MICRO DATA CENTER ENVIRONMENTS

A micro data center is modular or containerized and smaller than a computer room—typically one rack or less. All required IT functionalities are contained in the micro data center, designed to handle your specific needs at distributed locations and typically managed from a larger data center.²

Micro data centers are often housed in the telecommunications room (TR) or telecommunications closet (TC), which is defined as the space that acts as the common access point between backbone and horizontal distribution pathways. TRs contain telecommunications equipment, control equipment, cable terminations and cross-connect wiring.³

THE RISE OF EDGE COMPUTING

For many years the trend for data centers has been to consolidate multiple sites into one or a few centralized, larger facilities. Much of that consolidation has shifted from the enterprise-owned and operated data center to the multi-tenant or colocation environment. While it makes sense for many organizations to take this approach, the exponential growth of data and the Internet of Things (IoT) drives a need for local processing and storage IT in environments such as IDF closets, branch locations and remote sites.

Edge computing describes a data center topology in which information processing and content collection and delivery are placed closer to the sources of this information. The goals are to reduce latency, reduce unnecessary traffic and establish a hub for interconnection between interested peers and for data thinning of complex media types or computational loads.⁴

By 2020, 26 BILLION devices will be connected to the Internet, adding $1.9 TRILLION in global economic value through sales into diverse end markets.¹

² Gartner, Hype Cycle for Data Center Power and Cooling Technologies 2016 – The Micro Data Center.
³ ANSI/TIA-569-A.
⁴ Gartner, Hype Cycle for Data Center Power and Cooling Technologies 2016 – Edge Computing.
BUSINESS AND TECHNOLOGY DRIVERS

The micro data center is becoming a key part of the IT strategy to optimize your business outcomes. Three of the main drivers supporting the growth of micro data center solutions are: the Internet of Things, the convergence of systems and hardware, and reliance on local applications.

The Internet of Things is increasing the number of IP-connected devices that need to be supported locally in rooms that were not traditionally designed to support dense server and network switched environments. Recent proposed changes to the PoE standard, when approved, would require switches that consume more power, placing added strain on the building cooling system. Physical security to these areas also becomes critical to protect against costly outages.

Disparate systems and hardware are converging on a single protocol to make it easier to support. The power and connectivity required for these devices are supported locally but should be managed centrally.

Due to the increased reliance on local applications, enterprises are beginning to send more applications off premise to be supported in the cloud; however, the systems that remain supported in-house, particularly those in remote locations, are now critical to maintaining constant uptime. The ability to support these systems in a distributed environment with a centralized IT team is key to maintaining performance and reliability.

DATA CENTER EDGE CONSIDERATIONS

<table>
<thead>
<tr>
<th>COMPLIANCE</th>
<th>CONTINUITY</th>
<th>CONSISTENCY</th>
<th>COST</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory requirements, regional requirements</td>
<td>Independent operation, redundant design</td>
<td>Standard architectures, installation consistency</td>
<td>Packaged solutions, simple installations</td>
<td>Remote management, standardized maintenance</td>
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</table>
MICRO DATA CENTER

TELECOMMUNICATIONS ROOM
## TECHNOLOGY SOLUTIONS

### CABLE PATHWAYS
- a. Cable tray and ladder rack
- b. Vertical cable management
- c. Horizontal cable management
- d. Fire stop

### ENCLOSURES
- a. Open racks
- b. Cabinets

### POWER QUALITY AND DISTRIBUTION
- a. UPS systems
- b. Cabinet PDUs
- c. Surge suppression
- d. Grounding and bonding

### ENVIRONMENTAL MONITORING
- a. Spot cooling systems
- b. Environmental sensors
- c. Leak detection cabling
- d. Fire detection* (not pictured)

### VIDEO SURVEILLANCE
- a. Video storage
- b. Digital video recorder
- c. Video management server
- d. Dome camera

### ACCESS CONTROL
- a. Card reader
- b. Controller*
- c. Cabinet locking system
- d. Door locking hardware

### NETWORK INFRASTRUCTURE
- a. Copper and fiber cabling
- b. Patch panels and enclosures
- c. Patch cords
- d. Test equipment*
- e. Power over Ethernet switches
- f. KVM switches

### WIRELESS
- a. Active distributed antenna systems
- b. Access points

### PRO A/V
- a. Amplifiers
- b. Controllers
- c. Monitors and displays

### LIGHTING SYSTEMS
- a. Fixtures
- b. Controllers
- c. Sensors

*Not pictured
THE ANIXTER DIFFERENCE

At Anixter, we help build, connect, power and protect valuable assets and critical infrastructures. From enterprise networks to industrial support and supplies to video surveillance applications and electric power transmission and distribution, we offer full-line solutions—and intelligence—that create reliable, resilient systems that can sustain your business and community.

Through our unmatched global distribution network, supply chain management expertise and technical know-how, we drive efficiency and effectiveness to benefit your bottom line.

MICRO DATA CENTER
BEST PRACTICES

The five key building blocks of Infrastructure as a Platform (IaaP) for medium to large data centers also are relevant to micro data centers and telecommunications rooms.

The five building blocks addressed by IaaP are:

- **Risk Management** in a micro data center environment starts at the building and adopts a layered physical approach that allows you to deter, detect, deny, delay and defend both locally and remotely.

- **Network Migration** and performance is enabled through versatile physical layer connectivity to achieve an open system platform to support local processing and storage.

- **Power Optimization** using remote power management and monitoring best practices will reduce the risk of outages at the edge of your network.

- **Thermal Efficiency** of a micro data center and telecommunication room should be addressed remotely using best practices for airflow management and temperature control.

- **DCIM Enablement** of your remote network environments gives you visibility and control for assets, monitoring, change management and capacity planning.

Consider a micro data center solution as one component of your overall data center strategy, which may include enterprise and multi-tenant data center solutions depending on your needs. Learn more at anixter.com/datacenter.
ON-TIME, ON-BUDGET DEPLOYMENTS

Whether you are building a new data center, considering a multi-tenant data center strategy or planning to install a micro data center to meet the demand for local processing and storage, you need the people, processes and deployment plans to help implement your solutions with minimal disruption while meeting project deadlines. Anixter can deliver the right products to your project team, organized specifically to minimize your time, effort, risk and cost.

ANIXTER’S SUPPLY CHAIN MODEL

Reducing costs, saving time, improving productivity and mitigating risks are our goals on every project. With our customizable supply chain solutions, you can eliminate costs, address sustainability requirements, enhance focus on your core competencies and stay competitive in the marketplace.

TECHNOLOGY ALLIANCE PARTNERS

From enterprise data centers to security infrastructure to in-building wireless and beyond, Anixter recommends and provides solutions that connect the world’s most important information. Delivered directly and through partners, these solutions help today’s data-intensive organizations operate more efficiently and maximize the business value of their infrastructures. As a provider of leading-edge solutions, Anixter recognizes the benefits that a joint technology partnership can bring to its customers. That’s why Anixter has created the Technology Alliance Partner program with the mission of building long-term partnerships that enable us to deliver comprehensive and proven best-of-breed technology solutions.
TECHNICAL EXPERTS RIGHT WHERE YOU NEED THEM

In addition to our technical salesforce, we have a Technology Support Services organization that includes presales and advanced technology specialists to help you select the right solutions for your needs.

CORPORATE SNAPSHOT

GLOBAL REACH. LOCAL ADVANTAGE.

With Anixter, you get a true local partner around the world. No other distributor of our kind can claim an in-country presence in approximately 50 countries and in over 300 cities.

We do business in more than 35 currencies and 30 languages, which means we are uniquely positioned to help facilitate your project in the local environment, reduce risks and keep costs down.