CoreSite
An American Tower Company

Data Centers 101

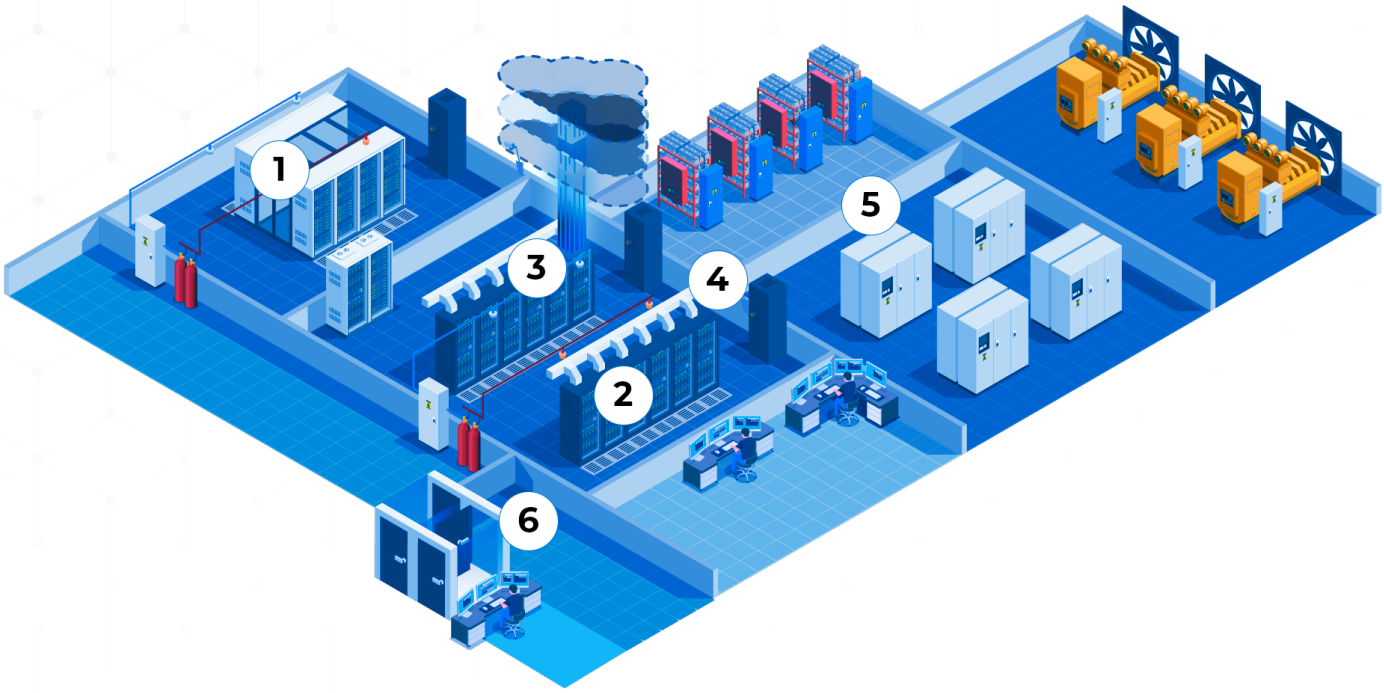
THE CRITICAL ROLE DATA CENTERS PLAY IN MODERN SOCIETY

What Is a Data Center?

A data center is a building within which equipment processes, stores, transmits and manages data. Each data center provides the fundamental infrastructure for and backbone of digital interactions, communications and services.

- Contains computing technology such as servers, storage devices, networking equipment, cooling systems and power backup systems.
- Connects servers, clouds, devices and users that enable consumer and business transactions.
- Employs people such as administrators, engineers, technicians, facility managers, project managers and security guards.
- Monitors power, cooling, temperature, energy input/output and other factors to meet standards for performance and efficiency.

Components of Data Centers



1 **SERVERS:** Servers are powerful computers placed in large racks that run applications, process data and support the digital services people use every day.

2 **STORAGE SYSTEMS:** Storage systems are cabinets filled with hard drives and devices that safely hold, organize and protect the massive amounts of data customers rely on.

3 **NETWORKING EQUIPMENT:** Networking equipment, such as switches, routers and structured cabling, connects all systems inside the data center and links the facility to the outside world, so data can move quickly and reliably.

4 **COOLING SYSTEMS:** Cooling systems use air conditioners, air handlers, chillers and airflow management to remove heat from the server rooms and maintain stable temperatures, ensuring equipment stays reliable and energy-efficient.

5 **POWER INFRASTRUCTURE:** Power infrastructure includes transformers, batteries, uninterruptible power supplies, electrical distribution boards and backup generators that work together to deliver continuous electricity and prevent outages, even if the external power grid fails.

6 **SECURITY SYSTEMS:** Security systems combine perimeter fencing, access controls, surveillance cameras and on-site personnel to ensure only authorized individuals can enter and that the facility remains protected at all times.

Not All Data Centers Are Alike

Data centers differ in size, capabilities and purpose. As a result, they are grouped into types. The three main data center types tracked by industry analysts are shown in the chart. Edge data centers, an emerging type, are small facilities located close to end users who require local data processing and real-time data analysis. Edge use cases like smart cities, smart homes and robotics require minimal latency, which is the time it takes for data to travel from its source to the location where it's processed and back.

Hyperscale Data Centers

- Built by or for technology companies such as Meta, Oracle, Google, Microsoft and Amazon.
- Usually contain a single tenant that owns or leases the facility and runs workloads that require massive computing performance – cloud services, data analytics, artificial intelligence training and hosting of services like ChatGPT.
- Account for 44% of worldwide data center capacity.[1]

Multi-Tenant Colocation Data Centers

- Facilities in which multiple businesses (tenants) rent space to locate and operate equipment.
- Owned and operated by data center companies.
- Ideal for workloads that require direct access to hybrid cloud (a mix of private and public cloud); generative AI running in digital business applications such as chat sessions, financial services, social media, online educational services and streaming entertainment services.
- Account for 22% of data centers globally.[2]

Enterprise On-Premises Data Centers

Sizes range from a small room to a large campus owned and controlled by a private business for its own use.

- Workloads typically involve sensitive, classified or proprietary data (used, for example, in human resources, finance, government, manufacturing, content delivery networks and research) or workloads that can't be moved to public clouds.
- Account for 34% of data centers globally.[3]

Multi-Tenant Colocation Data Centers

Multi-tenant colocation data centers like CoreSite differ in size and capabilities. Each facility is occupied by tens to hundreds of tenants that share resources and costs, unlike hyperscale and on-premises data centers which are occupied by a single business that pays all overhead and operating expenses. In a multi-tenant environment, tenants pay their share of:

- IT infrastructure, power, cooling, bandwidth and security.
- Centralized monitoring and management.
- Scalability of space, power and bandwidth.

Designed and purpose-built to support modern workloads and high server utilization, multi-tenant colocation data centers offer special features:

- Interconnected data centers and connectivity solutions enable enterprises, cloud service providers, network service providers and other organizations to collaborate and/or expand geographically with ease.
- Businesses are near each other, allowing them to interact fast and efficiently.
- Redundant systems and disaster recovery solutions lower risk. For example, data centers rely on redundant systems to maintain “uptime” despite weather, power outages and other events.
- Central locations in major metropolitan areas reduce latency.

What's Driving Demand for Data Centers?

The story behind the rising demand for data centers is about people — and particularly our collective and pervasive use of digital services, many of which run through data centers:

- Critical services such as 911 emergency response and suicide/help lines.
- Medical and healthcare research.
- Telehealth services/remote medical assistance.
- Online education courses.
- Business uses such as cloud computing, data storage and hosting of applications such as payment processing and electronic health records.
- Cloud computing used by consumers in everyday activities such as banking, shopping, scrolling social media, conducting internet searches, saving documents and photos to the cloud, sending emails, gaming and streaming of music, content and podcasts.
- GPS navigation in smartphones, self-driving cars and ride-sharing apps.

Global demand for data center capacity could more than triple by 2030 ... about

70%

will come from **hyperscalers** ...[4]

The "cloud"

is a network of servers deployed globally in data centers, which provide people and businesses with access to the internet and public clouds.

How Does the Use of AI Increase Demand for Data Centers?

According to many sources, demand for AI tools and capabilities is a top cause of growth. "Analysis suggests that demand for AI-ready data center capacity will rise at an average rate of 33% a year between 2023 and 2030 …"[5] Consumers interact with AI when they:

- Use AI tools like ChatGPT, Copilot and Gemini.
- Use navigation services like Waze, Google Maps and Apple Maps.
- Use chatbots and digital assistants like Siri and Alexa.
- Receive personalized recommendations from Spotify, Netflix and Amazon.

Businesses use AI to increase efficiency through automation and to gain insights from data analysis when they:

- Deliver customer service using chatbots, targeted ads and digital assistants.
- Conduct online meetings via Zoom, Microsoft Teams and other collaboration software.
- Automate data organization and preparation in areas such as invoice processing, email generation and human resources.
- Recognize out-of-the-ordinary patterns that indicate a potential problem in product quality, security, safety, financial transactions and other areas.

Governments use AI to increase efficiency, improve public services and protect the public's interest:

- Deliver 911/emergency response.
- Oversee public health.
- Detect fraud.
- Provide cybersecurity.

Before people, businesses and governments can use AI, however, an AI "model" must be trained. Training, which involves vast amounts of data and software algorithms that provide instructions for making decisions, requires substantial computing capacity and power. A great deal of the work is done in hyperscale data centers.

Global AI adoption has grown from **20% in 2017** to **78% in 2024**[6]

Almost half of the people in the United States spend 5 to 6 hours per day on smart phones.[7]

87% of companies identify AI as a top priority in their business plans; 76% of organizations now use AI …[8]

Learn More

Our collective demand for digital everything drives the growth of data centers and the critical infrastructure they provide. The ideal approach to shaping the future of data centers? Collaboration among data center builders and operators, data center tenants, communities, local governments, public service commissions, energy companies and policy makers.

Informed citizens can be influential in future discussions and decisions. Continue learning about data centers by exploring the following resources:

- CoreSite's Knowledge Base, a source of videos, infographics, articles, reports and more
- Data Center Frontier, The Power Play: How Data Centers and Utilities Are Reinventing Energy Strategies
- Forbes, Data Centers: 18 Challenges (and Solutions) on the Horizon
- Brookings Institute, the Future of Data Centers
- McKinsey, The Data Center Balance: How U.S. States Can Navigate the Opportunities and Challenges
- Urban Land Institute, Local Guidelines for Data Center Development
- Data Center Knowledge, U.S. Data Center Tax Incentives: A Special Report

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1,2,3. Synergy Research Group, The World's Total Data Center Capacity Is Shifting Rapidly to Hyperscale Operators, June 24, 2025.

4. McKinsey, The Data Center Balance: How U.S. States Can Navigate the Opportunities and Challenges, August 8, 2025.

5. McKinsey, AI Power: Expanding Data Center Capacity to Meet Growing Demand, October 29, 2024.

6. QuantumBlack AI by McKinsey, The State of AI, How Organizations are Rewiring to Capture Value, March 2025.

7. DemandSage, Latest Smartphone Usage Statistics (2025 Data & Trends), October 23, 2025.

8. IDCA, Global Artificial Intelligence Report (2025).