

## MICRO DATA CENTER TRENDS

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# DATA CENTERS OF FUTURE

Predicting data center evolution life cycle and pace of growth over long period will always be center of discussion but would be challenging to predict accurately. The rapid growth underscores the need for more and more data centers to house and manage all information. Managing all the information and to cater for the Tsunami of data traffic due to IoT Enabled devices, online streaming and social media growth, requires a robust planning in terms of infrastructure. Unpredicted growth, pandemic response and dynamic usability demands the future of data center with high availability.

As the volume and variety of data increases, bottlenecks are observed at the edge. Legacy network models were not built to cater dynamic traffic flows and data volume at level of performance and quality which is on continue increment surge. Data Centers will now evolve from a centralized large form factor and locally centralized approach to distributed approach.

According to “*Global Interconnect Index Volume 3*”, global growth rate of data capacity exchange to expected to be 51%. The bandwidth utilization and data transfer growth in pandemic 2020, surged above all the prediction and service providers have to go through nightmare to provide services at par. This will lead the technology specialist to design and build a sustainable infrastructure.

The types of popular future data center which are likely to dominate the future approach and methodology are likely to be,

- Hyperscale Data Centers
- Cloud and Service Provider Data Centers
- Enterprise Data Centers
- EDGE Data Centers
- High Performance Computing Data Centers

IT Infrastructure in data centers are typically refreshed four to five years’ time but critical capacity components are not often refreshed with typical time frame. Data Centers of future should be planned and strategize that should help to maximize the efficiency and should reduce the risk of being obsolete. Data Center infrastructure should be scalable and modular which should have ability to scale and grow as when needed. Data Center Infrastructure will also shift towards hybrid models with focus on consolidating into large scale facilities along with distributed facilities to lesser the burden on main data center. Edge micro-data centers will also to some extent replace the legacy infrastructure and approach and will provide support to the larger infrastructure.

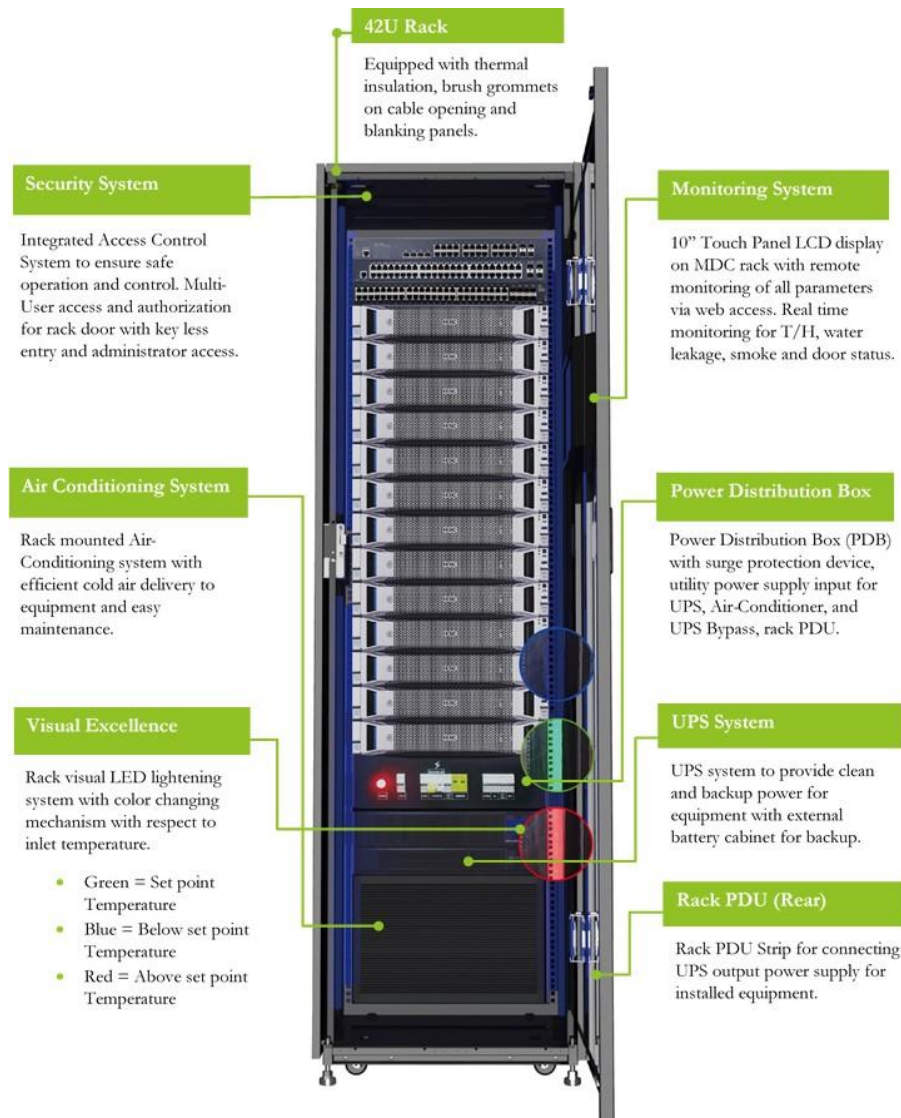
Edge Data Centers are distributed facilities that are located closer to the consumer and provide cached content to the end users. They typically connect to larger central or multiple data centers. Edge data center allows organizations to reduce the latency and improve the customer experience. Edge Data Centers require smaller infrastructure footprint and are located in various locations within the country.

A micro data center is a physical infrastructure solution which hare based on as low as one rack to multiple racks depending on the capacity requirement which is suitable for smaller footprint edge data center and are quick to deploy. Micro Data Centers are becoming popular not just in edge data center environment, but small and medium businesses are also interested in micro data center with respect to lesser critical infrastructure components required for brick and mortar data center.

# MICRO DATA CENTER

Micro Data Center is exactly what it sound like, that are smaller version of traditional data centers that provide self-sufficient data processing and communication infrastructure, which comprises of all major critical capacity components required for data processing and communication in a traditional brick and mortar facility. It is a modular infrastructure which comprises of main physical capacity components like power, cooling and monitoring packaged in as less as single rack to multiple racking options. Not only it is an all in one packaged solution, but its pre-fabricated nature also enables the micro data center as a plug and play solution and quick deployment time.

A Micro Data Center comprises of all critical components that are required for a standalone infrastructure which are key components for technology components operation. Micro Data Centers can comprise of a single rack solution to multiple rack solution which can be deployed within an office building or a remote location.



Micro Data Centers comprises of below key components,

- Air-Conditioning
- UPS
- Fire Detection and Suppression
- Rack PDUs
- Environmental Monitoring
- Electrical Distribution
- Remote Monitoring

Micro Data Center are also available with different redundant configuration, these redundancy configurations consumes rack space and required solution can be spread of various racks depending on planned technology and communication equipment,

- N
- N+1
- 2N

Micro Data Center come with 2 type of variant,

1. Micro Data Center with Split type DX cooling system with evaporator inside the rack/enclosure and condenser unit located in outside environment of the building.
2. Micro Data Center with split type DX cooling system with evaporator inside the rack/enclosure and condenser unit mounted of top of rack or with other **configuration**.

Micro Data Center are good fit for existing office spaces, stores and any area within the building that is suitable for housing technology infrastructure with physical security. Micro Data Centers are available with racks/enclosures that are fit for indoor application as well as outdoor application with compliant ingress protection (IP) rating for outdoor installation. Micro Data Centers does not require any special treatment of planning that are usually required for on premise traditional data center.

Micro Data Center is not the answer to requirement for on premise small, medium or enterprise data center, but has application for special requirements where deployment time, cost, and requirements are mapping to the need of it. Micro Data center has several benefits over traditional data centers,

- **Lower cost to deploy:** Micro Data Centers are prefabricated and have much smaller footprint than traditional data centers, micro data centers tend to be more cost-effective as well. Cost for building a traditional data center where power, cooling, civil, surveillance, fire system and other components which are required for an entire premises is saved.
- **Faster time to deploy:** Micro Data Centers can be fabricated and shipped quickly, once the requirement is finalized. On the Contrary, it take much longer to order and install it for a traditional physical data center solution selected or built.
- **Standardization:** The components of a micro data center are preselected before the unit is fabricated, so the equipment type and their capacities are fixed.
- **Easy to install:** Since micro data centers are self-contained, installation is a just as easy as it can be. As a bonus, they are also easy to move and can be located anywhere from the reception area of a small office to a small room in a hospital or retail store to a remote site.

# MICRO DATA CENTER MARKET

Micro Data Center solution has use cases in different markets, application types and industry verticals. Its packaged nature makes it first choice by most of the professionals where time, cost and requirement is a challenge and fulfillment requirement is specific. We list down various requirement scenarios and industry verticals where Micro Data Center is a preferable solution.

- **Banks:** Banks can utilize 1 rack MDC for information technology and communication setup for branches. Multiple Rack Configuration MDC is suitable for Primary and DR purpose.
- **Retails:** Retail business have small infrastructure requirement with limited capex and opex. MDC is the right solution for their information technology requirement at retail facilities.
- **Manufacturing** – Manufacturers have their IT infrastructure setup usually in their headquarters. Their information technology requirement at manufacturing sites are related to managing supply chain and management using ERP etc. This usually requires a robust and small infrastructure than can manage and operate without greater infrastructure resources.
- **Service Provider** – EDGE computing requirement is a next requirement for service provider industry. MDC is the perfect solution for placing the MDC closer to the user with less infrastructure requirement, monitoring capability with lesser management required, quick and adaptable deployment suitable for all environments and conditions.
- **Small and Medium Business** – MDC is the right Information Technology Infrastructure bundle for small and medium business, with Lower Capex and no requirement for special infrastructure construction and management. MDC infrastructure comes with built-in essential critical capacity components which are necessity for standard operation of IT Equipment. MDC also does not require SMB market have specialist for designing and maintaining IT infrastructure and allows companies to have single window solution for equipment management and operation.
- **Oil/Gas & Exploration** – Companies which require temporary installations with purpose of exploration, temporary establishment for project monitoring/delivering can utilize MDC for their temporary requirements. This saves companies with infrastructure that can be relocated with minimum to no wastage of infrastructure which is required to establish a traditional data center. Relocation will save cost on relocation the MDC with standard packing to a newer location and infrastructure intact in the rack and quick and easy deployment on new location.
- **Broadcasting** – Broadcasting companies like television and radio broadcaster require Information Technology Infrastructure for coverage of an event like Olympics and sports world cup. Event can take place in different countries or cities for which an infrastructure which can be quickly deployed and convenient to relocate to different location will not just give financial saving but timely coverage due to quick deployment.
- **Military** – Military have requirement for Information Technology infrastructure with quick relocation and deployment for their strategic requirements.
- **Education and Hospital** – Universities and Hospitals have large coverage areas with distant. To build a traditional data center in each campus with all essential critical capacity components is not cost effective. MDC will provide cost effective solution with respect to both Capex and Opex. Remote manageability is also a key factor.

# MICRO DATA CENTER USE CASES

## MDC use case scenario 1 – Edge Data Center

- **EDGE Computing** – As more and more demand is placed on data centers for these services, data takes longer to reach its destination. In general, the further the distance from the data center, the longer it will take to deliver its digital services and with increased bandwidth costs. Placing data centers closer to the point of use is known as edge computing.
- **MDC Use** – Primary requirement for EDGE is to have infrastructure closer to the user with remote location, need for transmitting data back and forth across networks, latency and remote location downtime. MDC's flexibility can be used in a wide variety of applications. Individual micro data center solutions can be tuned to simplify solving core business challenges – whether that be quick and easily repeatable deployments, resiliency or a need for local compute without the need for local IT support. Micro data centers can be deployed on their own, and at the edges of network in small offices, warehouses, smart factories and other remote sites for local data storage and communication.

## MDC use case scenario 2 – Business Branch

- **Business Branch** – Business like Retails and Banks have ever expanding requirements. Data and IT applications at branch will require s standardized infrastructure to house the equipment. Moreover, branch may have lesser expertise for operation and management and fast replication of business goals is essential.
- **MDC Use** – All the essential critical capacity components are factory tested and fabricated. This infrastructure comes with ready to use deployment with no special infrastructure requirement for operation. MDC can be installed in any space of the branch available for placement with no special environmental, safety and security and architectural requirements. MDC is equipped with safety and security, power, cooling and monitoring infrastructure which can operate without local management and can be monitored remotely from a single SOC/NOC.

## MDC use case scenario 3 – Temporary Establishment

- **Temporary Establishment** –Businesses like oil and gas exploration, media broadcasting, military application and any other type of engagement where the tenure of operation is temporary and the business would like to have Information Technology setup in various locations within a country or globally.
- **MDC Use** – MDC is a prefabricated solution which comes integrated with all power, cooling and other required peripherals. User can install all the information technology and communication equipment within the micro data center rack. While relocating from one location to another, MDC secures the infrastructure as an asset and relocation to new location and setup at that location is done with minimal to none cost and asset can be reutilized further.

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