

DATA REPORT

Uptime Institute Data Center Capacity Trends Survey 2022

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Uptime Institute's Data Center Capacity Trends Survey 2022 reveals growing capacities, increased hybrid IT awareness and developing cost concerns. Data center capacities continued to grow for colocation and enterprise facilities throughout 2022. But operators are more aware of cost as they look to increase server power densities and reduce energy use. Most enterprises are adopting a hybrid approach (for both on- and off-premises venues) to address capacity needs. Keeping some applications in owned facilities is desirable for retaining full control over infrastructure and data. Some enterprise users, however, report cloud-provider failures in meeting capacity requests — undermining the very proposition of the cloud. Some applications that moved to public cloud are returning to owned facilities. This is more common for legacy applications and is driven mostly by cost. But enterprises are not abandoning public cloud. Instead, they are taking a more flexible approach to workload placements and are doubling down on hybrid strategies.

The Uptime Institute Data center Capacity Trends Survey 2022, conducted online in September and October 2022, had 701 end-user respondents. This report highlights some of the findings.

KEY POINTS

- Most operators (across all industry sectors) report that their data center capacities are growing, but colocation providers are more bullish about growth expectations — both currently and in the medium term.
- Modernization of IT applications remains the top driver behind server hardware refreshes — but reducing power consumption is an increasingly important factor.
- The majority of respondents (82%) expect higher server power densities in the future: but nearly one-third cannot accommodate this without upgrading infrastructure or increasing capacity.
- Unexpected costs are driving some legacy applications back to on-premises locations from the public cloud. Very few organizations are abandoning the public cloud altogether, however.

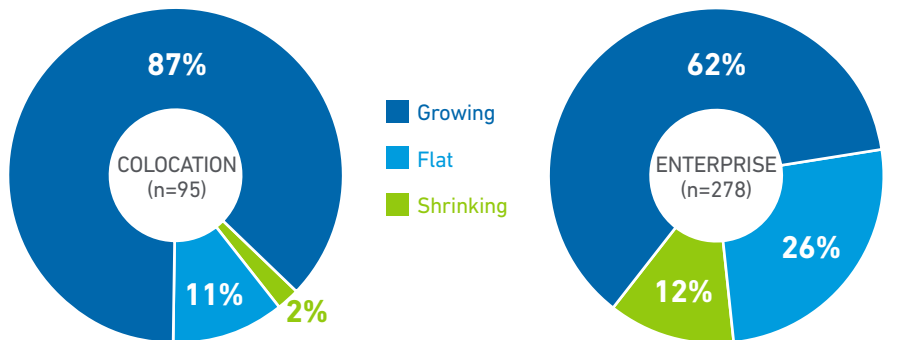
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Colocation capacity growth is outpacing enterprises'

A significantly greater proportion of colocation providers (87%) report their data center capacities as “growing” than do enterprise respondents (62%, **Figure 1**): something that might be partially explained by increasing demand for colocation services from hyperscalers. Since most IT in a facility is owned by their tenants, colocation providers have also been less affected by higher IT hardware costs: which might have impacted growth rates (see *Uptime Institute Data Center and IT Spending Survey 2022*). When asked about the next three years, colocation providers are also more optimistic regarding capacity growth: 93% (n=94) expect overall capacities to increase, in contrast to only 61% of enterprise respondents (n=263).

Figure 1

In terms of overall megawatts, how would you describe the capacity of your data centers? Is overall capacity growing, flat or shrinking?



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Nearly one-third of respondents need upgrades for higher power densities

More than two-thirds (68%) of all data center owners and operator respondents (n=242) anticipate upgrading their servers over the next two to three years. Of this group, 82% expect to deploy higher server power densities (**Figure 2**). Nearly one-third cannot currently accommodate these higher densities without adding new capacity or upgrading existing infrastructure, however. For these respondents, capacity-expansion projects facilitating higher-density deployments are probably already underway (see **Figure 1**). Developments in cooling infrastructure here (e.g., direct liquid cooling (DLC) technology) could allow densification without the need for additional capacity.

Figure 2

What impact do you expect your future server hardware to have on your organization's data center power / cooling? (n=204)



(All figures rounded.)

Future server hardware deployments will lower our power densities

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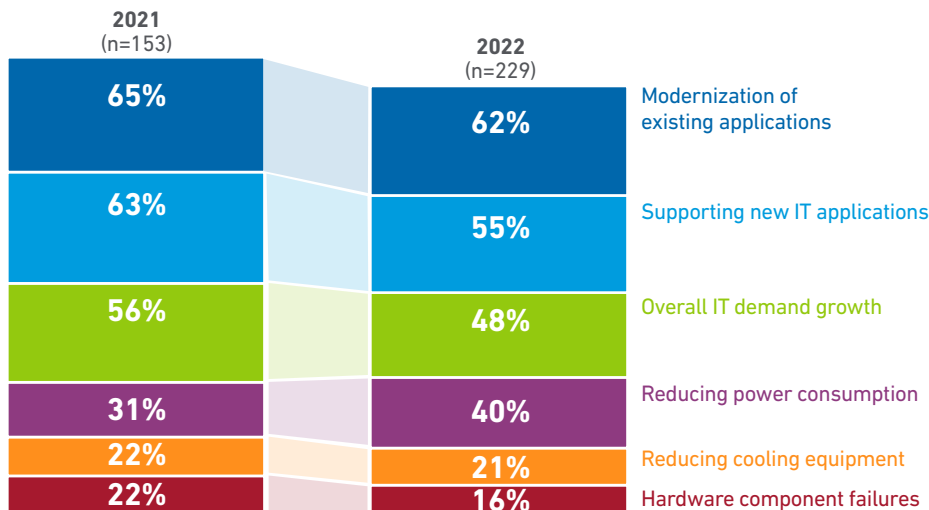
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Operators are seeking better power consumption from servers

Reducing power consumption was a bigger driver behind IT hardware refreshes for enterprise respondents in 2022 compared with the previous year (**Figure 3**). Soaring energy prices were the key driver here, together with greater pressure on the industry to improve sustainability (and, consequently, reduce carbon emissions) in power consumption. Modernizing existing applications, supporting new applications, and continued IT demand growth remain the top three drivers behind IT hardware refreshes.

Figure 3

Which of the following are the key drivers in refreshing your organization's IT hardware? Choose all that apply



(Responses for "Other" are not included.)

(Only responses from enterprise owners / operators are included.)

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Cloud applications face potential scaling risks

Cloud applications are typically architected to ensure capacity is always available (or, conversely, relinquished to cut costs). However, this was not the case for almost one-third of the 63% of enterprise respondents using public cloud (**Figure 4**), meaning that while applications could be scaled downward, they could not always be scaled back up under higher demand. Squeezed capacity here compromises application performance, potentially increasing downtime and creating significant business risks, particularly for mission-critical workloads in public cloud. Asked about the impacts of such failure, operators' written responses typically cited:

- Limited impacts, but nonetheless poor experience.
- Service delivery disruptions.
- Service outages.
- Bad end user experience (and potential lost revenue).

Figure 4

Has your primary cloud provider ever failed to provide resources when requested by your organization? (n=126)



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

(Only responses from enterprise owner / operators are included.)

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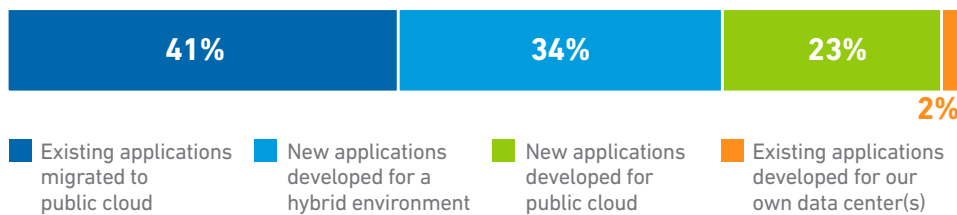
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Legacy applications least likely to succeed in cloud

When asked whether their organization had moved production applications away from public cloud on a permanent basis over the past 12 months, 35% of all enterprise owners and operators reported placing workloads back into their own data centers or into a colocation facility (n=134). For most respondents (41%) these applications had been “lifted-and-shifted” from on-premises environments to the public cloud without rearchitecting their applications for scalability (**Figure 5**). Any application that cannot grow to meet demand (nor shrink to reduce costs) rarely benefits from deployment on public cloud.

Figure 5

Thinking about production applications that were moved from public cloud by your organization, were they primarily new applications developed for the cloud or existing applications? (n=39)



(Responses for “Don’t know” are not included.)

(Only responses from enterprise owners / operators are included.)

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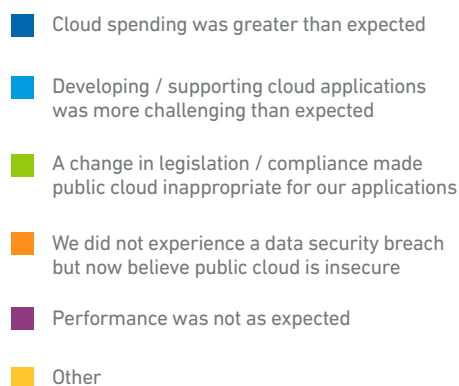
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Higher-than-expected costs are driving workloads away from cloud

Most enterprise applications repatriated from public cloud were originally architected for use with on-premises infrastructure, and not necessarily for taking full advantage of cloud scalability (**Figure 5**). Legacy applications cannot be scaled-up (to meet performance requirements) during periods of high demand, but also cannot be scaled-down (to reduce expenditure) when demand is low. This can create unexpectedly high costs for cloud services — found to be the primary driver behind cloud repatriation for most enterprise respondents (42%, **Figure 6**).

Figure 6

Which of the following best describes your organization’s reason for moving applications from public cloud? (n=43)



(Only responses from enterprise owners / operators are included.)

(All figures rounded.)

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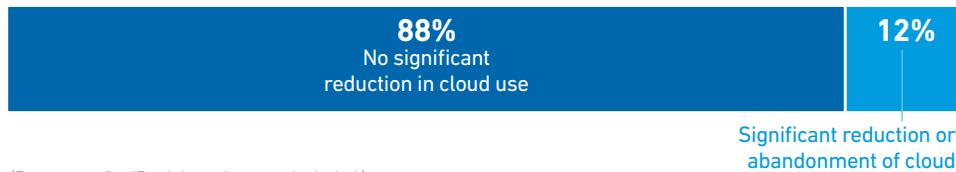
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Few enterprises are abandoning public cloud

For most enterprise respondents, moving applications away from public cloud did not result in a significant reduction in overall cloud use (**Figure 7**). Of those that did see a significant reduction, only two had abandoned public cloud altogether as a result of cloud repatriation, suggesting that most are pursuing a hybrid approach, using both on-premises and public-cloud venues. Rather than fully retreating from cloud, only those applications found to be too expensive or challenging to optimize are being repatriated to owned or colocation facilities.

Figure 7

Which statement best describes the overall impact to your organization of moving applications from public cloud? (n=39)



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

(Only responses from enterprise owners / operators are included.)

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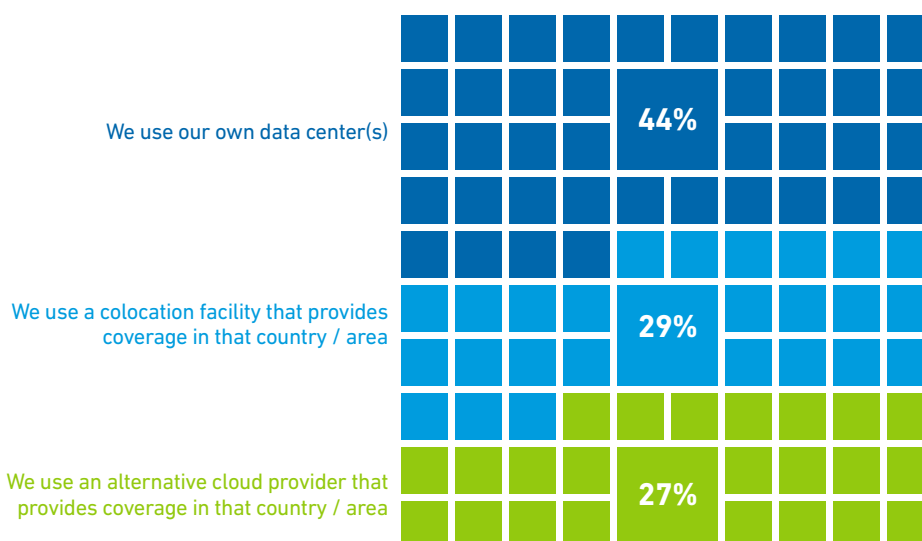
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Enterprises are using their own facilities where cloud lacks coverage

More than half of enterprise respondents (52%, n=141) report that their geographic coverage requirements are not being met in full by their cloud providers. Where geographic coverage is not available, most enterprises (44%, n=65) are supplementing coverage through their own data centers (**Figure 8**). Cloud providers are targeting those locations in greatest demand when building new data centers: but this leaves many enterprises having to fill in gaps in coverage.

Figure 8

If your primary cloud provider does not have the geographic coverage that your organization requires in a specific country / area, what approach does your organization take? (n=65)



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

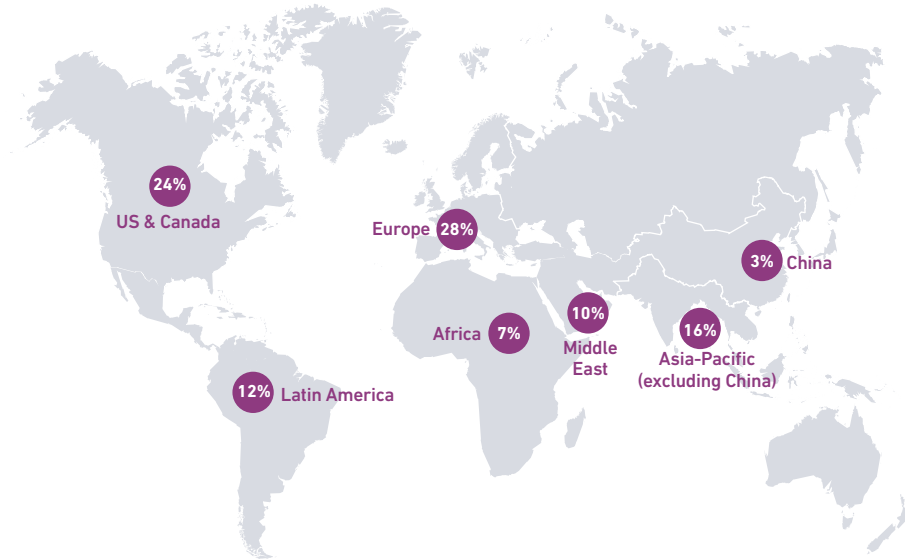
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Uptime Institute Global Data Center Capacity Trends Survey 2022: end user demographics

Company location (n=617)



Verticals (n=699)

Enterprise data center owner / operator



Data center design or engineering firm



Colocation provider



Consultant / advisory firm



Vendor / product supplier



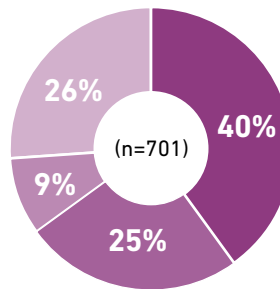
Cloud / hosting provider



Other



Digital infrastructure environment



- We own and / or operate one or more data centers and use colocation
- We own and / or operate one or more data centers
- We do not own or operate data centers but we use colocation
- None of the above

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All general queries

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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 25 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 Seattle, London, Sao Paulo, Dubai, Singapore and Taipei.

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