Data Center Management and Operational Excellence Training Course



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Sharm El-Sheikh

4100 € (Per Person)

Ref: #IT4450_287957

Course Introduction / Overview:

This comprehensive course is designed to equip professionals with the strategic and operational skills required to manage modern data centers with maximum efficiency and reliability. In an era where data is the new currency, the performance of the data center is directly linked to organizational success. This program moves beyond basic operations to instill a mindset of continuous improvement and strategic foresight. As detailed by experts like Luiz André Barroso and Urs Hölzle in their seminal work, "The Datacenter as a Computer: An Introduction to the Design of Warehouse-Scale Machines," viewing the data center as a single, integrated system is crucial for achieving operational excellence. Participants will explore the entire data center lifecycle, from design principles and infrastructure management to advanced topics in power and cooling efficiency, security, and capacity planning. BIG BEN Training Center has developed this curriculum to bridge the gap between theoretical knowledge and practical application, ensuring that attendees can implement effective data center management best practices, optimize resource utilization, and align IT infrastructure with overarching business objectives. This course provides a roadmap for transforming your data center into a resilient, scalable, and cost-effective strategic asset.

Target Audience / This training course is suitable for:

- Data Center Managers and Directors.
- IT Operations and Systems Managers.
- Infrastructure and Network Engineers.
- Facilities Managers and Engineers.
- IT Planners and Architects.
- Security and Compliance Officers.
- Project Managers involved in data center projects.
- Technical Support Staff.

Target Sectors and Industries:

- Information Technology and Services.
- Banking, Finance, and Insurance.
- Telecommunications and Media.
- Healthcare and Pharmaceuticals.
- Retail and E-commerce.
- Energy and Utilities.
- Government Agencies and Public Sector Institutions.
- Education and Research Institutions.

Target Organizations Departments:

- Information Technology Department.
- Data Center Operations.
- Facilities Management.
- Network and Infrastructure Teams.
- Engineering and Technical Services.
- Corporate Security and Risk Management.
- Strategic Planning and Finance.
- Procurement and Vendor Management.

Course Offerings:

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

- Develop a comprehensive strategy for data center operations and management.
- Analyze and optimize power and cooling systems for maximum efficiency.
- Implement industry standards such as TIA-942 and Uptime Institute tiers.
- Master key performance indicators like PUE and DCiE for performance benchmarking.
- Design and execute robust physical and cybersecurity protocols for the data center.
- Conduct effective capacity planning to meet future business demands.
- Create and test disaster recovery and business continuity plans.
- Evaluate and manage vendor relationships and service level agreements (SLAs).
- Integrate sustainability principles into data center operations for a greener footprint.
- Utilize Data Center Infrastructure Management (DCIM) tools effectively.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, engaging, and practical, ensuring that participants can translate learned concepts into real-world actions. This course employs a blended learning approach that combines expert-led presentations with collaborative workshops and hands-on exercises. We believe that adult learning is most effective when it is experiential. Therefore, participants will engage in detailed case study analyses of successful and failed data center projects, allowing them to dissect complex scenarios and understand the practical implications of strategic decisions. Group discussions and team-based problem-solving activities will foster a collaborative environment where diverse experiences are shared. The curriculum includes practical sessions on calculating key metrics, drafting operational procedures, and simulating incident response scenarios. Our instructors facilitate a dynamic learning environment, providing continuous feedback and encouraging participants to apply the principles of operational excellence to challenges from their own organizations. This immersive approach ensures a deep understanding of data center management and equips attendees with the confidence to drive efficiency and innovation.

Course Agenda (Course Units):

Unit One Foundations of Modern Data Center Management

- Introduction to data center ecosystems and their strategic importance.
- Understanding data center tiers and classifications (Uptime Institute, TIA-942).
- Key performance indicators (KPIs) and metrics for success.
- Calculating and interpreting Power Usage Effectiveness (PUE) and Data Center Infrastructure Efficiency (DCiE).
- The data center lifecycle from planning and design to decommissioning.
- Exploring different data center models: enterprise, colocation, cloud, and edge.
- Regulatory compliance and its impact on data center operations.

Unit Two Core Infrastructure: Power and Cooling Optimization

- Fundamentals of data center electrical power distribution systems.
- Uninterruptible Power Supply (UPS) and generator technologies.
- Strategies for improving power chain efficiency and reliability.
- Principles of data center cooling and airflow management.
- Comparing cooling technologies: from traditional CRAC/CRAH to liquid cooling.
- Hot aisle/cold aisle containment and other airflow optimization techniques.
- Environmental monitoring for temperature, humidity, and other critical factors.

Unit Three IT Infrastructure and Capacity Planning

- Managing server, storage, and network hardware infrastructure.
- The role of virtualization and hyper-converged infrastructure.
- Best practices for structured cabling and network design.
- Strategic capacity planning for space, power, cooling, and connectivity.
- Forecasting future IT load and infrastructure requirements.
- Techniques for rightsizing infrastructure to avoid overprovisioning.
- Balancing performance, availability, and cost in capacity management.

Unit Four Operations, Monitoring, and Security Management

- Establishing best practices for day-to-day data center operations.
- The role of Data Center Infrastructure Management (DCIM) software.
- Implementing effective change management and incident management processes.
- Developing a multi-layered physical security strategy for the data center.
- Access control, surveillance, and intrusion detection systems.
- Cybersecurity considerations within the data center environment.
- Conducting risk assessments and developing mitigation plans.

Unit Five Strategic Management, Sustainability, and Future Trends

- Financial management for data centers: understanding TCO and ROI.
- Developing and managing Service Level Agreements (SLAs).
- Effective vendor and contract management strategies.
- Implementing green data center and sustainability initiatives.
- The impact of AI, machine learning, and IoT on data center design.
- Exploring the future of data centers: edge computing and hyperscale architectures.
- Developing a roadmap for continuous improvement and operational excellence.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As AI and high-performance computing drive unprecedented power density, how can data center managers strategically balance the pursuit of cutting-edge performance with long-term sustainability goals and financial viability?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by adopting a holistic, business-centric approach to data center management rather than focusing solely on isolated technical components. While other programs may concentrate on specific hardware or software, this curriculum integrates technical expertise with strategic business principles, teaching participants how to align infrastructure performance with organizational objectives. We emphasize the "why" behind the "how," exploring the financial and operational implications of every decision. The content is built around real-world case studies and practical problem-solving, moving beyond theoretical knowledge to build tangible skills in areas like PUE optimization, risk assessment, and capacity forecasting. Furthermore, the course is forward-looking, dedicating significant time to sustainability, the impact of emerging technologies like AI and edge computing, and the principles of operational excellence. This strategic foresight ensures that participants are not just prepared for today's challenges but are also equipped to lead their data centers into the future, transforming them from cost centers into strategic enablers of business innovation and growth.