NTT DATA
Global Data Centers

Can data centers keep pace with AI?

AI is driving unprecedented demand for data center capacity. In a new report, NTT Data Centers examines growth trajectories, resource and industry trends shaping capacity needs. Learn more, below.



Modeling the Demand Surge

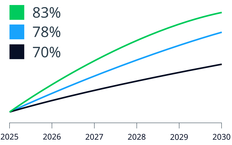
To understand how the AI boom affects whether capacity can meet new demand, NTT Data Centers **established three growth scenarios** for 2026-2030:

Slow
AI demand rises, but regulatory barriers, power constraints and supply chain issues limit pace of expansion.

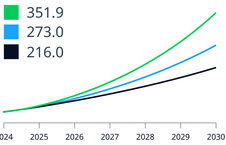
Steady
Strong AI adoption sustains growth, overcoming challenges through innovation and efficiency gains.

Accelerated
Explosive AI investment fuels an infrastructure supercycle, pressuring power, equipment and other critical resources.

Projections for Share of AI Workloads Under Each Scenario

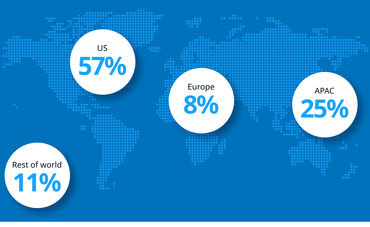


Evolution of Data Center Growth (GW of Electricity Capacity)



Slow Growth | Base Case | Accelerated Growth

Distribution of New Data Center Capacity Additions



The Expanding Data Center Landscape

Data center expansion remains concentrated in the world's established digital hubs.

The US leads capacity growth; Asia-Pacific expands rapidly and Europe grows more selectively amid tighter infrastructure and regulatory constraints.

In an accelerated growth scenario, the US will see:

- **136.5GW** of new capacity additions
- **24.5GW** of new capacity additions
- **19.0GW** in Europe
- **60.2GW** in APAC

The Constraint Stack

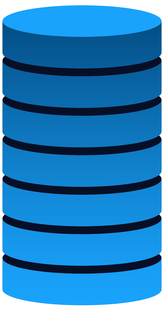
No single bottleneck is slowing data center expansion. Instead, the industry faces a convergence of interconnected constraints that are determining how quickly capacity can be delivered.

$3.8tn CAPEX
Needed for new data center capacity by 2030 in an accelerated scenario

74,000+ Acres
Estimated land needed for construction by 2030 in an accelerated scenario

95,000+ Backup generators
Required by 2030 in an accelerated scenario

7,700 Transformers
Demand for large transformers by 2030 in an accelerated scenario



- Grid connections
- CPUs and GPUs
- Transformers and switchgear
- Backup generators
- Land
- Capital
- Specialized labor

Stress Test Heat Map

Data centers must bolster use of resources in the face of many headwinds. It raises a pivotal question: how sustainable is faster data center growth?

This **heat map** displays supply chain and resources stressors and scores exposure, from 1 to 5, in 'base case' and 'accelerated' situations.

	Base case			Accelerated growth		
Stressor	**US**	**Europe**	**Asia Pacific**	**US**	**Europe**	**Asia Pacific**
Grid connections	4.0	5.0	2.0	5.0	5.0	3.0
Land availability	4.0	4.0	3.0	4.5	4.5	3.5
Processors	4.0	4.5	3.5	5.0	5.0	4.0
Power transformers	5.0	4.0	3.0	5.0	5.0	4.0
Backup generators	4.0	4.5	3.5	4.5	5.0	4.0
Rare earth materials	1.5	2.0	1.0	2.0	2.5	1.5
Water consumption	2.0	2.0	2.0	3.0	3.0	2.5
Capital	3.0	3.5	2.5	4.0	4.5	3.5
Construction labor	4.0	4.0	4.0	5.0	5.0	3.0
Operations labor	2.0	2.0	2.0	2.0	2.0	2.0

Actions to Keep Pace

Meeting future AI demand will depend on more than new capacity. It requires **coordinated action** to accelerate efficiency, resilience and sustainable infrastructure development.

- Set PUE/Water Use Effectiveness targets
- Drive R&D, workforce and efficiency innovation
- Prioritize supply chain resilience
- Demonstrate benefits data centers will bring to local communities
- Co-plan power infrastructure with utilities

Learn more about data center growth scenarios, critical stressors and actions industries can take to align AI ambition with infrastructure reality.

Read the Full Report