

The Infrastructure Behind AI:

WHY DATA CENTER SUPPLY CHAINS ARE THE NEW CRITICAL PATH



DP WORLD



SUPPLYCHAINDIVE

Custom content for DP World from
Studio by Informa TechTarget



Data center supply chains are no longer back-office operations — they are the critical path for AI deployment.

When a transformer is delayed, an AI cluster waits. When a GPU shipment is held at customs, compute capacity sits idle. In today's environment, logistics performance directly determines infrastructure performance.

As global data center investment races toward \$3 trillion by 2030, hyperscalers and colocation providers face mounting pressure to build faster, scale smarter and operate without interruption. But explosive growth is colliding with supply constraints, rising costs, cybersecurity threats and regulatory complexity. Supply chain uncertainty is not new. But for the data center industry — where specialized components, long lead times and hyperscale construction schedules intersect — disruption carries outsized consequences. Delays don't just affect procurement timelines; they postpone revenue-generating compute and slow AI deployment.

How are industry leaders responding? How are they balancing speed, security, cost and resilience in an increasingly volatile environment?

To answer these questions, DP World, a leading global end-to-end logistics provider, and Supply Chain Dive's Studio by Informa TechTarget surveyed supply chain leaders across sectors, including 100 executives from the data center industry. These data center organizations conduct the majority of their business in North America, and nearly half (43%) have \$500 million or more in annual revenue.

The findings reveal three defining imperatives shaping data center logistics today: security at every node, resilience through diversification and visibility, and predictive capability as a competitive advantage. "It's all about flexibility and agility — this industry is changing so quickly and will continue to do so over the next few years, so leaders need to respond to new conditions and mitigate risks," says Glen Clark, CEO of DP World in the U.S. and Mexico and Regional Head of Contract Logistics.

The message is clear: in the AI economy, supply chain strategy is infrastructure strategy — and the organizations that anticipate disruption, rather than react to it, will define the pace of digital growth.

THE NEW CRITICAL PATH: WHY DATA CENTER LOGISTICS IS DIFFERENT

Unlike traditional sectors, data center supply chains must coordinate hyperscale construction timelines, grid interconnection schedules, and the delivery of high-value, security-sensitive hardware — often across multiple continents and regulatory regimes.

These supply chains involve:

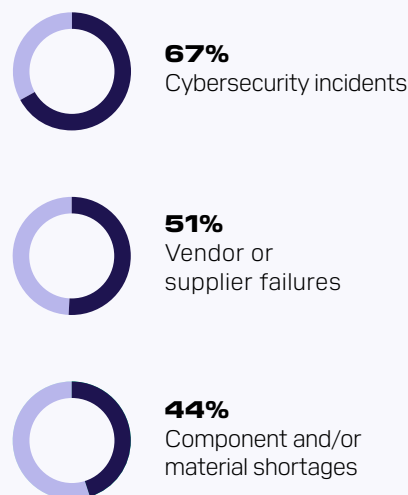
- Oversized and overweight equipment, such as transformers and generators
- Long lead-time electrical components
- High-value GPU clusters and sensitive compute infrastructure
- Dedicated hypercare logistics programs including white-glove handling, secure transport and real-time chain-of-custody monitoring
- Tight installation windows aligned to site energization
- Strict physical and cybersecurity protocols

A delay is not simply an inconvenience — it can idle millions in capital investment and postpone revenue-generating AI capacity.

Against this backdrop, survey respondents reported significant disruption in 2025. Cybersecurity emerged as the most prevalent disruption — underscoring that in data center logistics, physical movement and digital risk are inseparable.

FIGURE 1

Did your organization experience any of the following supply chain disruptions in 2025?*



*Respondents could choose multiple answers

Given the need for security in chips, servers, and software, it's understandable why cybersecurity would be such an important factor. The emphasis on vendor or supplier failures and struggles with shortages underscores the complexity of the data center supply chain and how much pressure these companies are under to meet massive demands.

Security, Shortages, and Cost Pressures: The Core Challenges

The survey showed that these issues weren't confined to last year — when ranking the importance of *current* supply chain challenges, the themes of cybersecurity, costs, and component shortages became clear.

FIGURE 2

How important are the following supply chain challenges to your organization's operations?*

Cybersecurity of systems/components

96%

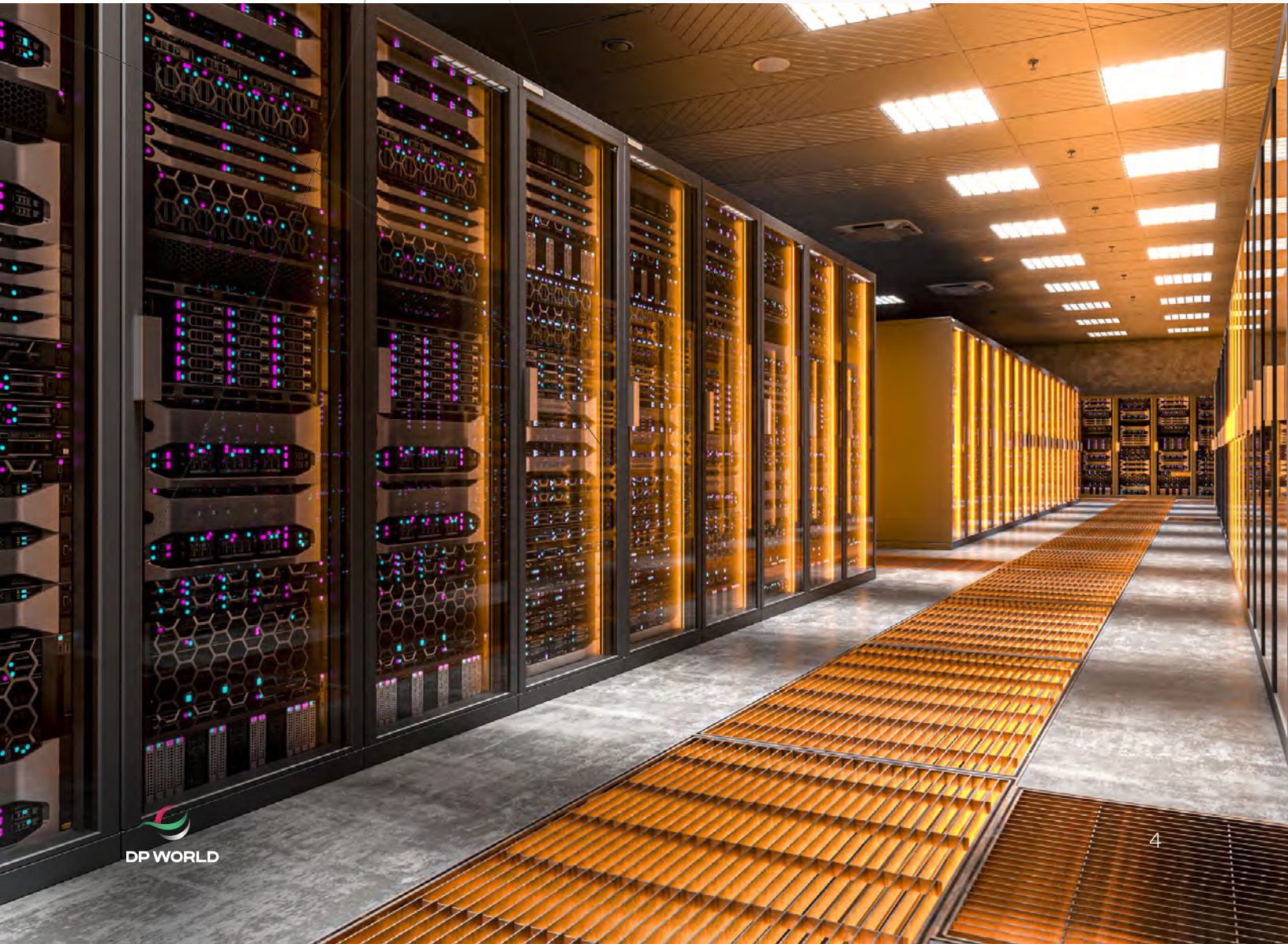
Material and/or component shortages

84%

Cost pressures/rising operating costs

82%

*Respondents ranked multiple answers on a Likert scale
Respondents answered extremely or very important





Security at Every Node

Security is an ever-present concern in this industry, and the sourcing, moving, and installation of sensitive, specialized components only increases difficulty.

In data center environments, security extends far beyond IT systems. It includes chain-of-custody protocols, access controls at logistics hubs, customs documentation integrity, and secure transport of high-value components. With trillions in [anticipated investment](#) in just the next few years, the demand for components is exceptionally high, resulting in higher costs and constrained supplies.

“Constant security checks at loading or unloading points, protocols for who has access, security clearances when badging in or out of a transport location — these are necessary for managing all security risks,” says Clark. “The need for growth and scalability is getting into uncharted territory, and data center executives are asking how logistics partners can help them achieve this monumental growth.”

HOW LEADERS ARE RESPONDING TODAY

Data center leaders are pursuing numerous solutions to their challenges around cybersecurity, shortages and costs. In terms of cybersecurity, sourcing secure semiconductors is, of course, crucial, but preventing a security breach encompasses all aspects of operations, including people.

Security is not a siloed function — it is embedded across the end-to-end supply chain.

The emphasis on employee training reflects leaders' awareness that human error remains a significant operational risk, and physical security measures still matter in the digital world. In fact, these measures are critical at every point in the supply chain.

“Constant security checks at loading or unloading points, protocols for who has access, security clearances when badging in or out of a transport location — these are necessary for managing all security risks,” says Clark.

FIGURE 3

What are the top strategies that your organization is focusing on to address cybersecurity risks?*

Implementing additional internal cybersecurity measures

57%

Introducing additional employee cybersecurity training

57%

Implementing additional physical security measures

49%

*Respondents could choose multiple answers

Resilience Through Diversification

Component shortages and supplier failures reflect the complexity and fragility of global technology supply chains. Long lead times for specialized electrical equipment and advanced chips can stretch 18–36 weeks in some cases. To reduce dependency risk, the top strategy cited by executives (70%) is changing and/or diversifying suppliers. This makes sense given the need to reduce the risk of a single supplier failure. When confronting cost pressures, leaders had a wide variety of responses, which suggests that the industry is trying any and all strategies to meet these challenges.

Diversification is not just risk management — it is a resilience strategy that protects build timelines and AI deployment schedules.





Managing Cost Without Slowing Growth

In an environment where delayed shipments can idle installed infrastructure worth tens of millions of dollars, cost management must be balanced against speed and reliability. To address this, leaders are deploying a range of tactics to address rising operating costs.

While there is certainly no easy answer to cost challenges in an environment of intense demand, changing trade policies and inflation, leaders are focused on staying one step ahead of new conditions and responding nimbly to manage costs.

FIGURE 4

What are the top strategies that your organization is focusing on to mitigate cost pressures and rising operating expenses?*

Optimizing transportation routes or modes

40%

Outsourcing non-core operations

37%

Implementing cost-control technologies
(e.g., analytics, AI)

33%

Adjusting inventory management practices

33%

Increasing automation to reduce labor costs

30%

*Respondents could choose multiple answers

THE SPEED-COST-CARBON EQUATION

It's well known that data centers require massive amounts of electricity — often enough to power millions of homes — plus billions of gallons of water for cooling. These resource needs have increased concerns about data centers' environmental impact, and industry leaders are acutely aware of this challenge.

Data center operators are increasingly balancing a three-way tradeoff:

- Speed to deploy compute
- Cost efficiency
- Carbon intensity

The survey data shows leaders are attempting to reduce environmental impact primarily through transportation decisions:

It's a difficult balancing act, however, to reduce emissions while scaling up quickly. "Air transport is the fastest yet the most emissions-intensive," says Rob Choy, Global Senior Vice President, Vertical Lead - Technology, with DP World. "We can use EVs instead of gas or diesel trucks, but the tension between speed and lowering emissions is real," he adds.

Ramping up renewable power sources and offsetting emissions may be key tactics in the future as the industry experiments with various solutions to mitigate environmental impacts. As AI demand accelerates, optimizing this equation will require data-driven decision-making across multimodal networks.

FIGURE 5

What are the top strategies that your organization is focusing on to address environmental and/or climate-related risks today?



63%
Changing
transportation
routes



58%
Reducing carbon
footprint/
emissions



46%
Changing
transportation
modes or methods

*Respondents could choose multiple answers

PREDICTIVE CAPABILITY: THE NEXT COMPETITIVE ADVANTAGE

How can data center executives ensure their organization has the agility it needs? As the survey data demonstrated, technology plays a crucial role. If resilience defines today's leaders, predictive capability will define tomorrow's.

"When there is downtime, that's a cost impact to the hyperscaler," Clark says. "They're looking to get ahead of any delays or failures, and that means having predictive capabilities."

One survey respondent put it succinctly:

"The most crucial improvement is the adoption of predictive analytics to forecast demand, optimize inventory management, and enhance overall supply chain responsiveness."

- DIRECTOR OF LOGISTICS FOR A NORTH AMERICAN CONSUMER ELECTRONICS PRODUCER/RETAILER WHO RESPONDED TO THE SURVEY

FIGURE 6

How important is technology to the following supply chain activities at your organization?*

Demand forecasting

92%

Predictive maintenance for equipment

92%

Predicting supply chain disruptions

89%

*Respondents ranked multiple answers on a Likert scale
Respondents answered extremely or very important

Yet adoption remains limited. Less than one-third (29%) of data centers are using predictive analytics today. A little less than half (40%) plan to implement predictive analytics in the next 12-24 months. It may seem surprising that more actions haven't been taken to leverage predictive capabilities, but to implement the technology they need, data center leaders must overcome regulatory and cybersecurity issues.

In an environment where a delayed GPU shipment can idle significant capital investment, predictive logistics becomes a financial imperative — not just an operational upgrade.



Barriers to Technology Adoption

So why the hesitation?

For data center operators, regulatory complexity spans export controls on advanced chips, customs compliance, data sovereignty requirements and evolving environmental standards. These layers of compliance can complicate digital integration and cross-border visibility tools.

In the larger context of the data center industry, this is understandable. State versus federal regulation of AI is still in flux, and with AI compute power being the primary driver of data center operations, leaders may be hesitant to implement tracking or predictive capabilities in an uncertain landscape.

Changing trade policies and tariffs may also complicate choices about investments, not because of the provenance of a particular software program, but in the larger inflationary environment where funds need to be prioritized for chips, servers and other hardware. At the same time, leaders must ensure that new technologies do not introduce additional cyber risk into already sensitive environments.

FIGURE 7

What are the primary barriers preventing the broader adoption of supply chain technologies in your organization?

Regulatory concerns

47%

Cybersecurity concerns

46%

Budget constraints

43%



“Advanced analytics will be leveraged to optimize cost service tradeoffs and enhance cybersecurity resilience across end-to-end supply chain systems.”

- DIRECTOR OF OPERATIONS FOR A NORTH AMERICAN CONSUMER ELECTRONICS PRODUCER/RETAILER WHO RESPONDED TO THE SURVEY

Orchestrating End-to-End Visibility

Overcoming these barriers will be essential to achieving full [end-to-end visibility](#). If companies can see when delays may occur or where policies may change, they can adapt more quickly and avoid downtime. Solutions providers like DP World are critical to these efforts because they offer the flexibility and agility that data centers need.

For example, DP World's [CARGOES Flow](#) provides real-time tracking across any mode of transportation so that data center logistics teams can spot congestion risks, regulatory holdings like customs inspections, labor strikes or shortages, and many other risks to on-time delivery. DP World also offers the expertise needed to kit, deliver, and install sensitive components for data centers.

“Whether it's security protocols with our people, visibility through the entire value chain or even recycling materials post-installation, we have the ability to help these companies move faster,” says Clark.

Supply chain leaders understand that partnerships are vital to their success, which is why 45% of survey respondents said they're increasing the use of third-party logistics (3PL) providers to gain efficiency or profitability. By prioritizing visibility and agility in their partners' capabilities, data center companies will leverage those partnerships to their full advantage and be able to navigate risks to their growth and success.



SEEING AROUND CORNERS IN THE AI ECONOMY

The data center industry is at an inflection point. Explosive AI-driven growth is colliding with supply constraints, regulatory complexity, cybersecurity threats, and sustainability pressures.

Navigating these issues requires end-to-end visibility and agility to pivot whenever necessary. As the survey data proved, leaders in this industry are clearly trying to see around corners and anticipate challenges before they become delays and downtime.

The organizations that succeed will not simply react to disruption — they will anticipate it.

While many of these conditions are out of any company's control, what they can control are their partnerships and strategies to stay ahead of changes. With expert transportation and operational services from 3PL partners, data center leaders can meet the tight schedules and stringent security requirements that their industry relies on. They also must have access to the dashboards, reports and communications that will keep them constantly informed.

“Finding a partner who is flexible and agile will help you meet the coming demand,” says Clark. “You may be waiting for a compliance issue to be resolved or a severe storm to pass in a different geographical location, but once that happens, you need to move quickly and mitigate any risks,” he says.

In the AI economy, logistics performance increasingly defines infrastructure performance. The ability to see around corners — identifying risks before they become downtime — will separate leaders from laggards.

With the right strategies, technologies, and partners in place, data center organizations can accelerate compute deployment, protect capital investment, and future-proof operations from factory door to data center door.

Contact [DP World](#) to explore cloud and data center logistics solutions.



DP WORLD

DP World is reshaping the future of global trade to improve lives everywhere. Operating across six continents with a team of over 100,000 employees, we combine global infrastructure and local expertise to deliver seamless supply chain solutions. From Ports and Terminals to Marine Services, Logistics, and Technology, we leverage innovation to create better ways to trade, minimizing disruptions from the factory floor to the customer's door.

**WE MAKE TRADE FLOW TO CHANGE
WHAT'S POSSIBLE FOR EVERYONE.**

To learn more, visit [DP World](https://www.dpworld.com).

Follow DP World on [X](#) and [LinkedIn](#).



Expert led. Impact driven.

Studio is Informa TechTarget's global content studio offering brands an ROI rich tool kit: Deep industry expertise, first-party audience insights, an editorial approach to brand storytelling, and targeted distribution capabilities. Our trusted in-house content marketers help brands power insights-fueled content programs that nurture prospects and customers from discovery through to purchase, connecting brand to demand.

[Learn more](#)