

Can data centers keep pace with AI?

AI is driving unprecedented demand for data center capacity. In a new report, NTT Global Data Centers examines growth trajectories, resource requirements 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 Global 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.

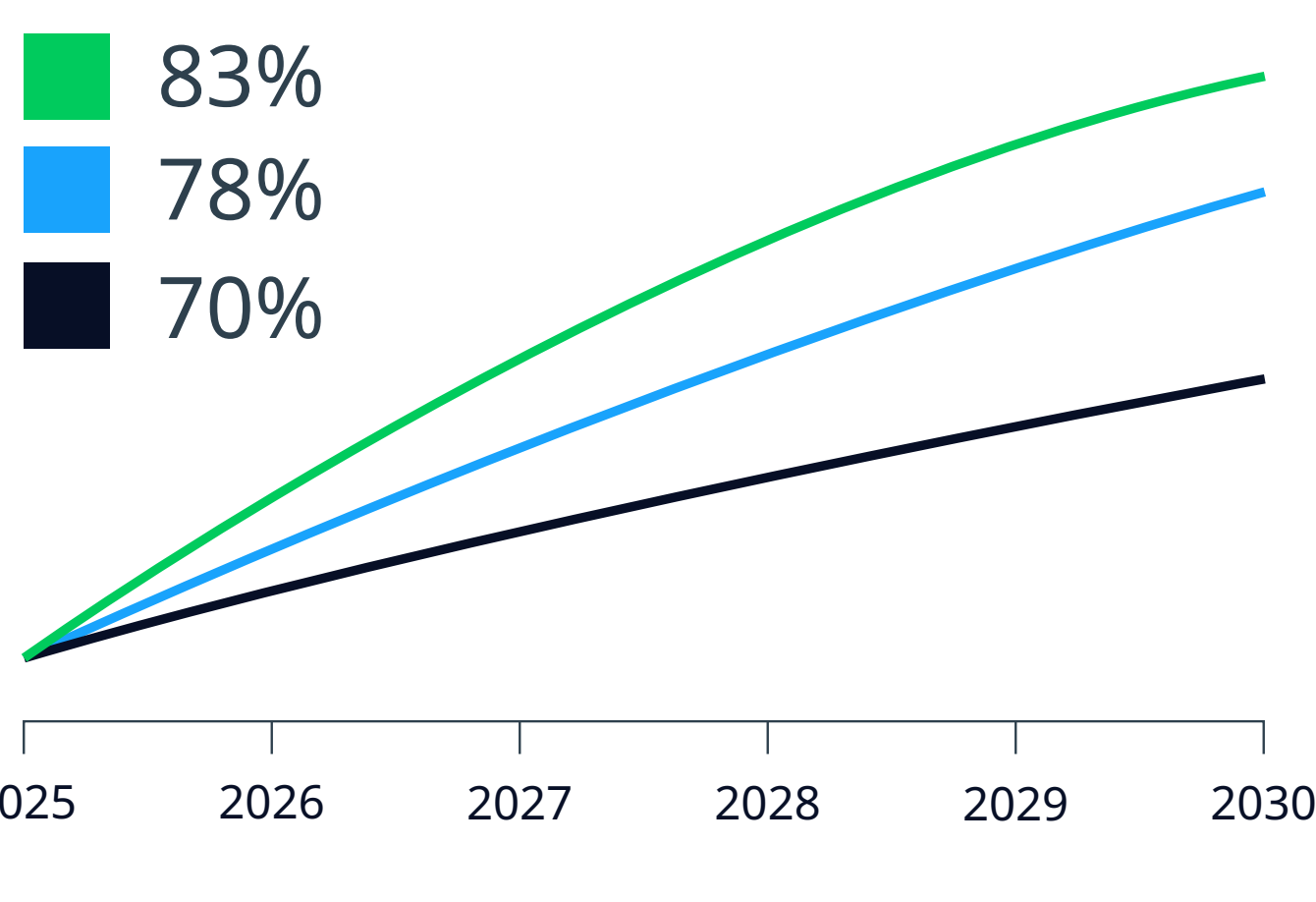
Steady

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

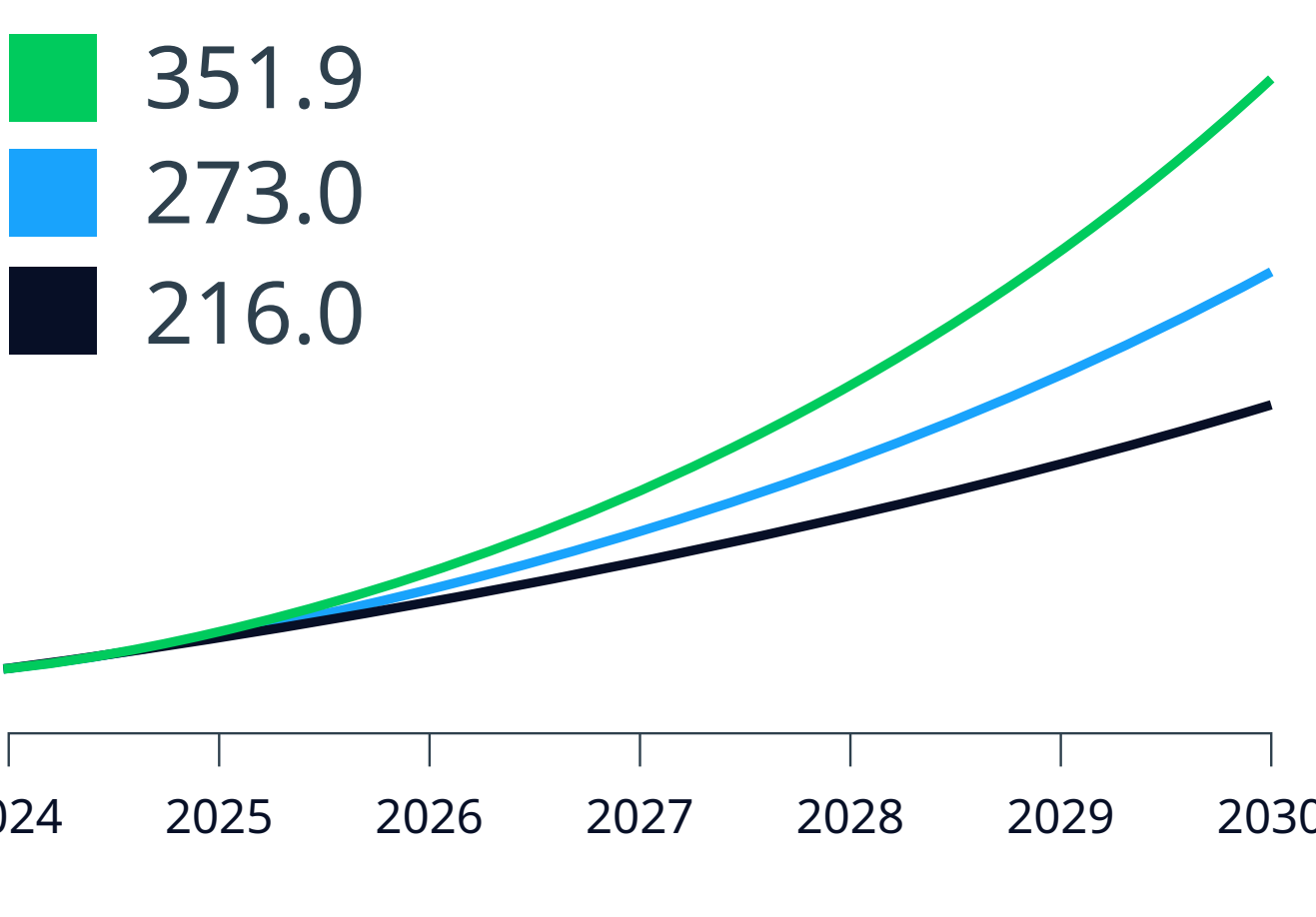
Accelerated

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

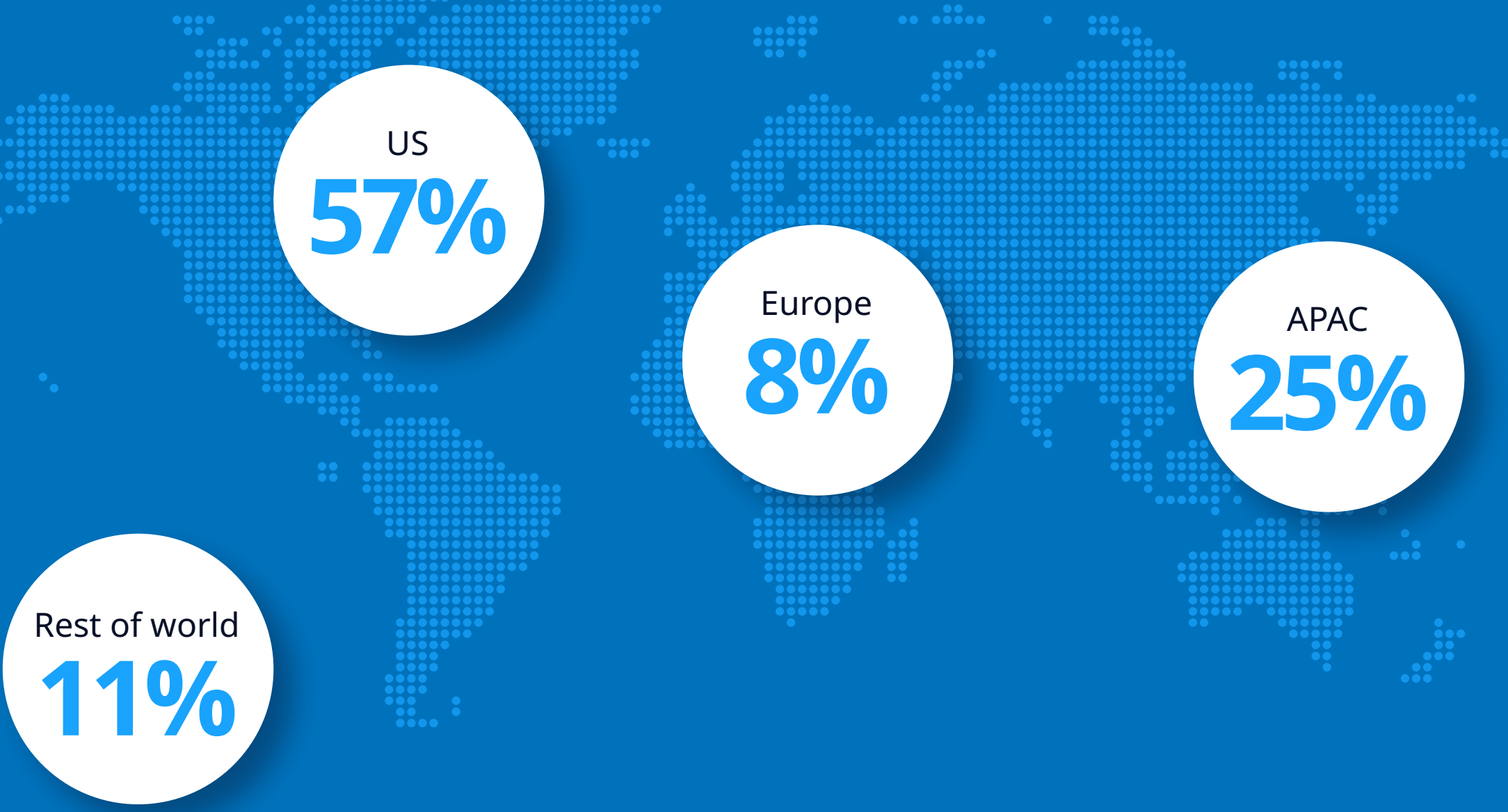
Projections for share of AI workloads under each scenario



Evolution of data center growth (GW of electricity capacity)



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, by 2030 new capacity will increase by:

136.5 GW in the US	60.2 GW in APAC
19.0 GW in Europe	25.4 GW in the rest of the world

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.

\$5.7 trillion total investment

Global CapEx investment needed for new data center capacity 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

74,000+ acres

Estimated land needed globally for construction by 2030 in an accelerated scenario



- Grid connections
- CPUs and GPUs
- Transformers and switchgear
- Backup generators
- Land availability
- Capital
- Specialized labor
- Rare earth minerals
- Water consumption

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 resource stressors. For each stressor, we assigned a score from 1 to 5, where 5 represents the most acute pressure, allowing us to compare the exposure of the base case and accelerated growth scenarios to supply chain and resource bottlenecks across each region.

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 minerals	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	3.0	5.0	5.0	3.0
Operations labor	2.0	2.0	2.0	2.0	2.0	2.0
Final	3.35	3.55	2.55	4.0	4.1	3.1

Least pressure Most pressure

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 and grid infrastructure with utilities

Data centers have already helped bring the benefits of the AI revolution to millions of workers, citizens, and enterprises across the world.

As our analysis has shown, the next phase of that revolution, predicated on ever more powerful AI models and applications, will likely prove trying to some aspects of data center development.

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