

Certified Data Centre Professional

Day 1 — Data Centre Fundamentals, Standards & Site Selection

Data Centre Fundamentals

- What is a Data Centre?
- Importance of Data Centres
- Data Centre components and supporting facilities
- Common causes of downtime
- Availability and reliability concepts

Standards & Best Practices

- Purpose of Data Centre standards
- Data Centre standards and best practices
- Standards-based design considerations

Location, Building & Construction – 3 hrs

- Data Centre site-selection criteria
- Selecting appropriate buildings
- Environmental and location risks
- Common site-selection pitfalls
- Supporting facility requirements

Practical/Activity

- Evaluate potential Data Centre locations
- Identify risks and recommend the most suitable site

Day 2 — Raised Floors, Ceilings & Lighting

Raised Floor Infrastructure

- Raised floor concepts
- Uniform load
- Concentrated load
- Rolling load
- Applicable standards

- Raised floor guidelines
- Signal Reference Grid
- Rack grounding
- Disability regulations
- Suspended ceiling requirements

Lighting Infrastructure

- Lighting standards
- Fixture types
- Fixture placement
- Emergency lighting
- Emergency Power Supply (EPS)

Practical/Activity

- Design a basic Data Centre floor layout
 - Rack and floor-load planning
 - Lighting and emergency-lighting placement
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Day 3 — Data Centre Power Infrastructure

Power Fundamentals

- Power infrastructure from generation to rack
- Three-phase vs single-phase
- Real vs apparent power
- Power quality
- Bonding vs grounding
- Common Mode Noise

Power Distribution

- ATS and STS
- Distribution boards
- IP protection grades
- Power cabling
- Bus bar trunking
- Isolation transformers

- Redundancy techniques

UPS, Generators & Batteries –

- Generator systems
- Static UPS
- Dynamic UPS
- UPS selection criteria
- Energy efficiency
- Battery types
- Battery selection and testing
- Thermography

Practical

- Data Centre load calculation
- UPS sizing exercise
- Power-path design
- Redundancy scenario

Power infrastructure is one of the largest sections of the supplied curriculum, covering the path from generation to rack, redundancy, distribution, load sizing, generators, UPS and batteries.

Day 4 — EMF & Equipment Racks

Electromagnetic Fields s

- Electric and magnetic fields
- Measurement units
- Sources of EMF
- Effects on people and equipment
- HEMP
- EMF standards
- Shielding solutions

Equipment Racks

- Rack standards
- Rack properties
- Rack selection criteria

- Security considerations
- Power rails and strips
- Rack planning

Practical

- Select racks for a given Data Centre scenario
 - Rack equipment-placement exercise
 - EMF risk identification and mitigation
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Day 5 — Cooling Infrastructure & Water Supply

Cooling Fundamentals

- Temperature recommendations
- Humidity recommendations
- Cooling measurement units
- Unit conversions
- Sensible vs latent heat
- Comfort vs precision cooling

Cooling Architecture

- Air-conditioning technologies
- Raised vs non-raised floor cooling
- AC unit placement
- Supplemental cooling
- Cold aisle/hot aisle containment

Water Supply

- Importance of water supply
- Water applications
- Backup water supply

Practical

- Design rack and cooling layout
- Hot/cold aisle planning
- Identify cooling problems in sample layouts

The outline covers these cooling topics plus water supply and backup techniques.

Day 6 — Scalable Network Infrastructure

Structured Cabling

- Importance of structured cabling
- Planning considerations
- Copper cabling
- Fiber cabling
- Cable standards

Data Centre Network Design

- ANSI/TIA-942 cabling hierarchy
- SAN storage cabling
- Network redundancy
- Building-to-building connectivity
- Network monitoring requirements

Testing & Verification

- Cabling testing
- Verification considerations

Practical

- Create a structured cabling layout
- Copper vs fiber selection scenarios
- Design redundant network connectivity

Day 7 — Fire Suppression, Security & Safety

Fire Protection

- Fire suppression standards
- Fire detection systems
- Total flooding systems
- Benefits and disadvantages
- Handheld extinguishers
- Safety signage
- Regulatory requirements

Operational Security

- Data Centre security layers
- Physical security
- Infrastructure security
- Organisational security
- Safety measures
- Essential signage

Practical

- Create Data Centre security layers
 - Fire-risk assessment
 - Emergency response scenario
 - Safety checklist
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Day 8 — Data Centre Monitoring

Monitoring Fundamentals

- Why Data Centre monitoring is required
- Infrastructure monitoring
- Environmental monitoring
- Monitoring requirements

Monitoring Systems

- EMS
- BMS
- EMS vs BMS
- Water leak detection
- Notification options
- Alert considerations

Practical

- Define monitoring requirements
- Build a monitoring checklist
- Design alert/escalation scenarios
- Water-leak detection planning

Day 9 — Labelling, Documentation & Cleaning

Labelling

- Choosing a labelling scheme
- Recommended practices
- Network labelling
- Rack/cable identification

Documentation

- Data Centre documentation
- Setting up documentation
- Document management policies
- Document management procedures

Data Centre Cleaning

- Importance of controlled cleaning
- Cleaning practices

Practical

- Create rack and cable labelling scheme
- Develop documentation checklist
- Create sample maintenance documentation

Day 10 — Reliability, Maintenance, SLA & Final Case Study

MTBF & MTTR

- MTBF definition
- MTTR definition
- Relevant standards
- Calculation models
- Understanding their practical value

Maintenance Contracts / SLA / OLA

- Maintenance contract concepts
- SLA concepts
- OLA concepts

- Maintenance planning

The supplied outline ends with MTBF/MTTR and Maintenance Contracts/SLA/OLA.

Integrated Case Study

Design a Data Centre for a given business requirement covering:

**Site → Floor → Racks → Power → Cooling → Network → Fire Protection → Monitoring → Security
→ Labelling → Documentation → Reliability & Maintenance**