

U.S. Data Center Market Landscape 2023-2028

Market Report | 2023-06-28 | 99 pages | Arizton Advisory & Intelligence

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Report description:

The U.S. data center market will witness investments of USD 110.21 billion by 2028, growing at a CAGR of 3.57%.

KEY TRENDS

Sustainability Measures Adopted by Data Center Operators

- The increased data center power consumption and the need to decrease carbon emissions prompted many service providers to purchase clean, renewable energy sources to power their current and new facilities.
- Data centers are among the largest consumers of power and a leading source of carbon emissions across several locations. Several operators and governments have implemented initiatives to lower carbon emissions from data centers.
- According to one of the operators of the world's largest PPA marketplace and leading provider of renewable transaction infrastructure, LevelTen Energy, the renewable energy power purchase agreement (PPA) prices in Q2 2022 rose to over 5.3% and around 30% YOY in the North American industry.

AI & HPC Applications Driving Liquid Immersion & Direct-to-Chip Cooling

- Vendors in the U.S. data center market operating in the liquid immersion and direct-to-chip cooling industry are strengthening their offerings through multiple OEM partnerships. For instance, Fujitsu, IBM, HPE, Dell Technologies, and ODM server suppliers actively offer direct-to-chip cooling and liquid immersion server racks to run AI and ML workloads to their HPC clients.
- The Skybox Datacenters facility in Houston has deployed a cooling system in its DownUnder GeoSolutions (DUG) project, which has more than 40,000 servers immersed in liquid coolant in 720 enclosures.
- Microsoft partnered with Wiwynn to test deploying a two-phase immersion-cooled server at a data center in Washington.

Adoption of Cloud-based Services

- The U.S. data center market is among the biggest cloud markets in the world. It has the presence of all the major cloud operators, such as Google, Amazon Web Services, Microsoft, Alibaba, Oracle, Tencent, IBM, and others.
- Businesses shifted to the cloud to increase cost efficiency and ensure business continuity and digital transformation. Government agencies have also migrated their applications to a private cloud environment. For instance, in October 2022, the US Army

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announced a migration project of around USD 1 billion, in which it plans to migrate its IT infrastructure to the cloud. The migration is expected to be completed by 2023.

-□Several U.S. data center market operators, such as Equinix, Digital Realty, Cologix, CyrusOne, and CoreSite, host cloud on-ramps to access hyperscale cloud service providers directly and privately. The available cloud on-ramps include Amazon Web Services Direct Connect, Google Cloud Platform Interconnect, Microsoft Azure ExpressRoute, IBM Cloud Direct Link, and Oracle Cloud Infrastructure FastConnect.

SEGMENTATION INSIGHTS

-□Some IT infrastructure trends witnessed in the S. data center market are the adoption of NVMe storage, 200/400 GbE ports, ARM-based architecture, server virtualization, and converged and hyper-converged infrastructure.

-□The lithium-ion data center battery industry is expected to account for a share of 30?40% by 2024. Modern UPS systems are being innovated to be modular and occupy lesser space in facilities. It is expected that with a significant increase in data being generated and stored, low tolerance for downtime, and need for sustainability, lithium-ion adoption will increase significantly, with the market share of VRLA batteries decreasing significantly.

-□The S. data center market witnessed several innovations and changes over time. Several operators are innovating to improve the operations of their facilities. Some innovations include adopting eco-diesel generators, HVO fuel, fuel cells (Hydrogen based), and DCIM solutions.

-□Liquid cooling is the most popular cooling technology used in data centers in High-Performance Computing (HPC) to support AI and ML workloads. These technologies require powerful computing capabilities for TPU, where the heat generated exceeds the cooling limit and thus demands superior efficiency to keep the chips working optimally.

Segmentation by Facility Type

- Hyperscale Data Centers
- Colocation Data Centers
- Enterprise Data Centers

Segmentation by Infrastructure

- IT Infrastructure
- Electrical Infrastructure
- Mechanical Infrastructure
- General Construction

Segmentation by IT Infrastructure

- Server Infrastructure
- Storage Infrastructure
- Network Infrastructure

Segmentation by Electrical Infrastructure

- UPS Systems
- Generators
- Transfer Switches & Switchgear
- Power Distribution Units
- Other Electrical Infrastructure

Segmentation by Mechanical Infrastructure

- Cooling Systems

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- Racks
- Other Mechanical Infrastructure

Segmentation by Cooling Systems

- CRAC & CRAH Units
- Chiller Units
- Cooling Towers, Condensers, and Dry Coolers
- Economizers & Evaporative Coolers
- Other Cooling Units

Segmentation by Cooling Techniques

- Air-based Cooling Technique
- Liquid-based Cooling Technique

Segmentation by General Construction

- Core & Shell Development
- Installation & Commissioning Services
- Engineering & Building Design
- Physical Security
- Fire Detection & Suppression
- DCIM

Segmentation by Tier Standard

- Tier I & II
- Tier III
- Tier IV

GEOGRAPHICAL ANALYSIS

- All the major colocation and hyperscale operators have their presence in the South-Eastern region, majorly in Virginia, and are expanding their footprints and industry share with several new investments.
- The Chicago data center market witnessed maximum demand from the cloud and technology sector. Telecom, entertainment & media sectors were other prominent sectors that increased the demand for data center services, cumulatively creating around 20% of the overall demand.
- Texas is one of the leading states with maximum Foreign Trade Zones (FTZs) with over 30 trade zones. The state is also one of the top locations for FDI capital expenditure and the creation of new jobs from FDIs.

Segmentation by Geography

- United States
 - o□South-Eastern
 - o□South-Western
 - o□Western
 - o□Mid-Western
 - o□North-Eastern

VENDOR LANDSCAPE

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-□The U.S. data center market has the presence of several participants/vendors that are active and are leading to market growth. The vendors offering innovative and advanced technologies will likely gain a higher market share during the forecast period.

-□Some of the top IT and support infrastructure providers active in the U.S. data center market include Arista Networks, Cisco Systems, Hewlett Packard Enterprise, Dell Technologies, IBM, NetApp, ABB, Caterpillar, Cummins, Eaton, Legrand, Schneider Electric, Vertiv, STULZ, Rolls Royce Power Systems, Delta Electronics, and others.

IT Infrastructure Providers

-□Arista Networks
-□Atos
-□Broadcom
-□Cisco Systems
-□Dell Technologies
-□Hewlett Packard Enterprise (HPE)
-□IBM
-□Juniper Networks
-□Lenovo
-□NetApp
-□DataDirect Networks (DDN)
-□Extreme Networks
-□Fujitsu
-□Hitachi Vantara
-□Infortrend Technology
-□Inspur
-□Intel
-□Micron Technology
-□MiTAC Holdings
-□Nimbus Data
-□Oracle
-□Pure Storage
-□Seagate Technology
-□Silk
-□Supermicro
-□Synology
-□Toshiba
-□StorCentric
-□QNAP Systems
-□Quanta Cloud Technology
-□Quantum
-□Western Digital
-□Wiwynn

Support Infrastructure Providers

-□ABB
-□Caterpillar

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- []Delta Electronics
- []Eaton
- []Legrand
- []Rolls-Royce
- []Schneider Electric
- []STULZ
- []Vertiv
- []Airedale
- []Alfa Laval
- []Asetek
- []Bloom Energy
- []Carrier
- []Condair
- []Cormant
- []Cyber Power Systems
- []Data Aire
- []Enlogic
- []FNT Software
- []Generac Power Systems
- []Green Revolution Cooling (GRC)
- []HITEC Power Protection
- []Johnson Controls
- []KOHLER
- []KyotoCooling
- []Mitsubishi Electric
- []Natron Energy
- []NetZoom
- []Nlyte Software
- []Rittal
- []Siemens
- []Trane (Ingersoll Rand)
- []Tripp Lite
- []Yanmar (HIMOINSA)
- []ZincFive

Data Center Contractors & Subcontractors

- []AECOM
- []Arup
- []Corgan
- []DPR Construction
- []Fortis Construction
- []Holder Construction
- []Jacobs
- []Rogers-O'Brien Construction
- []Syska Hennessy Group

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- []Turner Construction
- []AlfaTech
- []BlueScope Construction
- []Brasfield & Gorrie
- []CallisonRTKL
- []Clark Construction Group
- []Climatec
- []Clune Construction
- []EMCOR Group
- []EYP MCF
- []Gensler
- []Fluor Corporation
- []Gilbane Building Company
- []HDR
- []HITT Contracting
- []Hoffman Construction
- []J E Dunn Construction
- []kW Engineering
- []kW Mission Critical Engineering
- []Linesight
- []M+W Group (Exyte)
- []Morrison Hershfield
- []Mortenson
- []Rosendin
- []Salute Mission Critical
- []Sheehan Nagle Hartray Architects
- []Skanska
- []Southland Industries
- []Sturgeon Electric Company
- []Structure Tone
- []The Mulhern Group
- []The Walsh Group
- []The Weitz Company
- []TRINITY Group Construction

Data Center Investors

- []Apple
- []Amazon Web Services (AWS)
- []CyrusOne
- []DataBank
- []Digital Realty
- []Equinix
- []Google
- []Meta (Facebook)
- []Microsoft
- []NTT Global Data Centers

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- Aligned
- American Tower
- CloudHQ
- Cologix
- Compass Datacenters
- COPT Data Center Solutions
- Cyxtera Technologies
- DartPoints
- DC BLOX
- EdgeCore Internet Real Estate
- EdgeConneX
- EdgePresence
- Element Critical
- Evoque
- Flexential
- fifteenfortyseven Critical Systems Realty (1547)
- GIGA Data Centers
- H5 Data Centers
- HostDime
- Iron Mountain
- Netrality Data Centers
- Novva Data Centers
- Prime Data Centers
- QTS Realty Trust
- Sabey Data Centers
- Skybox Datacenters
- Stream Data Centers
- STACK Infrastructure
- Switch
- T5 Data Centers
- TierPoint
- Vantage Data Centers
- Vapor IO

New Entrants

- AUBix
- Corscale Data Centers
- Edge Centres
- iMCritical
- PowerHouse Data Centers
- Quantum Loophole
- Yondr

KEY QUESTIONS ANSWERED:

- 1.□How big is the U.S. data center market?

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2. What is the growth rate of the U.S. data center market?
3. What is the estimated market size in terms of area in the U.S. data center market by 2028?
4. What are the key trends in the U.S. data center market?
5. How many MW of power capacity is expected to reach the U.S. data center market by 2028?

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