



*Training Course:
Advanced Data Center Design and Architecture*

*22 - 26 September 2025
Madrid (Spain)
Pestana CR7 Gran Vía*

Training Course: Advanced Data Center Design and Architecture

Training Course code: IT236103 From: 22 - 26 September 2025 Venue: Madrid (Spain) - Pestana CR7 Gran Vía Training Course Fees: 6000 € Euro

Introduction

This advanced-level training program, designed by Global Horizon Training Center, explores the principles and cutting-edge strategies in designing and architecting high-performance, scalable, and sustainable data centers. As digital transformation and cloud computing reshape infrastructure needs, professionals responsible for data center design must be equipped with the latest technical standards, engineering innovations, and future-ready concepts.

This course focuses on end-to-end data center design, including site selection, power and cooling infrastructure, physical layout, redundancy levels, sustainability, modularity, and integration with cloud and edge systems. The program prepares engineers, architects, and senior facility designers to create data centers that meet current operational needs while anticipating future expansion and environmental demands.

Objectives

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

- Apply industry best practices and standards in designing Tier I-IV data centers
- Analyze site, environmental, and regulatory factors influencing design
- Plan optimal power and cooling systems for energy-efficient performance
- Design scalable and modular physical infrastructure
- Integrate cloud, hybrid, and edge computing considerations into architecture
- Address fault tolerance, high availability, and risk mitigation through design
- Incorporate sustainability, green technologies, and compliance standards

Course Methodology

- Expert-led sessions with technical deep dives
- Design case studies from global data centers
- Technical drawing review and conceptual planning
- Interactive modeling exercises and design simulations
- Peer review of sample architectural frameworks

- Use of relevant software/tools for data center planning

Organizational Impact

Organizations that invest in this program will benefit from:

- Future-ready data center infrastructure aligned with business growth
- Optimized designs reducing energy costs and operational risks
- Improved performance and scalability through modular design
- Compliance with international standards and government regulations
- Reduced downtime through fault-tolerant and redundant architecture
- Increased return on investment ROI through strategic design

Target Audience

- Data Center Architects and Facility Designers
- Infrastructure and Network Engineers
- Senior Electrical and Mechanical Engineers
- Consultants involved in large-scale IT infrastructure projects
- Project Managers for data center construction or renovation
- IT leaders responsible for long-term infrastructure strategy

Course Outline

Day 1 - Foundations of Advanced Data Center Design

- Evolution of data center architecture: from traditional to hyperconverged
- Design process overview: requirement analysis to commissioning
- Tier classifications Uptime Institute and application in design
- Regulatory considerations: building codes, fire safety, and zoning
- Site selection: power availability, climate, risk, and connectivity

Day 2 - Power Infrastructure and Electrical System Design

- Power distribution design: utility feed, switchgear, UPS, PDUs
- Redundancy models: N, N+1, 2N, 2N+1, and concurrent maintainability
- Generator sizing, fuel planning, and failover strategies
- Arc flash mitigation and grounding systems
- Monitoring and integration with Building Management Systems BMS

Day 3 - Cooling Systems and Environmental Engineering

- Cooling strategies: air-cooled, liquid-cooled, free cooling systems
- CRAH vs. CRAC, hot aisle/cold aisle containment
- Computational Fluid Dynamics CFD modeling for airflow optimization
- Water and energy usage effectiveness WUE, PUE
- Integrating green technologies for sustainable operations

Day 4 - Physical Layout, Scalability, and Modular Design

- Space planning: white space vs. grey space allocation
- Rack layout optimization and cable management
- Modular and containerized data center solutions
- Expansion planning and future capacity modeling
- Access control, fire detection/suppression integration

Day 5 - Integration, Cloud Readiness, and Final Design Workshop

- Hybrid and multi-cloud infrastructure considerations
- Designing for edge computing and distributed architecture
- Disaster recovery zones and geographic redundancy
- Design review workshop: create and present a conceptual data center blueprint
- Final evaluation, feedback, and certification ceremony

Registration form on the Training Course: Advanced Data Center Design and Architecture

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Complete & Mail or fax to Global Horizon Training Center (GHTC) at the address given below

Delegate Information

Full Name (Mr / Ms / Dr / Eng):
Position:
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Personal E-Mail:
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Company Information

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Address:
City / Country:

Person Responsible for Training and Development

Full Name (Mr / Ms / Dr / Eng):
Position:
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Payment Method

- ☐ Please find enclosed a cheque made payable to Global Horizon
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