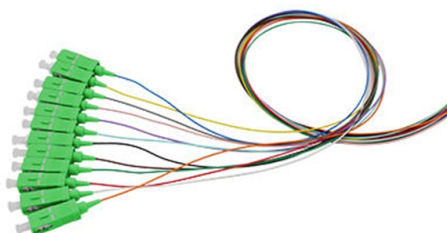


Integrated Micro-modular Data Center Configuration



Overview

Micro Data Center Delta's modular datacenter solution offers a datacenter environment that provides safe equipment HI2000 Micro Modular Data Center: Typical.

Key Takeaways

A micro-modular data center is a compact, pre-engineered facility that integrates IT racks, power, cooling, and monitoring systems for rapid deployment and efficient operation.

Micro-modular data centers (MDCs) are small-scale, self-contained facilities designed to house IT equipment in a compact footprint, typically supporting a handful of server racks with IT loads under 20–30 kVA . They can be fixed, mobile, or integrated into larger data centers, and often use modular designs to allow scalability and integration with existing infrastructure . MDCs are ideal for small businesses, edge computing, or regional deployments where space, cost, and rapid deployment are critical .

Core Components

- Racks and IT Equipment
- Standard server racks serve as the primary carrier for IT equipment.
- Racks may include integrated power distribution units (PDUs), environmental sensors, and cable management .

- Power Systems
 - Uninterruptible Power Supplies (UPS) provide high availability, often in N, N+1, or 2N configurations.
 - Power distribution is integrated to support rack-level redundancy and efficient energy use .
- Cooling and HVAC
 - In-rack or aisle-based cooling systems manage temperature and airflow.
 - Hot/cold aisle containment and horizontal airflow reduce hotspots and improve energy efficiency, achieving PUE values below 1.4 .
 - Cooling systems are often monitored and controlled via distributed control systems for reliability.
- Monitoring and Management
 - Intelligent monitoring includes temperature, humidity, lighting, door sensors, and environmental alerts.
 - Systems can provide SMS or email notifications and integrate with centralized management software .
- Security and Physical Protection
 - Physical security measures include locks, access control, surveillance cameras, and protection against environmental hazards such as fire, water, and dust .
 - Some MDCs are designed as IT Safes for sensitive equipment.

Deployment and Configuration

- Factory-Built Modules: Many MDCs are pre-engineered and factory-tested, reducing onsite construction and ensuring predictable performance .
 - Scalability: Modules can be added incrementally to expand capacity without major redesigns.
 - Site Adaptability: MDCs can be deployed indoors, outdoors, or in remote locations, with designs adaptable to environmental conditions such as temperature, humidity, and space constraints .
 - Auxiliary Systems: Fire suppression, leak detection, and backup power are integrated to meet Tier classification standards and ensure operational continuity .
- #### Advantages
- Rapid Deployment: Pre-configured modules reduce setup time compared to traditional data centers .
 - Cost Efficiency: Lower capital expenditure and operational costs compared to full-scale facilities .

- **Energy Efficiency:** Optimized cooling and high-efficiency UPS systems reduce total cost of ownership .
- **High Availability:** Redundant power and cooling configurations ensure reliable operation even in small-scale deployments .

Summary

A micro-modular data center combines compact design, integrated power and cooling, intelligent monitoring, and physical security to provide a reliable, scalable, and energy-efficient solution for small IT environments or edge computing. By leveraging factory-built modules and modular configurations, organizations can deploy IT capacity quickly while maintaining high availability and operational efficiency .

Article Content

HI2000 Micro Modular Data Center: Typical Configuration

Typical Configuration Micro-module data centers are classified as Micro-module A and Micro-module B based on

Modular Data Centers: Prefabricated Containers and Modules

Modular data centers are prefabricated buildings such as a container that house servers, data hall, or data center module for power

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