Critical Infrastructure Handovers
- DCIM Monitoring Tools: Tracking Power, Cooling, Capacity and Service Performance
- ITIL 4 Change Enablement and Continual Improvement: Controlling Data Centre Changes
- Incident vs Problem Management: Restoring Service Compared With Removing Root Causes
- Operational Risk Register: Identifying and Mitigating Risks to Critical Infrastructure

Day 4: Virtualisation, Cloud Integration and Automation

- Virtualisation Concepts: Hypervisors, Consolidation and Their Effect on Efficiency
- Public vs Private vs Hybrid Cloud: Placing Workloads Inside or Beyond the Facility
- Automation and Orchestration: Tools That Streamline Provisioning and Workload Management
- Predictive Maintenance Analytics: Using AI and Sensor Data to Anticipate Equipment Failures
- Managed Data Centre Services: Outsourced Operations, Colocation and Service Oversight

Day 5: Resilience Practice: Security, Recovery and the Operations Plan

- Cybersecurity Threats and Data Protection: Physical and Logical Safeguards for Data Assets
- RTO vs RPO: Acceptable Downtime Compared With Acceptable Data Loss
- ISO 22301: Applying a Business Continuity Management System to Data Centre Services
- Redundancy and Failover Testing: Applying Design Choices to Recovery Scenarios
- Operations and Resilience Plan: Completing Availability, Change and Recovery Sections



Skills You Will Gain

- Availability Metrics
- Data Centre Capacity Planning
- Redundancy Design
- PUE Measurement
- ITIL Change Enablement
- DCIM Monitoring
- Hybrid Cloud Placement
- Disaster Recovery Planning

Why Attend This Course

- From reacting to alarms to running daily checks, monitoring and change control on a planned routine
- From adding servers until power runs short to forecasting compute, power and cooling demand ahead of need
- From assuming backups are enough to setting recovery arrangements against stated RTO and RPO targets
- From scattered procedures to a data centre operations and resilience plan ready for management review

Conclusion

Running a data centre comes down to keeping services available at a known cost and recovering predictably when something fails. The course makes three distinctions clear: N+1 versus 2N redundancy, incident versus problem management, and RTO versus RPO. It is the right choice for infrastructure and facilities professionals who need the core competencies in one week; a two-week advanced edition covering projects, security and cloud integration in more depth suits those who already manage a facility.

Course FAQs

What is data centre management?

Data centre management is the planning, operation and protection of the facility and IT infrastructure that host an organisation's systems, covering capacity, power and cooling, monitoring, change control, security and recovery so that services stay available.

What is the difference between N+1 and 2N redundancy in data centre management?

N+1 adds one spare component beyond what the load needs, so a single failure is covered. 2N duplicates the whole system, so an entire path can fail or be maintained without interruption, at roughly twice the equipment cost.



Which standards does the data centre management essentials course follow?

The course follows ITIL 4 for change, incident and problem management, TIA-942 for data centre topology, cabling and redundancy ratings, and ISO 22301 for business continuity management, applied together to everyday data centre decisions.

Is the data centre management essentials course right for a facilities engineer?

Yes. Facilities engineers supporting IT rooms learn how power, cooling and redundancy choices affect availability targets, and how IT teams plan capacity and changes, which helps both groups agree on maintenance windows and growth.

What do delegates produce on the data centre management essentials course?

Delegates produce a data centre operations and resilience plan containing availability targets, a capacity forecast, change control steps, monitoring measures, redundancy choices and recovery arrangements set against RTO and RPO.

