uptime INTELLIGENCE

Executive summary

Uptime Intelligence report: May 2025

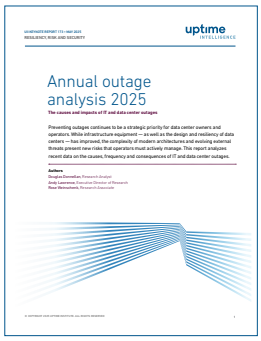
Annual outage analysis 2025

Preventing outages continues to be a strategic priority for data center owners and operators. While infrastructure equipment has improved, the complexity of modern architectures and evolving external threats present new risks that operators must actively manage. This report analyzes recent data on the causes, frequency and consequences of IT and data center outages.

This executive summary summarizes the key findings of Uptime Intelligence's *Annual outage analysis 2025* report, and includes sample pages from the full 26-page report, which is available to Uptime Network members and Uptime Intelligence customers.

Key findings

- For the fourth consecutive year, Uptime Intelligence research suggests that overall outage frequency and the general level of reported severity continue to decline. However, cyber incidents are rising and often have severe, lasting impacts.
- In 2024, a higher proportion of publicly reported outages — via news, social media and self-reported — tracked by Uptime Intelligence had severe impacts compared with previous years.
- More than half (54%) of the respondents to Uptime's 2024 annual survey say their most recent significant, serious or severe outage cost more than $100,000, with one in five saying that their most recent outage cost more than $1 million.
- Power issues remain the most common cause of serious and severe data center outages. However, outages caused by IT and network-related issues are increasing.
- The failure of staff to follow procedures has become an even greater cause of outages than in the previous year, suggesting a major opportunity to reduce incidents through training and process review.
- Data relating to outages should be treated skeptically. All methodologies used to track the frequency, severity and costs of outages are subject to uncertainty, partly because of a lack of transparency and reliable reporting mechanisms.



Report contents

Outage frequency and severity

Uptime Intelligence conducted analysis using the latest data from reports and surveys in both 2024 and 2025. For the fourth consecutive year, the data indicates that the frequency of outages, relative to the overall workload, is decreasing.

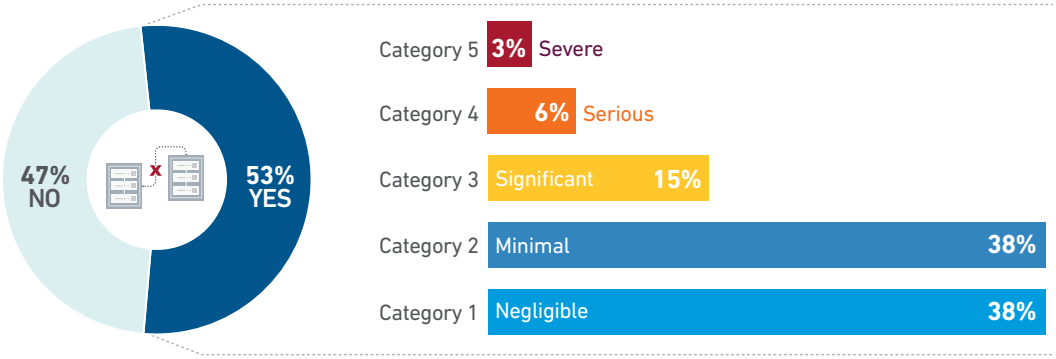
In the Uptime Institute Global Data Center Survey 2024, more than half (53%) of operators reported an outage in the past three years (see **Figure 1**). This rate continues a trend — with notable drops from 60% in 2022, 69% in 2021, and 78% in 2020. However, year-over-year improvement has slowed — the 2024 figure was down just two percentage points (55%) from 2023.

There are also signs that outage severity is decreasing. Only 9% of reported incidents in 2024 were classified as serious or severe — the lowest level recorded by Uptime to date.

Figure 1

Most operators had no or negligible outages in the past three years

Has your organization had an impactful outage in the past three years? If so, how would you classify the most impactful outage on a scale of 1 (negligible) to 5 (severe)? (n=768)



(Responses for "Don't know" are not included.)

UPTIME INSTITUTE GLOBAL DATA CENTER SURVEY 2024

These findings suggest that the industry's ongoing investments in availability — through redundancy, process improvements and operational discipline — are having a measurable effect. Some observations on these trends include:

- **Outages are becoming less frequent and less severe relative to the rapid growth of digital infrastructure.** This trend has held for several years, underscoring industry progress in risk management and reliability. However, workloads cannot be accurately measured across this (or any) sample. As a result, a rate-per-megawatt figure is not available.
- **The slowdown in improvement does not imply complacency.** Operators face mounting external risks that are largely beyond their control — including power grid constraints, extreme weather, network provider failures and third-party software issues. Improvements are occurring despite a more volatile risk landscape.

- **Software-based and distributed resiliency tools are expanding.** These systems improve uptime but can also introduce new risks and complexities. The use of software-based resiliency strategies alongside physical failover/redundancy is undoubtedly contributing to overall improvements in availability. However, the added complexity brings its own challenges and can blur lines of responsibility for failures, complicating root cause analysis and outage classification.
- **The pace of industry transformation is accelerating.** Soaring demand for AI is straining existing infrastructure designs — especially around power and cooling — while electricity grid limitations and global trade tensions introduce new uncertainty in supply chains and expansion plans. Together, these pressures could eventually affect the stability of current reliability trends.

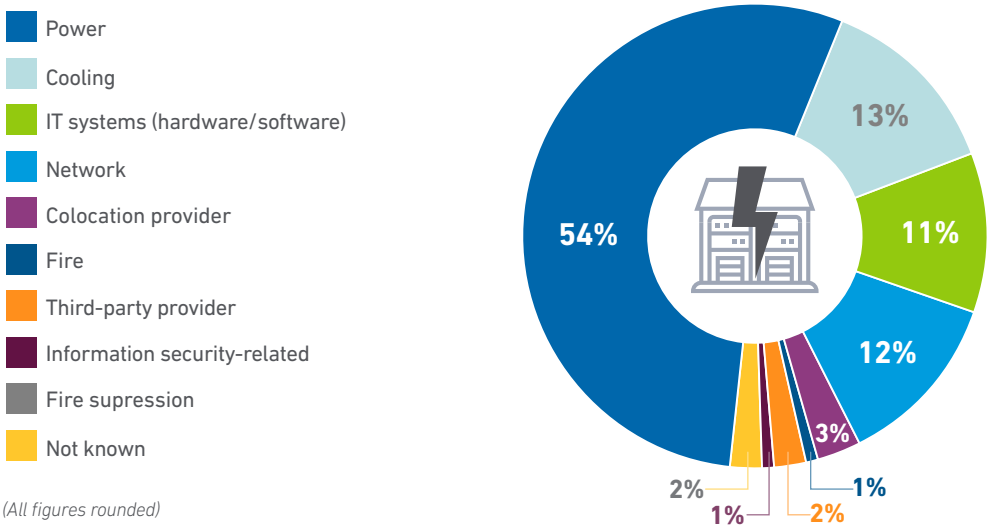
Uptime anticipates continued growth in both distributed, software-based resiliency models and traditional site-level redundancy. Recent Uptime research supports this, with increased resiliency and support for hybrid cloud cited among the top drivers of data center demand (see *AI adds to rising demand for capacity*). However, the need to support AI workloads may complicate how and where these models are applied.

Hybrid cloud platforms such as AWS Outposts and Azure Arc, along with management frameworks such as VMware Cloud Foundation, have matured significantly, improving integration with on-premises infrastructure. These trends confirm that on-premises resiliency remains critical, with third-party infrastructure used strategically based on cost, risk tolerance and specific workload requirements.

Figure 3

Power is still the leading cause of impactful outages

What was the primary cause of your data center's most recent impactful incident or outage? (n=97)



(All figures rounded)

UPTIME INSTITUTE GLOBAL DATA CENTER SURVEY 2024

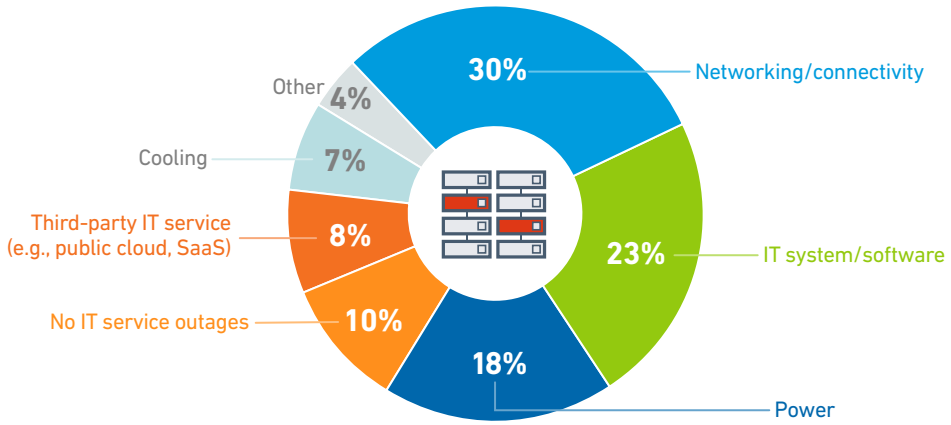
Outages from IT and networking issues increased in 2024, totaling 23% of impactful outages. This rise is likely caused by increased IT and network complexity, leading to issues with change management and misconfigurations.

For a more general view of outage causes that extend beyond (but include) the data center, the Uptime Institute Data Center Resiliency Survey 2025 also asks about the most common causes of any end-to-end IT service outages, regardless of whether they were the most recent or the most impactful. The responses have consistently shown that network-related outages are more common, and significantly ahead of power (see **Figure 4**).

Figure 4

Most common causes of IT service-related outages

Which of the following issues has been the most common cause of any IT service outages that may have affected your organization over the past three years? (n=412)



UPTIME INSTITUTE DATA CENTER RESILIENCY SURVEY 2025

PUBLICLY REPORTED OUTAGES

Commercial operators in the limelight

Over the nine years that Uptime has been tracking publicly reported outages, third-party IT and data center service providers — including cloud and internet giants, telecommunications and colocation companies — have accounted for about two-thirds of those reported (see **Figure 6**). This trend reflects the long-term move toward colocation providers, cloud and other third-party services. While outsourcing may reduce the risk for some enterprises, major failures still occur, sometimes with serious consequences.

In 2024, outages attributed to digital service providers increased, while those from cloud/internet giants declined — possibly due to hyperscalers' investments in distributed resiliency and regional failover.

For the third consecutive year, the financial sector saw a decline in outage frequency compared with the long-term average since 2020. This improvement may reflect the impact of stricter regulations and heightened oversight following several major, high-profile outages prior to 2021.

Figure 6

Publicly reported outages by sector, 2020 to 2024

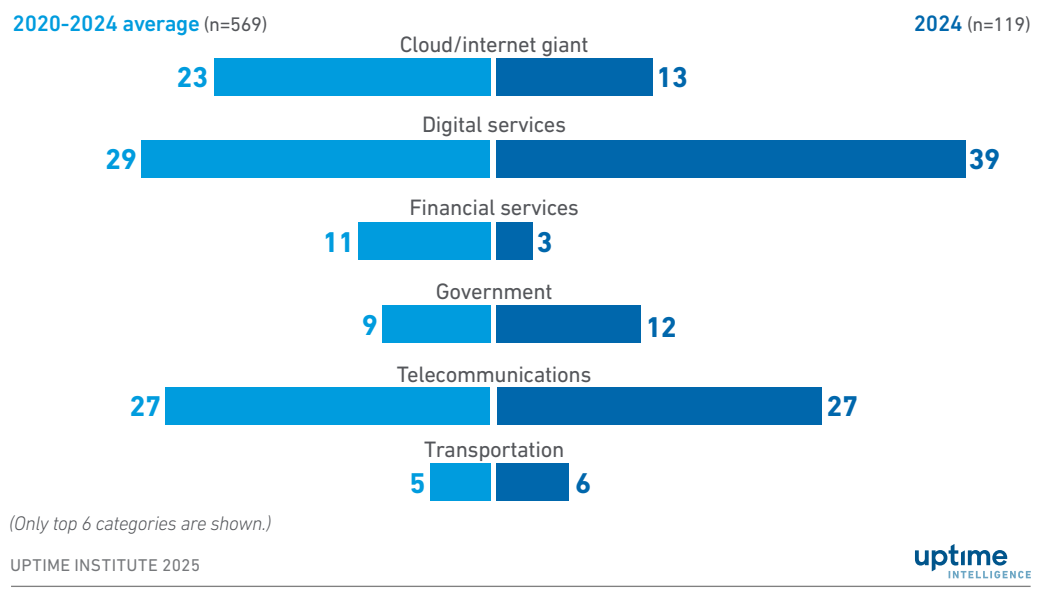
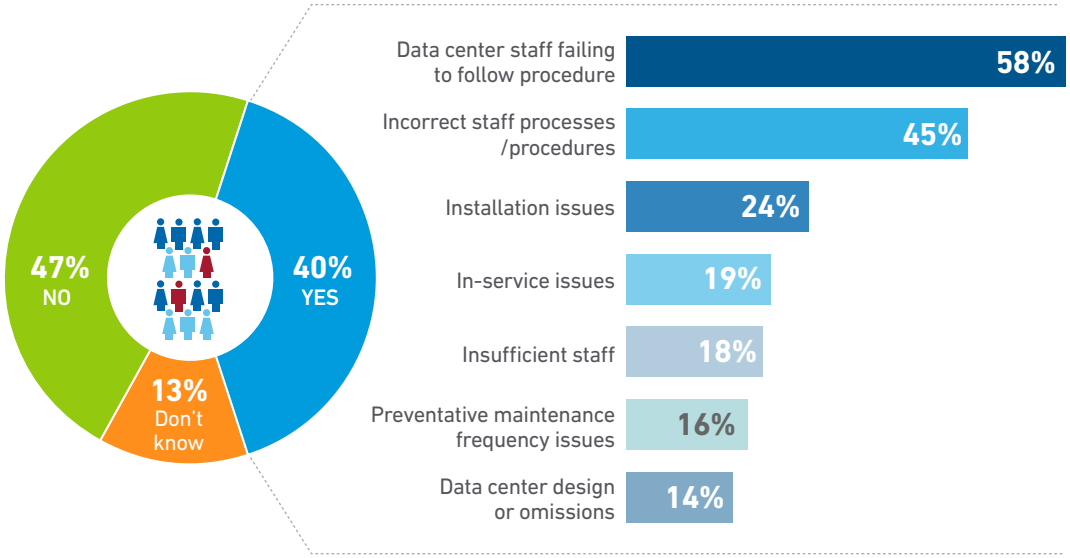


Figure 12

Most common causes of major human error-related outages

Has your organization experienced a significant, serious, or severe IT service outage(s) that was caused by human error over the past three years? If so, what are their most common causes? Choose no more than three. (n=397)



(Responses for "Other" and "Don't know" are not included.)

UPTIME INSTITUTE DATA CENTER RESILIENCY SURVEY 2025

In 2025, the proportion of human error-related outages caused by failure to follow procedures rose by 10 percentage points compared with 2024. The reason for this rise is unclear but it may be a consequence of the rapid growth of industry and the resulting staff shortages in many regions. While improving documentation and processes remains important, greater focus on staff training and real-time operational support may reduce risks more effectively.

The case for dedicating more resources to staff training and support is strengthened by results from a separate survey question, which shows that four in five (80%) operators believe that better management and processes would have prevented their organization's most recent downtime incident (see **Figure 13**). This proportion is consistent with previous years' data and suggests that further investments in this area can significantly reduce downtime incidents.

Find out more

We hope you found this executive summary of our *Annual outage analysis 2025* report valuable.

To access the entire *Annual outage analysis 2025* report and Uptime Intelligence on an evaluation basis, please visit intelligence.uptimeinstitute.com/request-evaluation

The full report is available to Uptime Network members and Uptime Intelligence subscribers.

To enquire about an annual subscription, which includes this report; or to purchase this report, please contact info@uptimeinstitute.com

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About Uptime Institute

Uptime Institute is the Global Digital Infrastructure Authority. Its Tier Standard is the IT industry's most trusted and adopted global standard for the proper design, construction, and operation of data centers — the backbone of the digital economy. For over 30 years, the company has served as the standard for data center reliability, sustainability, and efficiency, providing customers assurance that their digital infrastructure can perform at a level that is consistent with their business needs across a wide array of operating conditions. With its data center Tier Standard & Certifications, Management & Operations reviews, broad range of related risk and performance assessments, and accredited educational curriculum completed by over 10,000 data center professionals, Uptime Institute has helped thousands of companies, in over 100 countries to optimize critical IT assets while managing costs, resources, and efficiency.

Uptime Institute is headquartered in New York, NY, with offices in London, Sao Paulo, Dubai, Riyadh, Singapore, and Taipei.

For more information, please visit **www.uptimeinstitute.com**