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RESEARCH HIGHLIGHTS

NetApp: Analysis of Data-led Cloud Migrations

Scott Sinclair, ESG Senior Analyst

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Overview and Research Objectives

Public cloud adoption continues to rise, but how has that impacted mission-critical application environments? Businesses rely on production-level and business-critical workloads to ensure effective operations. As IT organizations seek to access the benefits of cloud services, making sure that the public cloud will meet the needs of primary or business-critical workloads adds complexity and risk. Organizations need the flexibility, agility, and business acceleration that public cloud services offer, without compromising on performance, availability, or security.

To gain insight into the state of mission-critical and production-level workloads in multi-cloud environments, ESG surveyed 350 IT and business professionals at organizations in North America (United States and Canada) who are personally responsible for evaluating, purchasing, managing, and building data center and cloud solutions. This research was intended to understand the needs of modern IT organizations in supporting their cloud initiatives for mission-critical or tier-one workloads.

ESG RESEARCH FINDINGS

Hybrid-cloud environments are pervasive, and multi-cloud adoption continues to rise.

Mission-critical workloads are increasingly becoming cloud-migration candidates.

Cloud migrations are costly and time-consuming and create risk.

IT decision makers are prioritizing data center infrastructure options that can help with cloud migrations.

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Growing Interest in Data-led Cloud Migrations

What Are Data-led Migrations?

Data has become a strategic asset. With the right tools, data becomes predictive and provides agility. Data is now the starting point for how a company, agency, or government conducts successful business. Using data-led migrations and advanced data monitoring and analytics solutions, entities can create repeatable and scalable solutions that provide increased operational efficiencies and profitability.

Characteristics of Data-led Migrations:

1. Data is what drives value; therefore, data should drive the cloud journey.
2. As opposed to workload or application migrations, data-led migrations focus on moving data away from traditional sources residing in data centers to the cloud, often as part of a data lake.
3. Once in the cloud, these repositories can serve multiple digital business initiatives, supporting business intelligence, analytics, and even artificial intelligence and machine learning projects.
4. As a result, the business can more easily and quickly harness the value inside their data, accelerating time to insights and time to value.

This eBook presents ESG research supporting the need for data-led migrations by highlighting the rise of cloud adoption for business-critical workloads. Given the increased scale of IT operations and data, the usage of public cloud resources, data movement, and migrations will continue to increase. As a result, ensuring that migrations are data led is essential to optimizing data management.

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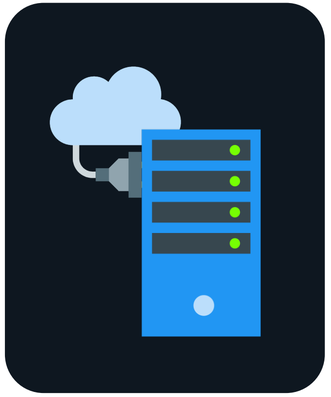
The Rise of Cloud Adoption for Business-critical Workloads

Modern IT is predominantly “cloud-first” and is built on hybrid and multi-cloud environments

Nearly every (97%) IT organization leverages public cloud infrastructure. IT decision makers are also twice as likely to consider themselves as being cloud-first than on-premises first.

Public cloud services are no longer an ancillary part of IT; they are currently as essential as data center resources. And IT’s usage of public cloud services continues to grow.



91%

of organizations are currently using public cloud infrastructure to run some of their workloads.

Organizations with a cloud-first approach outnumber those with an on-premises-first approach by

2:1.

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Understanding the needs of mission-critical and business-critical workloads

Mission-critical and business-critical workloads are different and should be treated differently. These workloads pose an added level of risk to the organization if there is an interruption of service. As such, extra planning and analysis must be applied prior to a new deployment or migration to a new environment.

> ***Failure to meet these requirements*** *can result in severe negative financial, legal, and regulatory impacts to the whole organization."*

Characteristics of mission-critical and business-critical workloads:

Vital to the organization and cannot go offline ever

Must always predictably and consistently perform at a high level

Demand resilience and fault tolerance

Able to scale greatly without compromising any services

Must stay secure and able to adhere to regulatory compliance requirements

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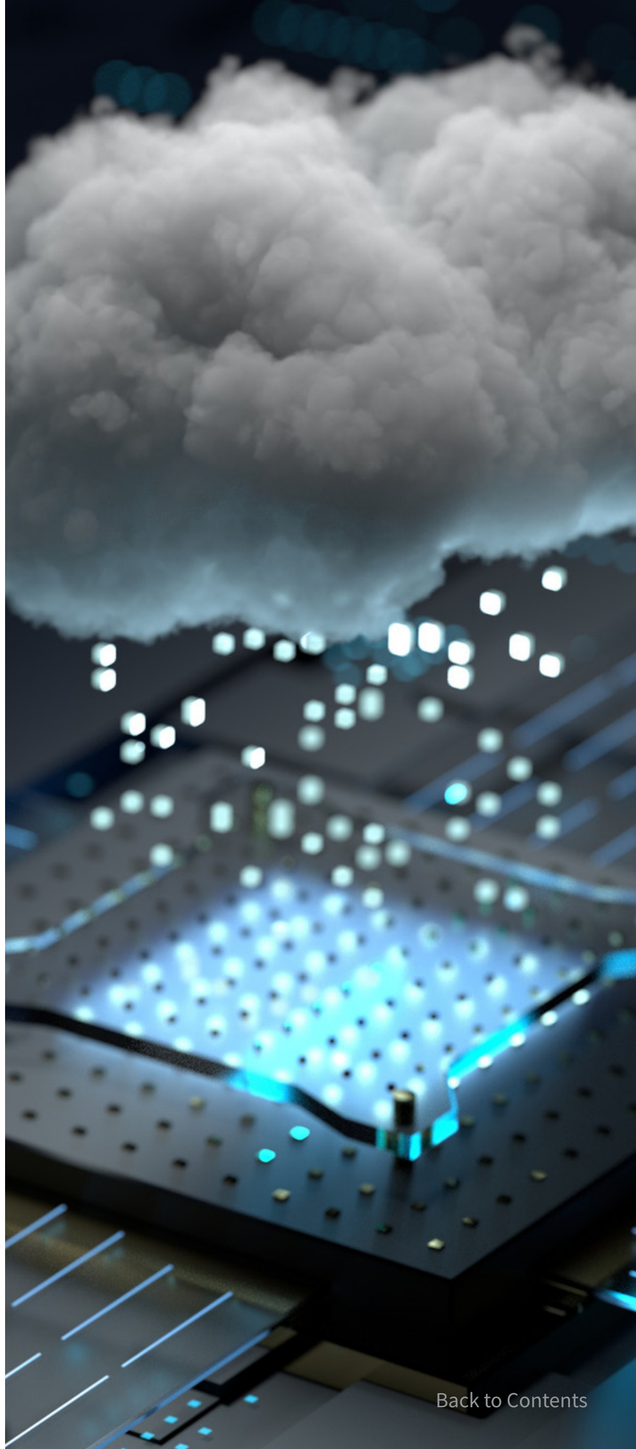
Examples of mission-critical and business-critical

- Enterprise database environments (such as Oracle, SQL, SAP HANA
- Customers running virtual machines with VMware Cloud on AWS require native datastore functionality to scale storage without increasing host instances
- Industry-specific applications that are crucial for business operations (such as electronic design automation (EDA) or customer relationship management (CRM))
- Software-as-a-service (SaaS) platforms (such as Atlassian, Tableau, Blackboard, or Salesforce) that are crucial to the business of both the SaaS vendors and their customers
- Workloads with strict security or regulatory compliance needs (such as healthcare or financial industries)
- Data analytics and reporting
- Any application that has a direct and significant impact on revenue, operations, or the ability to provide essential services



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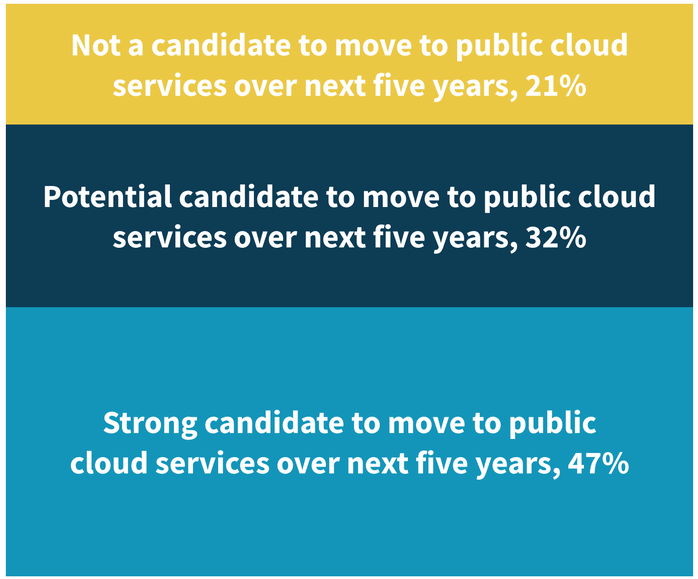
Nearly eight in ten remaining on-premises workloads will be cloud candidates over the next five years

With nearly eight in ten remaining on-premises workloads considered candidates to move to the cloud in the next five years, businesses are actively working to migrate mission-critical and business-critical applications to public cloud services.



On average, nearly

EIGHT IN TEN

remaining on-premises workloads could move to public cloud in next five years.

Top 3 business-critical applications migrated over the past 12 months

40%

Data analytics and reporting

39%

Customer relationship management (CRM)

35%

Enterprise resource planning (ERP)

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The Complexities of, Inhibitors to, and Lessons from Cloud Migrations

Migrations are often dreaded, difficult processes that IT needs help to improve

Nearly every IT organization identified cloud migration as a complex process that can be improved.

In the era of multi-cloud, application movement will continue to be more common.

It is essential for IT decision makers to prioritize IT infrastructure purchases (especially for the data center) that can simplify application movement to the public cloud.

> ***In the era of multi-cloud,*** *application movement will continue to be more common.”*

93%

of organizations using IaaS believe that their workload migrations can be improved upon.

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Inhibitors to cloud migration and adoption

Complexities, challenges, and other factors that add risk impact business-critical and mission-critical applications even more than lower-tier workloads.

Organizations must address these challenges in their cloud environment in order to effectively reap the benefits of cloud services.

Top 7 inhibitors to cloud migration and adoption

Hard to predict our applications' requirements over time
45%

Hard to compare security capabilities
44%

Hard to pick a cloud technology roadmap to commit to
41%

Hard to determine which cloud can best meet performance requirements
40%

Difficult to assess compliance implications
40%

Hard to determine which cloud can best meet availability expectations
36%

Difficult to predict/ compare costs
33%

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Lessons from past cloud migrations

When organizations reflect on past cloud migration projects, the lessons center on better upfront analysis.

Too little is often known about on-premises workloads prior to cloud migration, or what has been recorded is inaccurate.

It is essential to not only do the upfront work to better understand application needs prior to migration, but also to invest in cloud technologies that will deliver the necessary performance, availability, and security in the cloud.

Actions that organizations have taken to mitigate unforeseen challenges or satisfaction issues with cloud-hosted applications

Executed more thorough analysis about the cloud's capabilities (performance, availability, security, etc.)

49%

Executed more thorough analysis about application performance requirements

47%

Executed more thorough analysis about application availability requirements

47%

Instituted more controls to limit shadow IT

45%

Executed more thorough analysis to understand the data's sensitivity or compliance requirements

39%

Executed more thorough analysis about the cloud's cost

35%

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Addressing the skills gap

As organizations strive to address the complexity of migration activities, they often run into another hurdle: they don't have enough highly skilled personnel. More than a third (35%) of organizations identify a problematic skills shortage in the area of cloud architecture/planning.

In addition to the lack of personnel, existing skilled personnel are under increasing pressure to add on new responsibilities to keep pace with business demands.

76% agree "I have taken on added/new responsibilities to support my organization's digital transformation goals/ initiatives (or I am under pressure to do so)."

Top 5 problematic skills shortages

48%
Cybersecurity

39%
IT architecture/planning

37%
IT orchestration and automation

36%
Artificial intelligence/machine learning

35%
Cloud architecture/planning

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Ensure That the Cloud Delivers Everything Your Applications Need

Business-critical and mission-critical application essentials for cloud services

Ensure that your business-critical and mission-critical applications get the benefits of cloud services, while not compromising the essential infrastructure capabilities that these applications leverage in the data center.

This requires cloud technology that can deliver superior speed, ease, agility, and flexibility when it comes to application deployment and scale.

It must also, however, eliminate the inhibitors of cloud adoption by delivering enterprise-level availability, performance, and security.

> ***As cloud adoption increases,*** *the ability to support business-critical and mission-critical applications effectively and efficiently in the cloud will be a competitive necessity."*

Business-critical and mission-critical application essentials

THE BEST OF THE CLOUD:

Ease of management

Speed of operations

Agility

Flexibility

THE BEST OF THE ENTERPRISE:

Enterprise availability

Predictable performance

Security

Compliance

Predictable, transparent costs

Simpler, easier, and faster migration path

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NetApp Can Help Simplify Cloud Migration and Storage for Mission-critical Workloads

NetApp is a leader in cloud data storage software. Long trusted in the data center, NetApp® software is now natively integrated into each of the major public cloud providers. As a cloud-led, data-centric software company, NetApp can help companies build a data fabric to support their specific mission-critical and application-driven environments while reducing cost, complexity, and risk. Organizations can efficiently extend into a hybrid cloud, migrate primary workloads, and launch native apps without the need to refactor or redesign code. They can consume NetApp's expansive suite of data services, all nestled in an AWS-native experience.

Users can combine the agility and scalability of AWS with ONTAP® enterprise-grade data services from either the AWS Management Console or NetApp Cloud Manager, simplifying implementation and management. From a single control plane, the AWS or NetApp customer can manage any Linux or Windows hybrid cloud environment and automate data movement between on-premises and the public cloud.

The AWS cloud user has the choice of storage targets for data-led migrations:

1. **Amazon FSx for NetApp ONTAP:** This native AWS service brings a consistent hybrid cloud experience as an AWS fully managed service powered by NetApp ONTAP software. Swiftly complete data-led migrations with the only multiprotocol block and file service—in any cloud.
2. **Cloud Volumes ONTAP:** A self-directed data management service, Cloud Volumes ONTAP enables greater control, efficiency, and visibility. It allows users to launch and run shared storage across the hybrid cloud and supports industry-standard NFS, SMB, and iSCSI protocols.

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Learn more about how NetApp can help you:

Simplify: Satisfy GDPR and other audit and compliance requirements with NetApp Cloud Data Sense. Use NetApp Cloud Secure to thwart ransomware and other external threats. The AWS native service, Amazon FSx for NetApp ONTAP, supports both AWS and NetApp APIs from the AWS Management Console or NetApp Cloud Manager.

Economize: Control hybrid cloud data from Cloud Manager to unify siloed storage systems on a single-pane console. Embrace “speed is the new scale” you’d expect in the cloud without one iota of administrative overhead. Get access to important metrics to slash troubleshooting time, predict performance needs, and regain control over infrastructure costs.

Protect: Provide disaster recovery for on-premises and cloud data with NetApp SnapMirror® replication software technology along with automated data synchronization from Cloud Sync. Reduce backup times and instantly restore data with zero-impact NetApp Snapshot™ copies. Get built-in automation to replicate copies across AWS Availability Zones (AZs) and gain control with cost-effective, incremental-forever, block-based backups.

Consolidate: Unite dozens or hundreds of distributed file servers into a single AWS footprint with NetApp Global File Cache to save up to 70% in costs. You can do without the headaches of data silos. Reduce cloud waste with storage efficiencies and zero-footprint Snapshot copies. Maximize productivity with multiprotocol support for Linux, Windows, and iSCSI instances.

Optimize: Extend resources. Build applications faster with multiprotocol support, hybrid caching, and bursting capabilities. Reduce cloud waste and EBS costs by nearly 90% with Cloud Volumes ONTAP efficiencies. Continually optimize storage and compute resources with Spot by NetApp and reduce costs up to 90%.

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Conclusion

Based on this survey data, ESG found that multi-cloud environments are already pervasive across IT, with environments poised to become even more distributed moving forward. As cloud adoption increases, organizations are increasing their use of the cloud for mission-critical and business-critical applications. In similar fashion, they are increasing the number of migration projects that include mission-critical applications.

However, cloud migrations are complex, costly, and risky endeavors. As more of these projects center on mission-critical workloads, the risk only increases for the business.

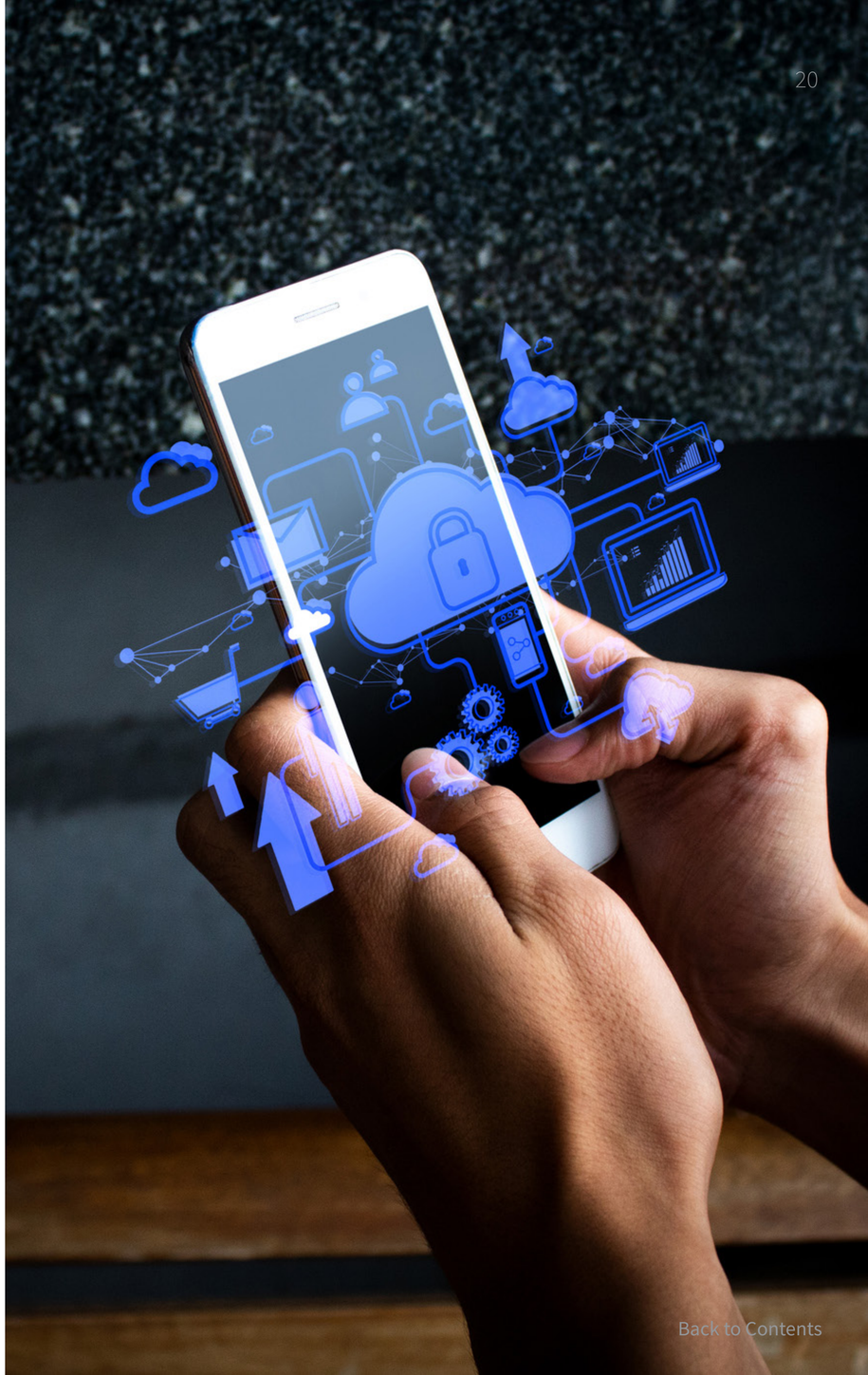
IT leaders must prioritize technologies that can simplify these migrations to reduce the burden on IT while accelerating cloud initiatives. In addition, IT leaders must prioritize cloud technologies that deliver the essential infrastructure capabilities, such as enterprise availability; predictable performance; security; compliance; and predictable, transparent costs.

Meet one-on-one with an AWS cloud specialist

Need to untangle complex cloud infrastructure challenges? Cut the knot with expertise from NetApp. We are known to obsess over our customers' success. Talk with a NetApp cloud specialist to get more from AWS at less cost.

Talk to a Specialist

NetApp®



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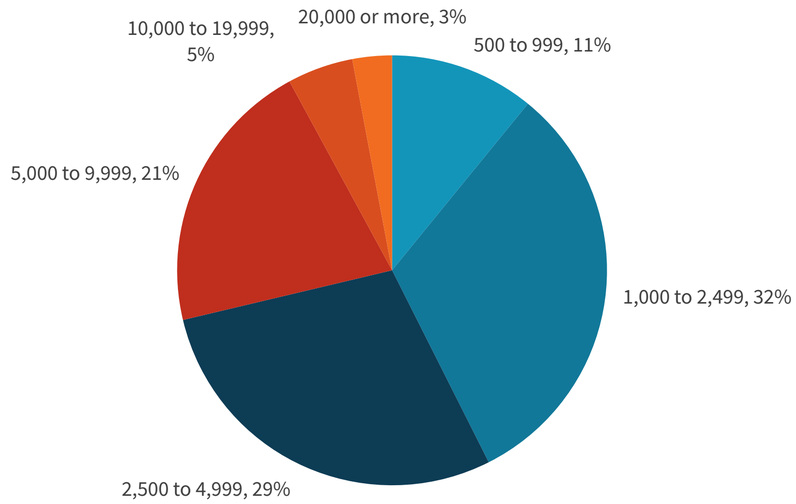
Research Methodology

To gather data for this report, ESG conducted a comprehensive online survey of IT and business professionals from private- and public-sector organizations in North America (United States and Canada) between November 18, 2020 and December 5, 2020. To qualify for this survey, respondents were required to be IT or business professionals personally responsible for and knowledgeable about their organization's current and future data storage and cloud environments. All respondents were provided an incentive to complete the survey in the form of cash awards and/or cash equivalents.

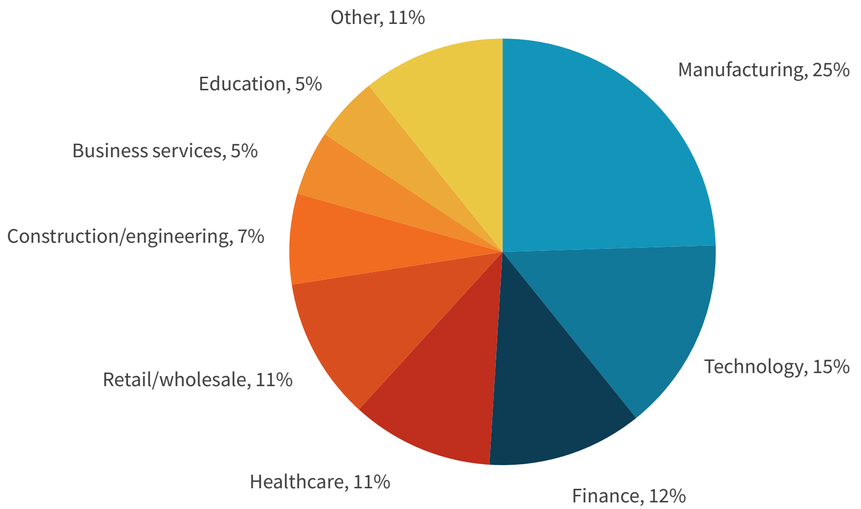
After filtering out unqualified respondents, removing duplicate responses, and screening the remaining completed responses (on a number of criteria) for data integrity, we were left with a final total sample of 350 IT and business professionals.

Note: Totals in figures and tables throughout this eBook may not add up to 100% due to rounding.

RESPONDENTS BY NUMBER OF EMPLOYEES



RESPONDENTS BY INDUSTRY



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