



# *Enterprise data center buyer survey and interview insights*

October 2017





Digital transformation is expanding the horizons of enterprise data centers to include private, hosted private, and public cloud environments. As a result, the top priorities for IT leaders is to secure and automate their data center environments.

### ***Objective of document***

PwC surveyed 235 IT leaders and interviewed another 35 from large, medium, and small enterprises to understand the buying decisions of IT leaders, across a wide variety of networking components (i.e., switches, SDN, and infrastructure monitoring solutions) within the data center. This report highlights the survey and interview insights to help Enterprise IT leaders understand the trends and implications of multi cloud environments.



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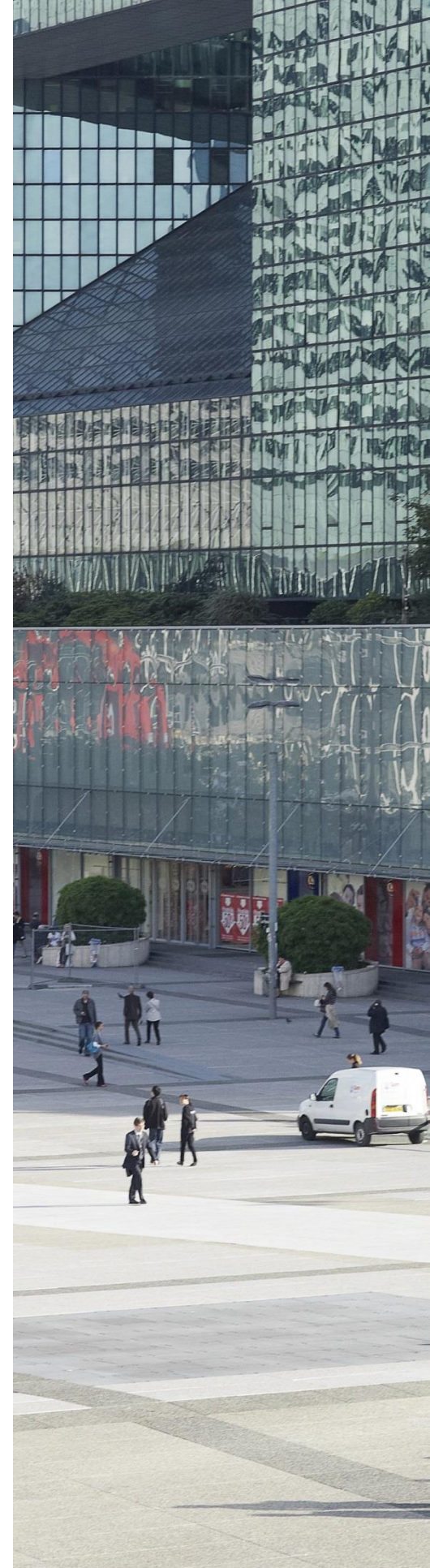
# 1. Introduction to the enterprise cloud data center survey

In June 2017, PwC conducted primary research of enterprises to assess company positions in the enterprise cloud data center market. The survey (235 respondents) and interviews (35) were conducted across various industries, covered market trends, vendor landscape, current/future IT spend, buying criteria, use cases, and key capabilities of enterprise data center products for networking. The insights shared in this document summarize the survey results and PwC's experience in understanding the future of the enterprise data center space.

The table below shows the range of respondents to this survey by region, role, and industry:

Regions	Roles	Industries
North America	CIO	Tech
Asia-Pacific (APAC)	Head of IT	Finance
Europe	VP of IT	Manufacturing
Australia	VP of cloud	Retail
South America	Cloud architect	Healthcare
	Manager of IT	Public sector
	Network manager	
	Network architect	

We would like to extend our sincere thanks to all respondents for taking the time to complete the survey and speak with us. The survey was conducted online through a secure survey tool, which enabled confidentiality of all company-specific data, and the interviews were 60 minute phone calls. All data was summarized, aggregated, and anonymized in a manner that further protected confidentiality.



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## ***2. Summary of observations***

There is a tectonic disruption in enterprise business models, which is forcing organizations to change how they operate in a digital economy. Enterprise boundaries have extended to the edge – where both data and users reside and multiple clouds converge. Business leaders today need to engage with their customers and prospects, which is forcing IT leaders to interconnect digital and physical operations. The role of the data center has now changed from being an infrastructure provider to a provider of the right service at the right time and the right price.

As enterprises are looking to harness the power of the cloud, workloads are becoming increasingly distributed, with applications running in public and private clouds as well as in traditional enterprise data centers. Development environments are also changing: Applications are becoming more modular, leveraging containers and microservices as well as virtualization and bare metal.

The Internet of Things (IoT) is another trend that will hugely impact data centers. As more data is generated, there will be a corresponding growth in demand for storage space. Not only will this increase the number of data centers built, but it will also foster innovative ways to optimize storage capacity with better servers and newer compression technologies. IoT traffic will see huge amounts of small data packets generated by individual devices coming into the data centers, requiring IT leaders to increase their inbound data bandwidth. Networks will also become more vulnerable to cyber-attacks due to increased number of connected devices. Since it will become virtually impossible to store all the IoT data generated, IT leaders will need to look for more efficient ways to sort and process this data in real time.

For enterprises looking to adapt to this rapidly changing space, they need to focus on a more secure, automated data center architecture that enables microsegmentation and artificial intelligence (e.g., self-driving), while reducing complexity and increasing flexibility.

### ***2.1. Key observations supporting enterprise cloud data center market trends***

Based on our survey findings, we are able to highlight the following three trends within the enterprise cloud data center space:

1. Enterprises ranked security and automation as their top buying criteria when purchasing data center network equipment.
2. Workloads are becoming more distributed across multiple environments, with the largest shift occurring from on-premises to the public cloud. This actually makes networks more relevant in the distributed environment, with applications more intertwined with the network, leading to significant changes in the processes that enterprises follow to procure data center network equipment. For example, instead of IT managers reviewing the vendors' offerings for network solutions, they will now have to coordinate with the business groups, cloud groups, and security groups before a vendor is selected.
3. Enterprises expect to increase allocation of IT spend on software-defined networking (SDN) in the next 1-3 years, resulting in increased adoption of SDN solutions.

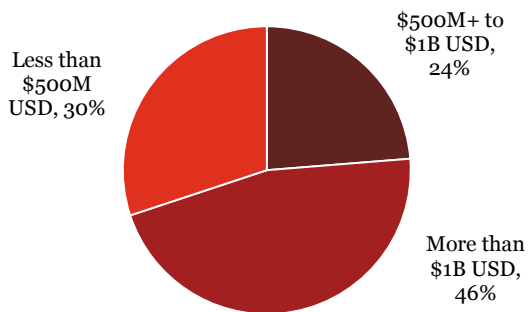
# 3. Analysis and findings

## 3.1. Profile of participating companies

235 enterprises participated in this enterprise cloud data center survey and 5 IT leaders participated in phone interviews.

### Company size (based on revenue)

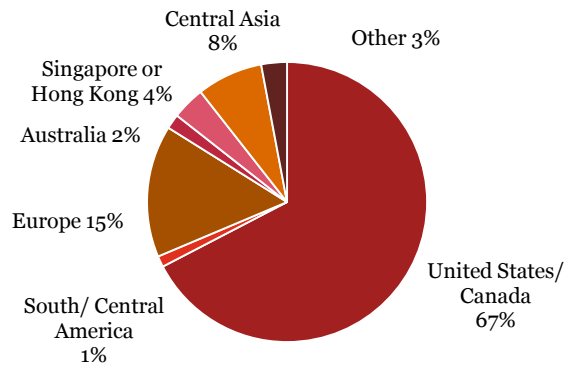
70% had an annual revenue greater than \$500M USD



Of the 235 enterprises, 160 had revenue greater than \$500M and were classified as medium and large enterprises. 46% of respondents were considered large enterprises with an annual revenue greater than \$1B.

### Regions

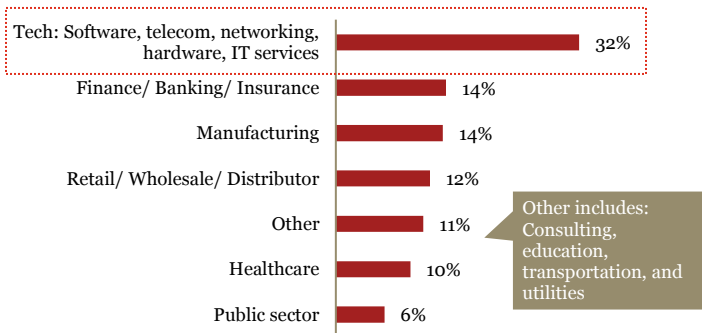
67% were from the US and Canada



The US and Canada accounted for 67% of the companies surveyed.

### Industries

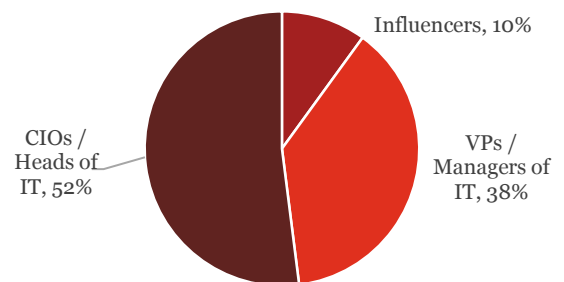
32% are from technology industry



On average, 32% of the companies surveyed were from the technology industry, including software, telecom, networking, hardware, and IT services.

### Roles

52% are CIOs/Heads of IT within IT organizations



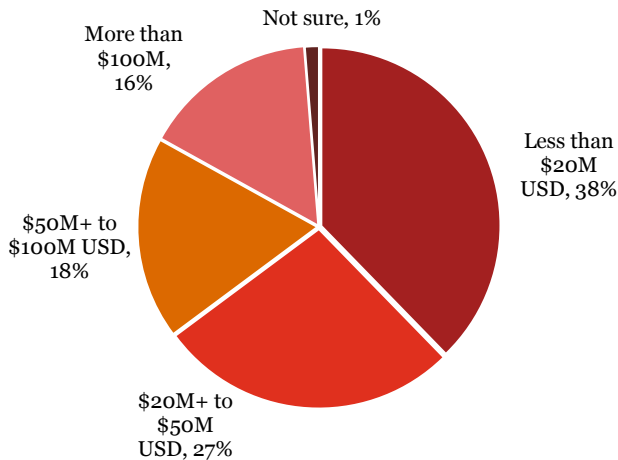
The majority of survey information came from individuals who were either the CIO of the company or the head of IT within IT organizations.

### 3.2. Current & future enterprise IT spend

On average, 34% of companies have an IT spend greater than \$50M, and 16% have an IT spend that is more than \$100M.

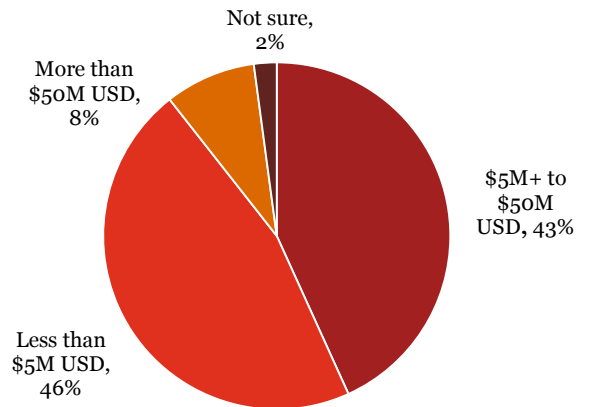
#### IT budget

34% have IT spend greater than \$50M



#### Budget for data center network products

43% have network spend between \$5M and \$50M

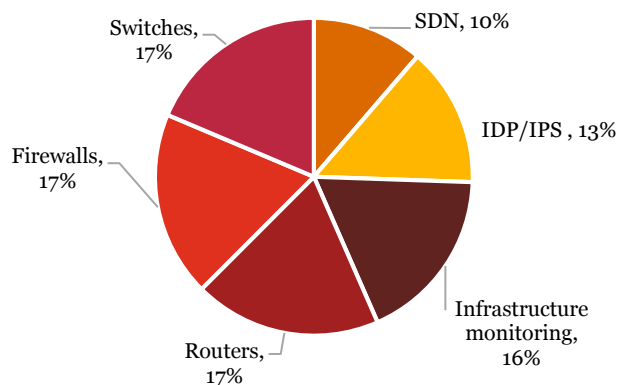


Out of all the respondents, 16% have more than \$100M of spend allocated to IT, while 38% have less than \$20M.

Out of the total IT budget, 43% of enterprises have network equipment spend between \$5M and \$50M.

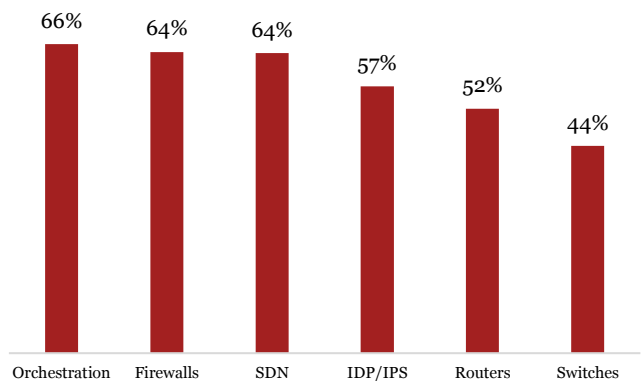
#### Data center network spend by product

17% of the data center spend today is attributed to switches, while only 10% goes towards SDN



#### Increase in spend

64% of respondents intend to increase their spend in the next 1-3 years



The majority (51%) of current network spend is still allocated to traditional network equipment – switches (17%), routers (17%), and firewalls (17%) – while only 10% of today’s spend is toward SDN solutions.

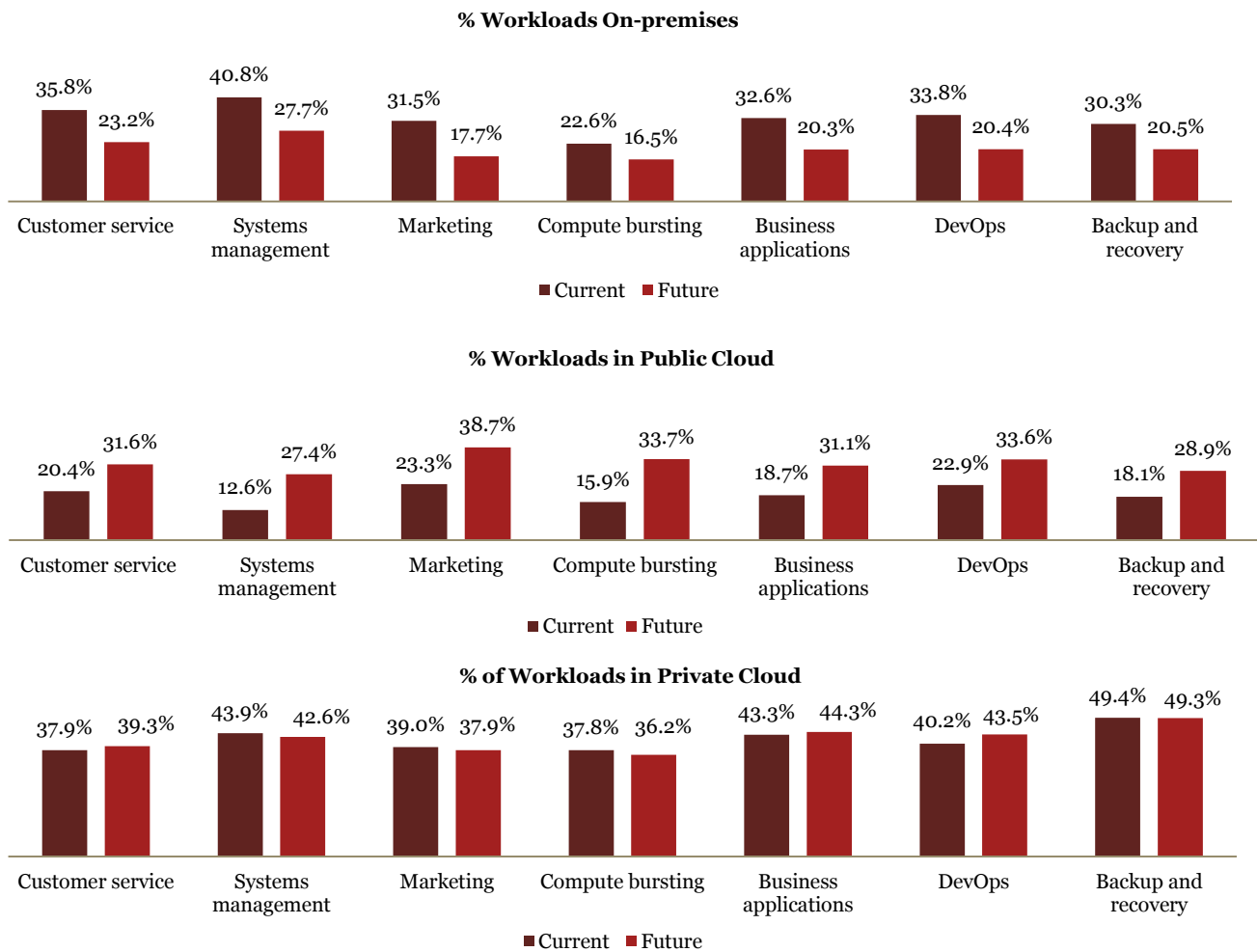
However, in the next 1-3 years, 64% of enterprises are expected to increase their spend in SDN, while only 44% will allocate more spend to switches.

### 3.3. Trends impacting enterprise cloud data center landscape

#### Distributed workloads

Workloads are becoming less monolithic as companies branch away from the traditional enterprise data center. They are becoming more distributed, more mobile, and more like the workloads typically associated with hyperscale environments. Our survey findings support this trend with almost all major workloads shifting from on-premises to public cloud in the next 1-3 years. As this transition persists, enterprises will adopt an even greater multi-cloud environment, compared to just a hybrid environment. Applications will, hence, be more tied to the network, and the network will become more critical given the distribution/dynamism of the workloads.

#### Distribution of workloads



Workloads in the private cloud have reached a stable state; however, all workloads currently on-premises are expected to migrate to the public cloud in the next 1-3 years.

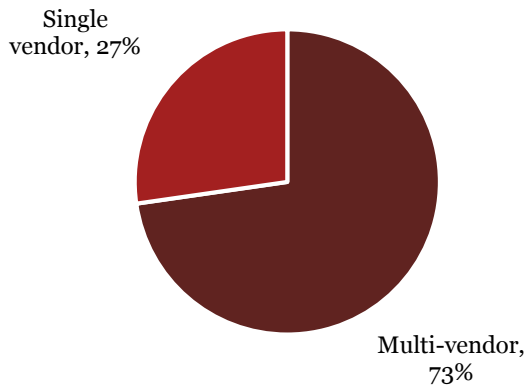


### Best of breed vendor strategy

Most companies are focusing on maintaining their multi-vendor data center strategy: On average, 73% of companies follow a multi-vendor strategy. In fact, 77% of large companies and 64% of medium companies follow this strategy. This trend can also be observed consistently across industries.

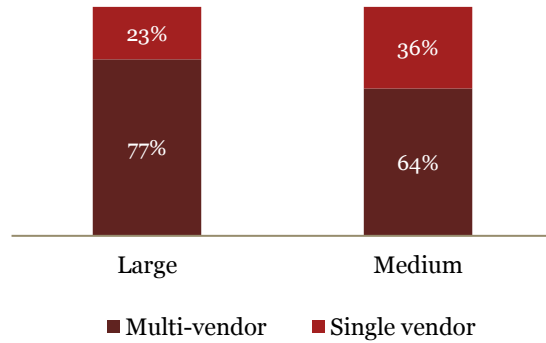
#### Vendor strategy

*73% of the enterprises follow a multi-vendor data center strategy*

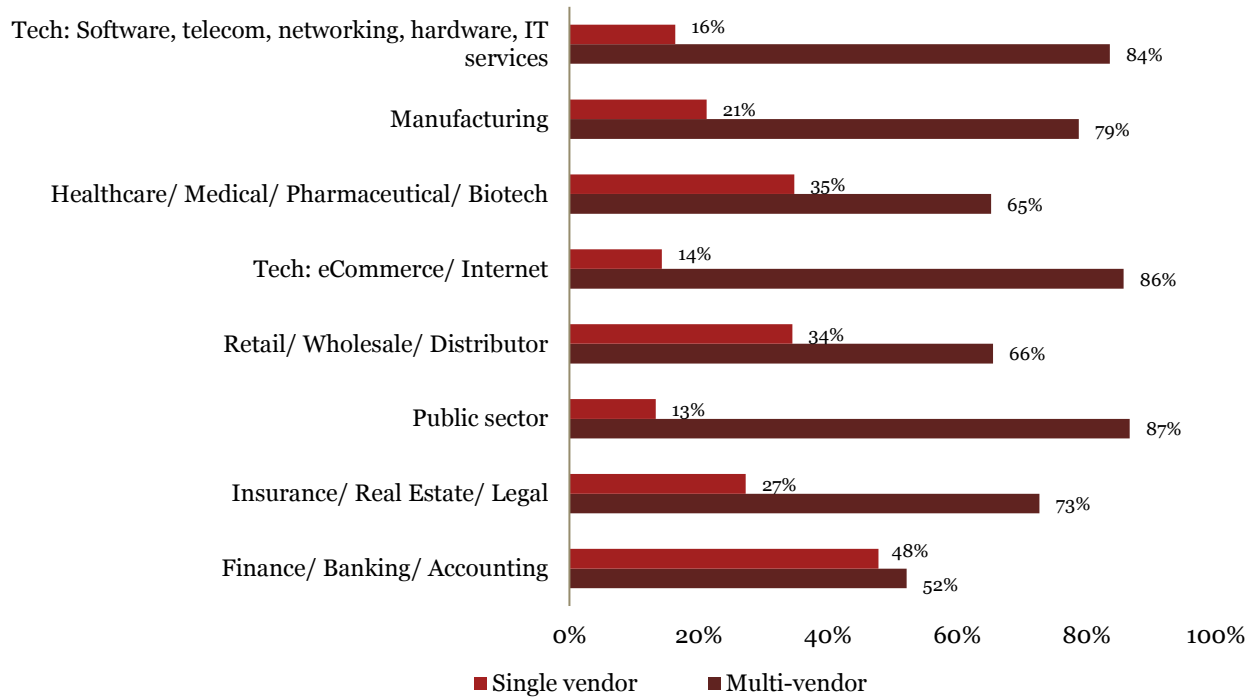


#### Vendor strategy – organization size

*77% of large organizations and 64% of medium organizations follow a multi-vendor data center strategy*



## Vendor strategy by industry



*“Primarily, all selections are based on a trusted relationship/partnership with the resellers and integrators; [we] do not necessarily make a decision based on the manufacturer. In a commoditized switching industry, vendors need to commit to understanding our business needs – mostly all switches have the same capabilities, so now it comes down to the relationship and reliability of the products.”*

**– CIO, Midsize commercial bank**

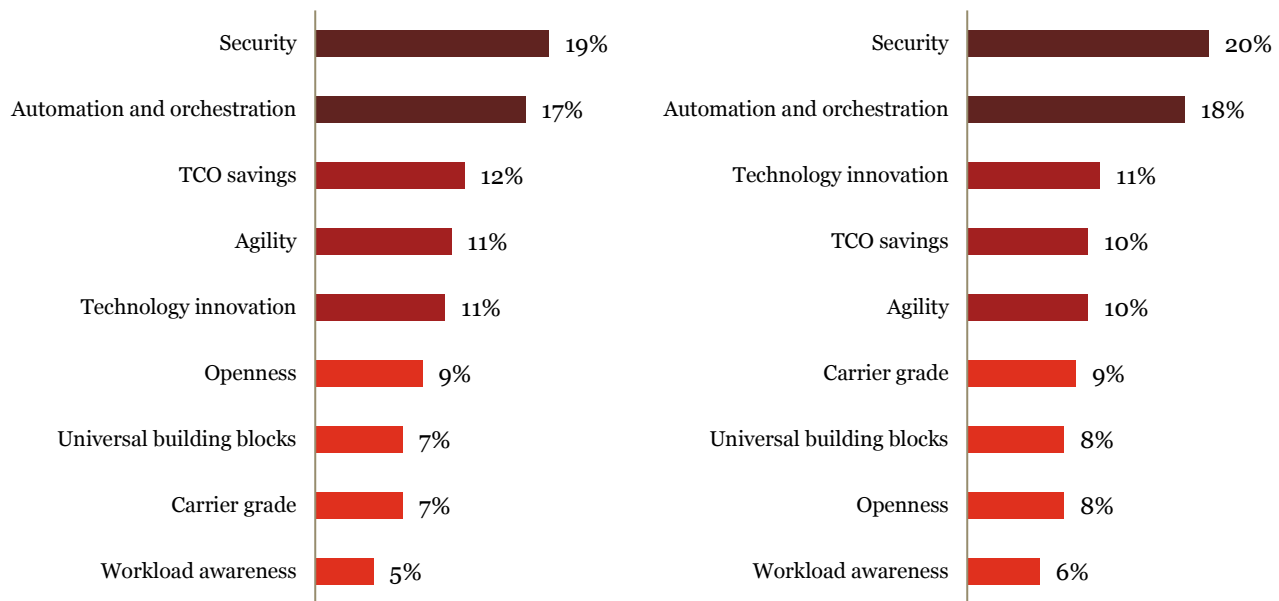
### 3.4. Buying criteria and purchasing state

Enterprises selected security and automation as their top buying criteria for data center network solutions; however, in the Asia-Pacific (APAC) region, security and TCO savings were considered more important than automation.

When looking at specific roles within an IT organization, there are similarities across levels but key differences in priorities. For example, CIOs and VPs/Managers of IT both rank security and automation as their top buying criteria, but CIOs care a little more for TCO savings, compared to lower level decision makers, who want greater innovation in their network solutions.

#### CIO

#### VP/Manager of IT

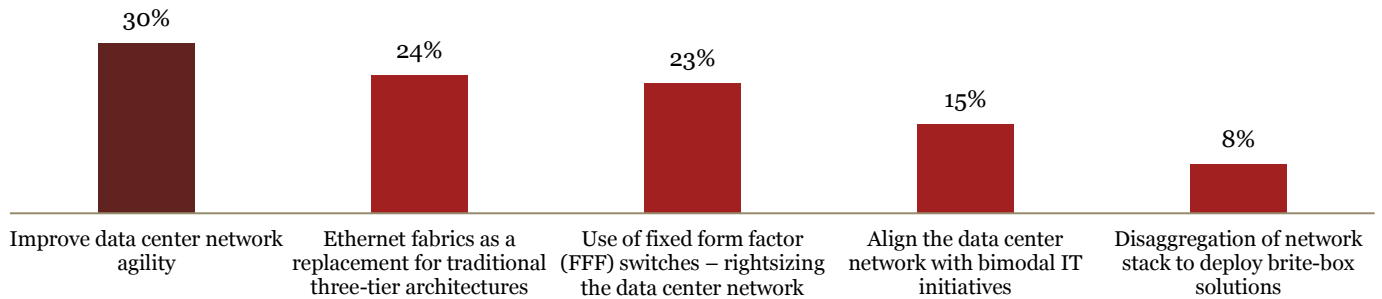


One VP of a multinational organization made it clear: “In today’s world, we are continuously looking for switching solutions that seamlessly integrate with security solutions, where we can buy a single switch and solve all our network and security needs.”

In order to cater to key decision makers within organizations, network equipment technology needs to be innovative such that it helps with overall productivity and efficiency, leading to significant cost savings. As one CIO stated, “My entire team knows that security is incredibly important, and [it] is a prime topic from our board.”

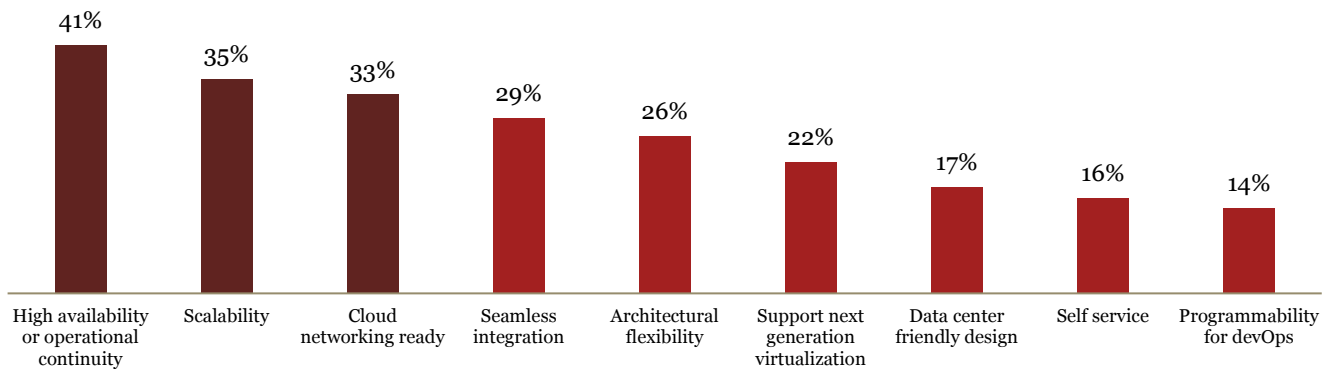
### 3.5. Switches in the enterprise cloud center market

#### Data center switches use cases



Enterprises that want to increase their network agility are looking for switches that have high availability, high scalability, and are cloud ready.

#### Data center switches buying criteria

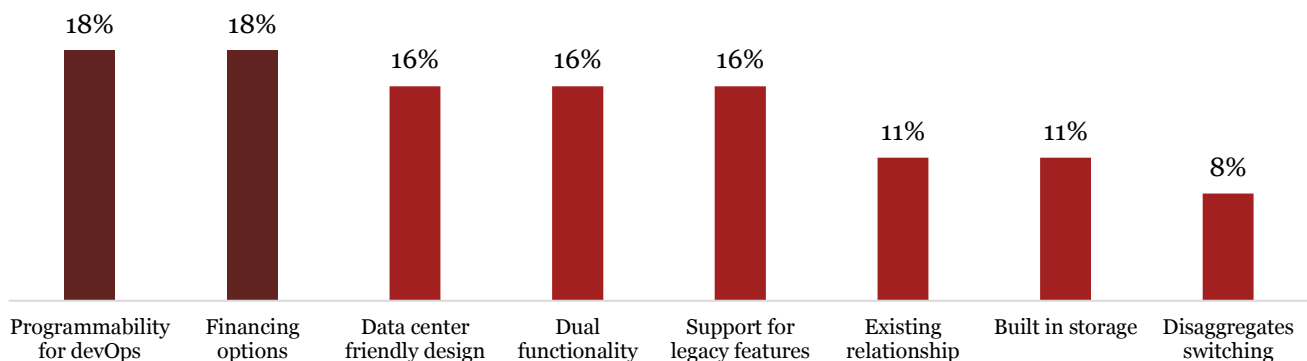


*“I am looking for a single switch that will take care of **all security and switching needs.**”*

*– CIO, Clothing manufacturing company*

Out of the 37 companies surveyed in the APAC region, the top buying criteria was programmability for development operations, financing options, and data-center friendly design.

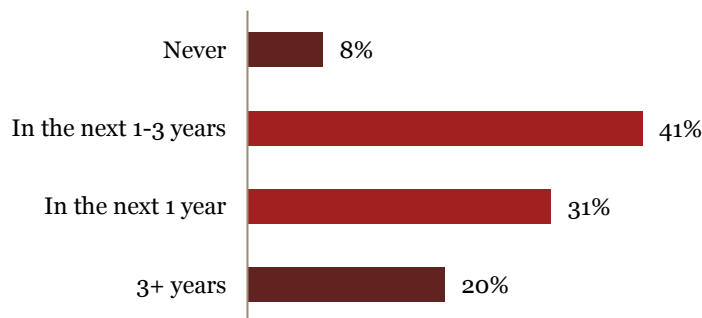
#### Data center switches buying criteria in APAC



### 3.6. Adoption of SDNs in the enterprise cloud data center market

Software-defined networking is gaining traction among companies in all industries. SDN is becoming popular because SDN-enabled enterprises can now have the same quality of automation and orchestration as Cloud Service Providers (CSPs) without the constraint of managing their data center in a single location. However, overall SDN adoption is slow. Less than half of respondents have adopted SDN today, and this is due to the lack of a business catalyst (i.e., regulation, cost savings) that drives the decision to move to SDN. However, enterprises continue to show a lot of interest in SDN, as 72% of the customers who do not currently use SDN plan to adopt it in the next three years.

#### SDN adoption trend

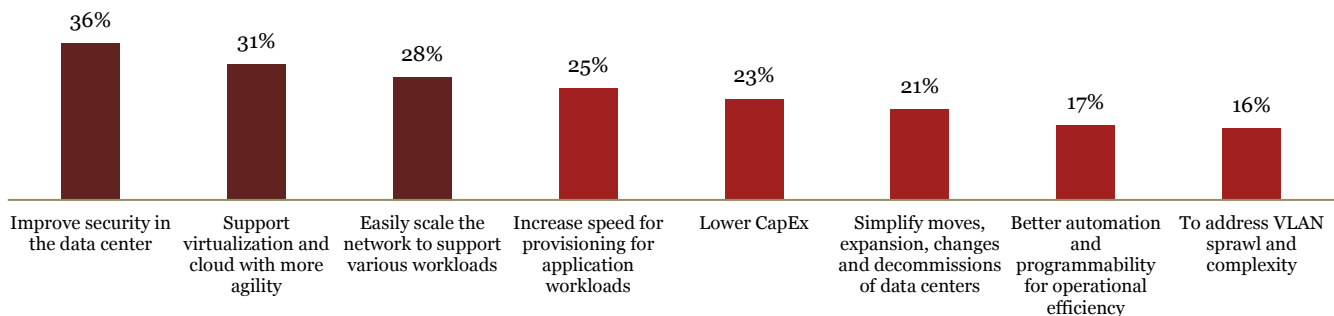


“Top 3 value drivers for SDN are **Security, TCO savings, and no proprietary language.**”

– CIO, Multinational clothing company

There are many benefits to SDN, greater scalability, efficient provisioning, lower CapEx, etc., but the most important use case for SDN is security, and more specifically, the ability to perform microsegmentation within your data center.

#### SDN buying criteria

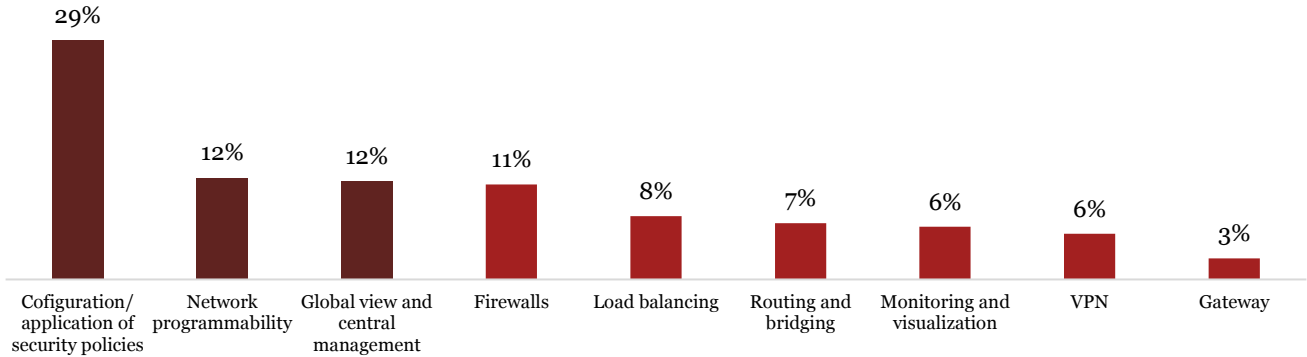


“Integrated security capabilities, or **micro-segmentation** is the next step for SDN.”

– CIO, Financial Institution

### SDN use cases

In order to achieve microsegmentation, enterprises are looking for the ability to configure security policies, program their network, and have central management of their entire network.

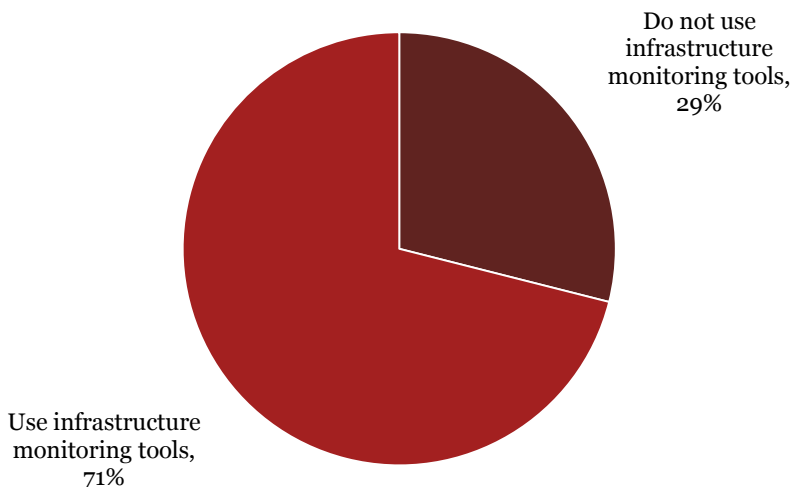


*“Enterprises will be ready to pay a premium as SDN is enhanced. The future will be SDN in a big way and the expectation will be that as you virtualize, you get a cheaper cost point.”*

*– CIO, Insurance Company*

### 3.5. Usage of infrastructure monitoring tools in the enterprise cloud data center market

#### Infrastructure monitoring adoption trend

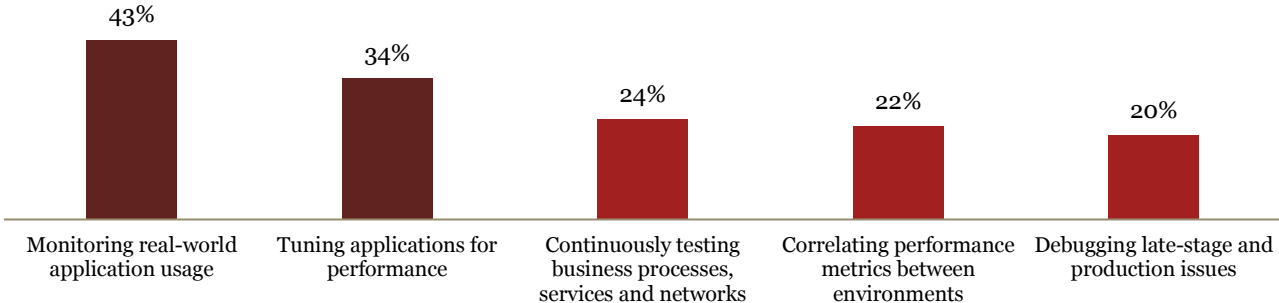


Greater access to data and demand for automation has driven growth (12.5% CAGR) for infrastructure monitoring solutions. Enterprises are looking for a single pane of glass management tool that has the ability to identify, diagnose, and prevent issues before they happen. As one CIO put it, “We need the ability to configure our network in a more flexible, automated manner, with greater coordination between the security and networking teams.”

Unlike SDN, infrastructure monitoring tools have been widely adopted, with 86% of respondents using networking technology today.

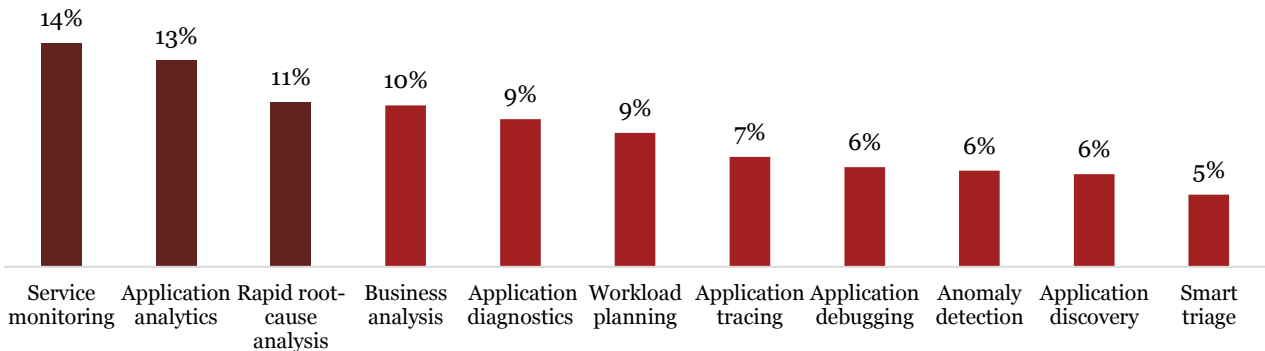
For companies seeking infrastructure monitoring solutions, the top use cases are monitoring real-world application usage and tuning applications.

**Infrastructure monitoring use cases**



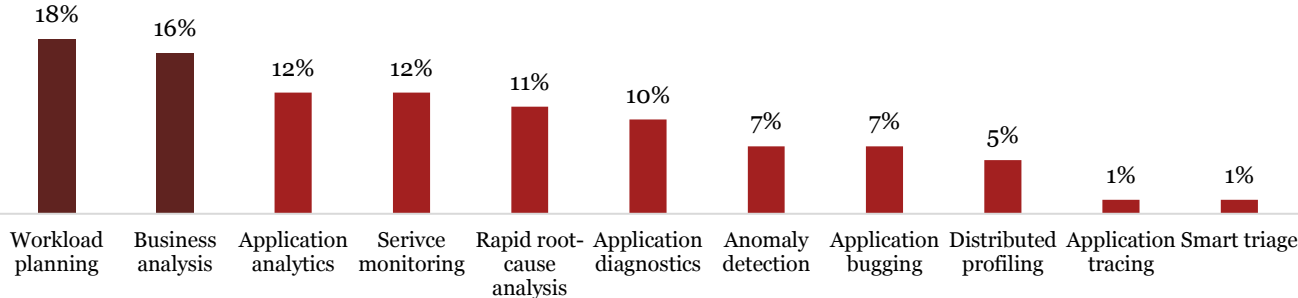
Companies looking to purchase infrastructure monitoring tools prioritize service monitoring, application analytics, and rapid root-cause analytics when selecting products.

**Infrastructure monitoring buying criteria**



However, in APAC, the main buying criteria for infrastructure monitoring solutions are workload planning and business analysis.

**Infrastructure monitoring buying criteria - APAC**



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# Who to contact

The following PwC professionals contributed their experience, knowledge, and expertise to produce this paper.

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In addition to the above contacts, Xun Wang, Senior Associate, Management Consulting and Ryan Gaynor, Associate, Management Consulting, provided key analysis and insights for this report.