AN IDC INFOBRIEF

The Sustainable Colocation Datacenter: The Heart of the Hybrid Multicloud Environment

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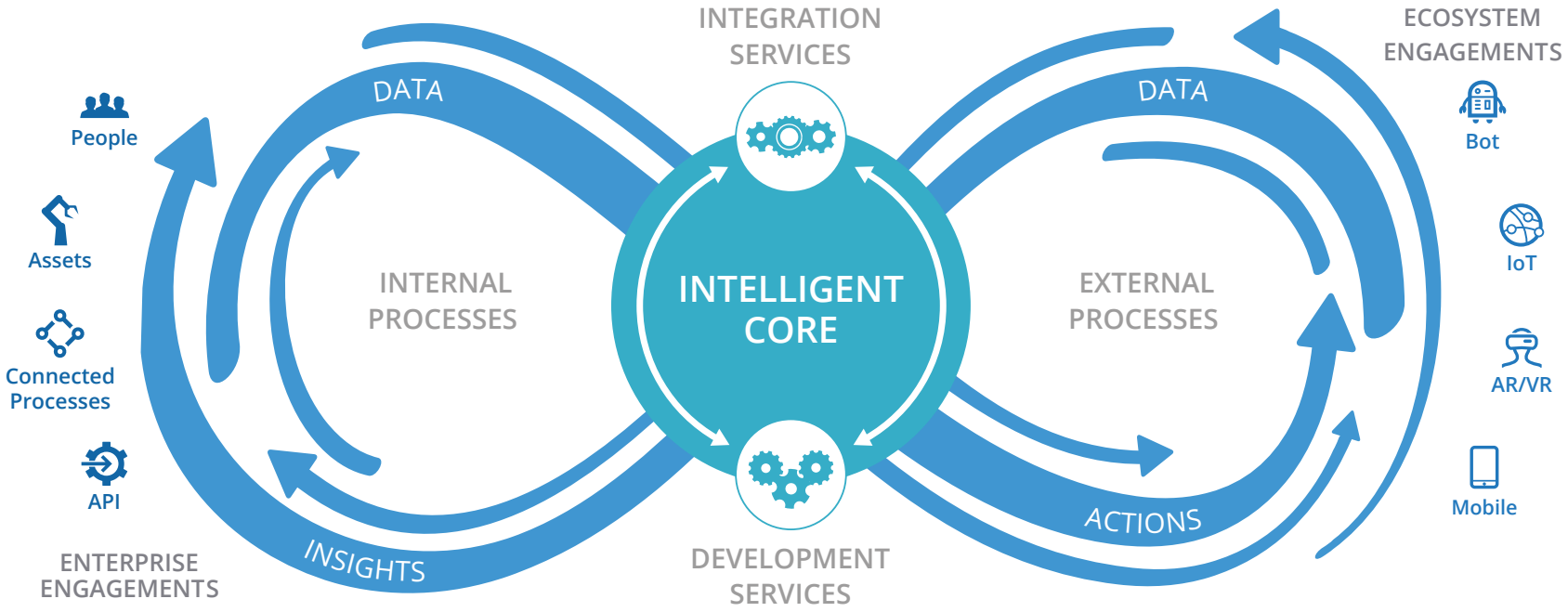
Overview

Even before the advent of COVID-19, many enterprises were actively engaged in transforming their ICT infrastructure, datacenters (DC) and business models. **COVID-19 has only put the exclamation point on the need for these digital transformation efforts.**

Modernized infrastructure, industrial scale datacenters, and workloads in many cloud services are now becoming common. Always-on and compliant infrastructure is critical for most enterprises and hyperscalers these days. Business resiliency is top-of-mind for most executives and business continuity disaster recovery (BCDR), a part of essential strategy as they look to provide high-quality, secure DC infrastructure with high uptime to support digital initiatives. **The role of the colocation datacenter is now at the very core of enterprises' digital environment.**

The Digital Platform is Built on Hybrid MultiCloud

The hybrid multicloud datacenter environment brings together legacy and cloud infrastructure in an integrated and secure on-premise, colocation and public architecture. This complexity is integrated through open architectures to create an intelligent core that supports new customer-facing digital workloads. Often colocation datacenters serve as the heart of the hybrid multicloud environment due to their support for physical and virtual connectivity, dense workloads and community ecosystems of industry clouds.



1. Cloud-based API strategies that **orchestrate** exchange of data across your ecosystem

2. Agile application architectures on platform as a service (PaaS) using microservices and containers

3. New customer experience technologies that fully support customer and ecosystem-facing business models

4. Foundation for "digital trust" through identity, vulnerability, and threat management across all services

5. An intelligent core based on data management, cognitive, artificial intelligence (AI), and machine learning

Hybrid Multicloud is Accelerating Across the Regions

There is strong appetite in both US and Asia/Pacific excluding Japan (APeJ) to shift equipment and applications to new datacenter environments. In the US, software as a service is particularly attractive in the finance and manufacturing industries. In Asia/Pacific excluding Japan (APeJ), intentions to move towards private cloud are strong in these same industries.

Companies intend to manage the equipment and applications in datacenters by shifting more workloads to:

United States

	Finance (n=80)	Manufacturing (n=56)	Retail and Wholesale (n=19)
1st	Software as a Service (SaaS)	Software as a Service (SaaS)	Public cloud
2nd	Managed service providers	Public cloud	Managed service providers
3rd	Private Cloud	Managed service providers	Private Cloud

Asia/Pacific excluding Japan

	Finance (n=78)	Manufacturing (n=80)	Retail and Wholesale (n=19)
1st	Private Cloud	Public cloud	Managed service providers
2nd	Managed service providers	Private Cloud	Public cloud
3rd	Software as a Service (SaaS)	Software as a Service (SaaS)	Private Cloud

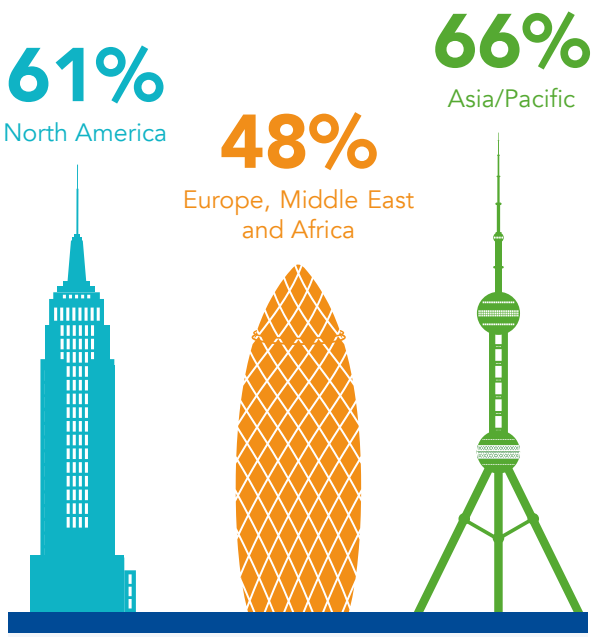
Private Cloud | Managed service providers | Public cloud | Software as a Service (SaaS)

Source: IDC APeJ Datacenter Operational Survey 2020 – Enterprise, n=376; IDC US Datacenter Operational Survey 2020 – Enterprise, n=250

Technology Resiliency Does Not Equate to Business Resiliency

Business Resiliency:
The ability for an organization to rapidly adapt and respond to business disruptions, while maintaining continuous business operations and its core sense of purpose.

Technology Resiliency:
Ability for an organization to quickly adapt its technology to accommodate new patterns of use.

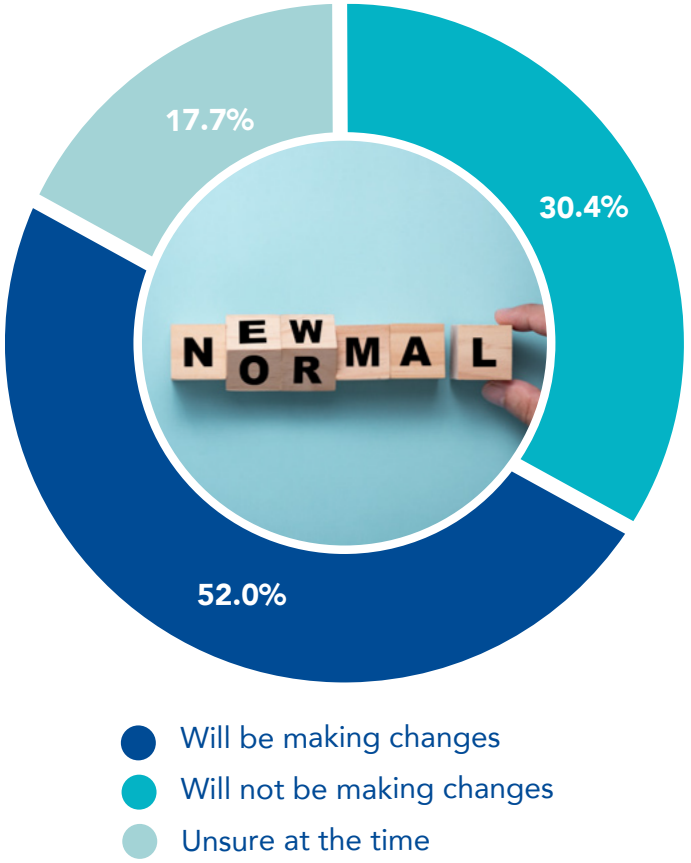


Technology Resiliency

59%

of organizations are reporting "very" or "extremely resilient

A majority of companies will be making changes to make themselves more technologically resilient, in response to their performance during COVID-19



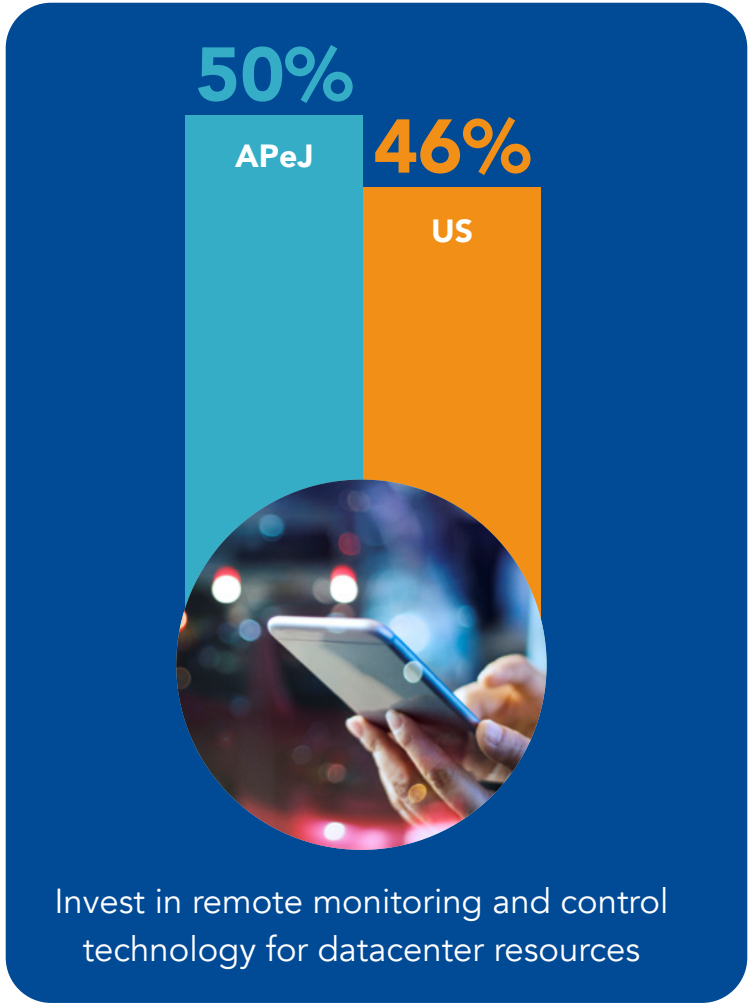
Source: COVID-19 IMPACT ON IT SPENDING Survey (Survey conducted during 7th July to 20th July period), IDC, July, 2020, N= 844 WW technology decision makers

Sustainability – Countering the Impact of COVID-19 on Datacenter Operations

Due to COVID-19, enterprises are now facing the challenge of providing reliable access to business applications of consistent performance to a remote workforce. Pressure is being placed on both the core and the edge. Supply chain constraints have also interrupted plans for deploying new workloads.

Businesses are planning to invest significantly in remote monitoring and control technology to better manage their datacenters from afar. There is also a strong intent to pass management of datacenter operations to cloud, service, and colocation providers.

Colocation datacenters as the "green" alternative to aging and inefficient enterprise datacenters.



Invest in remote monitoring and control technology for datacenter resources

Outsource more functions to a managed service provider

Source: IDC Datacenter Operational Survey 2020 – Enterprise; US, n=250 and APeJ, n=376

The Implications of Datacenter Modernization

Organizations are deploying a range of next-generation applications involving cognitive, artificial intelligence (AI), machine learning and augmented reality at both the core and edge, in order to digitally transform.

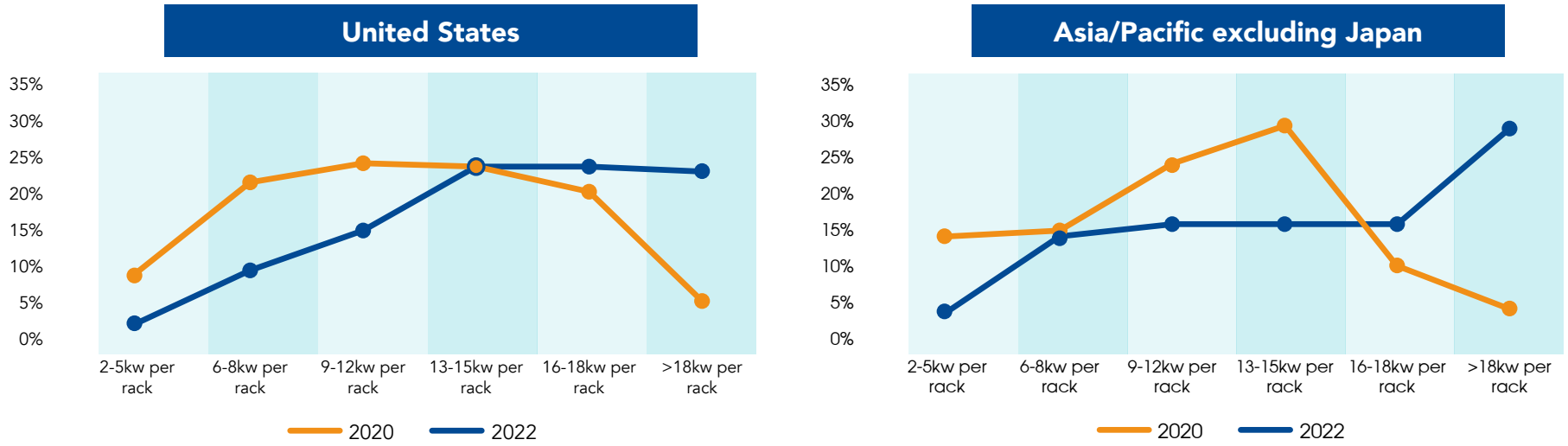
Next-generation workloads require high-density compute including high performance computing, converged, hyperconverged and composable.

The three tiers of traditional architecture—compute, network, and storage—converge in modern infrastructure. Software and storage are extracted from underlying hardware, allowing deployment on any hardware (that meets technical specifications). This simplifies configuration, reduces IT capital expenses, avoids hardware lock-in and optimizes total cost of ownership.

Key capabilities organizations will acquire are the ability to collect, store, manage and analyze data. Secure access to information, advanced analytics and AI solutions enables a shift from "data rich" to "data driven."

Modern infrastructure consumes much more power and so rack density will significantly increase in both APeJ and US from 2020-2022.

Average Power Density Per Rack in Datacenters



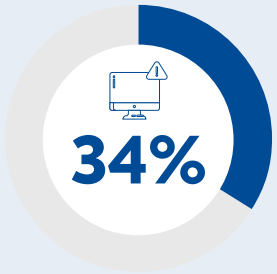
Source: IDC Datacenter Operational Survey 2020 – Enterprise; US, n=250 and APeJ, n=376

Downtime Due to System Failure is Slowing Deployment Times

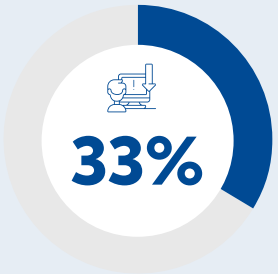
Apart from system downtime and slower deployment times which are consistent across regions, there is great variability across other factors.

Top 3 problems faced by enterprises in the last 12 months

APEJ



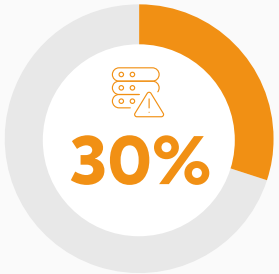
Latency and performance issues



Downtime due to human error

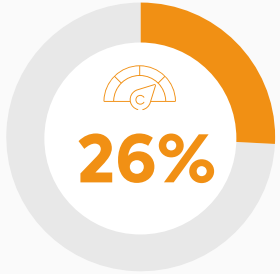
Regulatory or compliance issues

US



Inability to accurately plan for capacity needs

Data security breaches

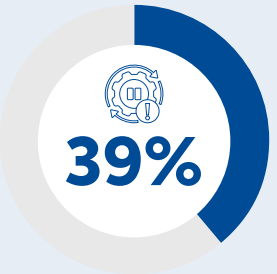


Latency and performance issues

The top 3 issues enterprises faced due to problems in the datacenter

APEJ

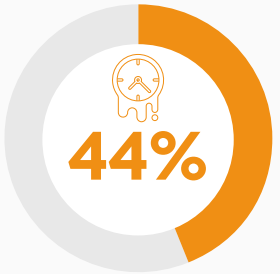
Slower deployment times



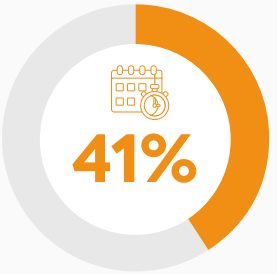
Lost business due to datacenter downtime

Data security breaches

US



Slower deployment times



Inability to meet deadlines

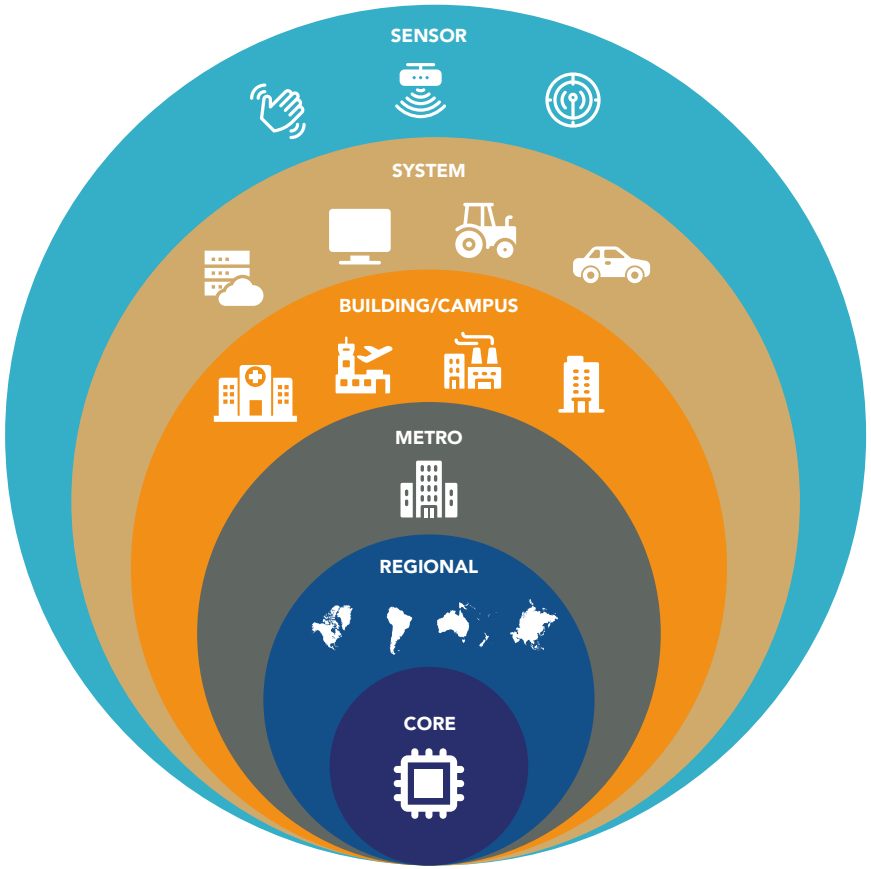
Data security breaches

Source: IDC Datacenter Operational Survey 2020 – Enterprise; US, n=250 and APeJ, n=376

Defining the Edge

Edge IT is not a single type of device nor a single kind of location. Some enterprises choose to compare the edge IT ecosystem to an inverted multilayer wedding cake, ranging from millions/billions of sensors to a central core residing in a few enterprises or cloud datacenters. A more useful metaphor is a set of rings. Each ring varies in depth and density.

Enterprises are pushing to the edge, as the pace of digital transformation quickens and the Internet of Things (IoT) develops more. In APeJ 64% (n=376) and US 81% (n=250) of enterprises plan to deploy more IT services at edge locations.



Source: IDC's Edge IT: The Engine Powering Digital Transformation

Considerations for Best Technologies/Platforms for Edge Investments

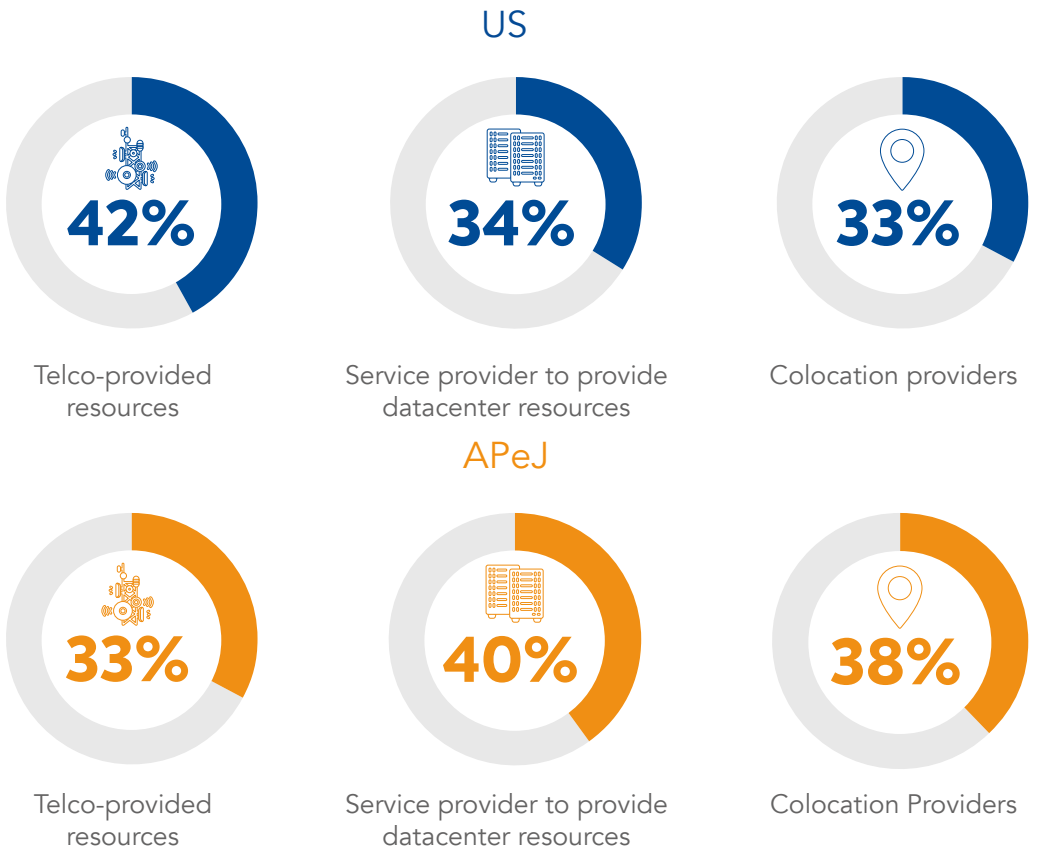
Core-edge integration. Edge computing must be functionally and logically treated as an extension of the firm's core, not "bolted on" to the firm's main infrastructure. A mismatch can lead to downtime and unavailability, resulting in disparity between expected and actual service levels.

"Always-on" approach to security. Security can no longer just be about physical access to the datacenter, or access to the network and applications. This is due to the rise of edge computing, which spans both physical and digital security, and data collection devices, which can compromise the entire business' integrity.

New form factors. IDC surveys indicate significant plans for deployment of edge datacenters on the following: Converged infrastructure, and cloud networking, hyperconverged and gateway aggregation appliances as well as bespoke/self-built infrastructure.

Outsourcing of edge infrastructure deployment. In the IDC APeJ and US Datacenter Operational Survey 2020, respondents indicated they would utilize a range of service providers to deploy edge infrastructure including colocation providers (APeJ: 38% and US: 33%) and telcos (APeJ: 33% and US: 42%).

Enterprises plan to deploy IT services at the edge in the following manner:

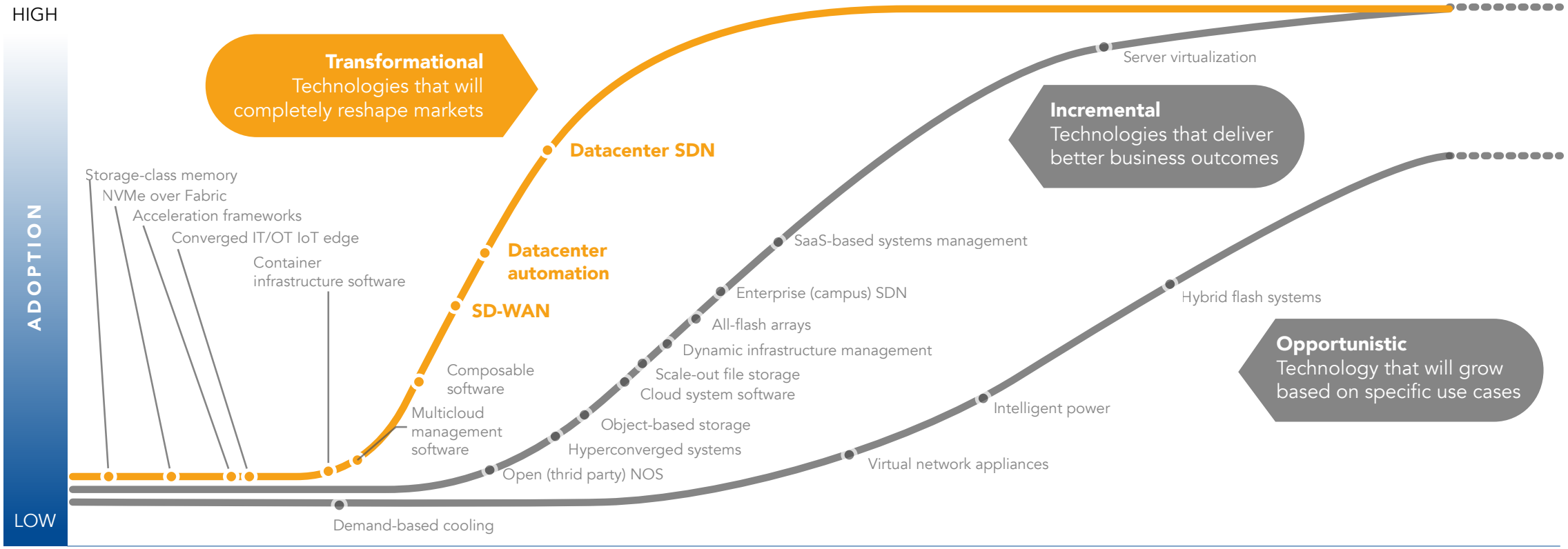


Source: IDC Datacenter Operational Survey 2020 – Enterprise; US, n=250 and APeJ, n=376

Importance of Software-Defined Technologies for Managing Datacenters and Edge

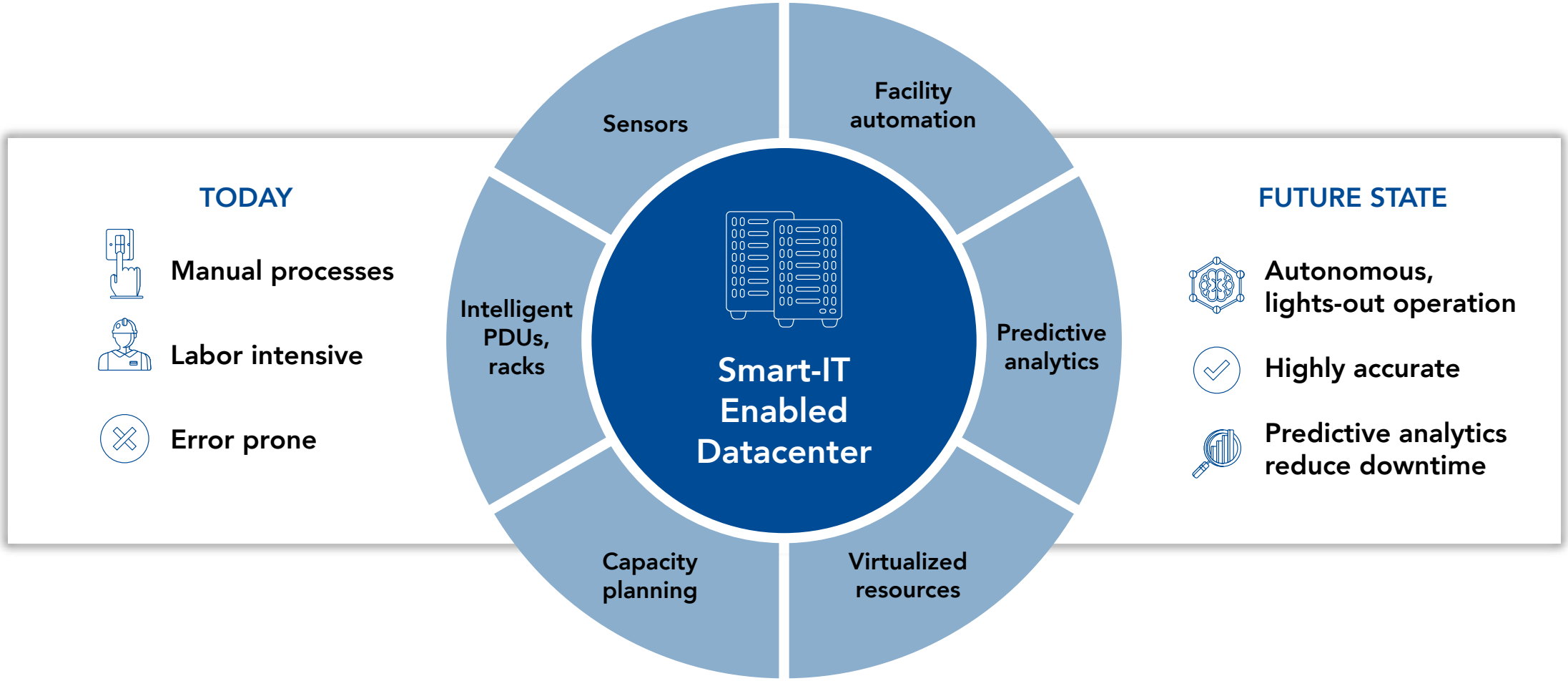
Software-defined infrastructure is managed by software with minimal human intervention and enables policy-based automation of IT operations such as monitoring, provisioning and configuration.

IDC techscape for software-defined architecture



Smart IT-Enabled Datacenters

Today's legacy datacenters need to be transformed through a range of new technologies to become smart IT-enabled datacenters which are less labor intensive, easier to manage and less error prone.



Characteristics of Third-Party Datacenter Providers

APeJ and US enterprises are looking for a range of facility, connectivity, and managed and cloud services when sourcing a colocation services provider.

Enterprises' top 3 selection criteria, when it comes to choosing a colocation provider

US

1st

Ability to support IT service in edge locations

2nd

Ability to access many managed, network and cloud services

3rd

Ability to support 5G connectivity

APeJ

1st

Ability to connect with my own infrastructure colocated in other markets

2nd

Investment in renewable energy sources and green initiatives

3rd

Ability to ensure physical asset security

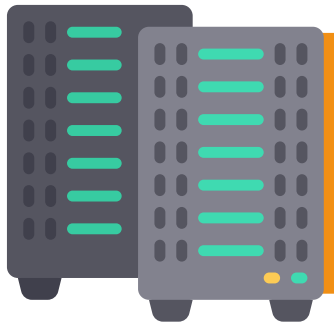
Source: IDC Datacenter Operational Survey 2020 – Enterprise; US, n=250 and APeJ, n=376

Modern DC Networks: All About the Applications and Business Outcomes

Datacenter networking has been irrevocably altered by cloud.

We're advancing toward an autonomous, self-driving network:

- Simple, declarative management
- Comprehensively automated
- Timely insights from pervasive, real-time visibility (exception-based data triggers) across the distributed landscape
- Capacity to autonomously detect, troubleshoot and remediate network-performance and -security incidents
- Proactive rather than reactive



Like other modernized IT infrastructure, the network should be defined by **what it achieves and enables** rather than for its underlying mechanisms.

Need for Multicloud Datacenter Network

The hybrid multicloud datacenter environment requires a software-defined Wide Area Network (WAN) fabric to facilitate connectivity between clouds.

Specifications of software-defined network (SDN) fabrics and overlays that are extended to public clouds

The datacenter network needs to support hybrid/multicloud.

Consistent network and security policies need to extend from the datacenter to public clouds.

Visibility needs to inform intent/policy and facilitate network management across the multicloud environment.

The datacenter network needs to support hybrid/multicloud application portability.

Cloud Connectivity, Application Delivery Networking

Thirty-nine percent of enterprises are considering using more software, platform and infrastructure as a service (SaaS/PaaS/IaaS) in datacenter-related matters, in response to what their organizations have been facing due to COVID-19[1].

Benefits of the "As-A-Service" Model

- Shift from hardware-based and -defined to software-driven and -defined network delivery
- Elastic scale and flexibility, self-service provisioning
- Abstracted management and control, and data planes with declarative intent or policy
- Ability to work seamlessly and securely through orchestration, across a multicluster and multicloud landscape
- Comprehensive automation for infrastructure agility with intelligent automation, directed by policy, informed by pervasive visibility and moving toward greater autonomy and automated remediation
- Ability to support all form factors – VMs, bare-metal, containers, cloud
- Ability to turn separation of concerns (NetOps/DevOps) into reconciliation of interests

Source: 1. IDC APeJ Datacenter Operational Survey 2020 – Enterprise, n=376"

SaaS Application Service Acceleration

Users of mobile devices, IoT sensors, and customers and staff working from home due to COVID-19 requirements are demanding the same application speed performance that they received in central locations.

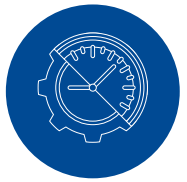
Fast and Available SaaS Applications

Edge applications driven by mobility, IoT and COVID-19 are subject to network inhibitors such as latency, congestion, and unpredictable user-experience.

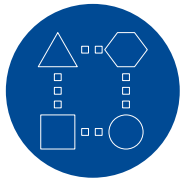
Cloud-based, fully managed SaaS acceleration services ensure consistent performance of SaaS applications irrespective of place or distance through end-to-end acceleration and performance measurement of SaaS applications.

Services can include built-in software-defined enterprise content delivery network (ECDN) for great user experiences of live and on-demand video.

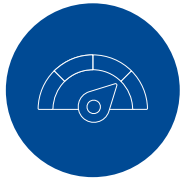
SaaS Application Acceleration Services Benefits



Agile and easy deployment
Fast and simple consumption-based service that is spun up in the cloud and utilizes a dedicated, central console for user management.



Flexible
Application services easily adapt to global consumption requirements, with SaaS accelerated to mobile devices, IoT sensors, buildings, and campuses.

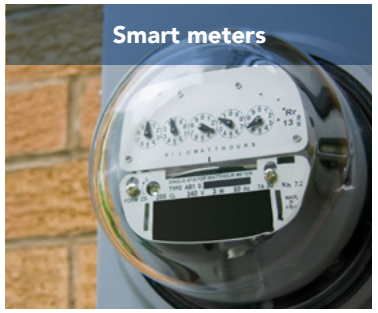


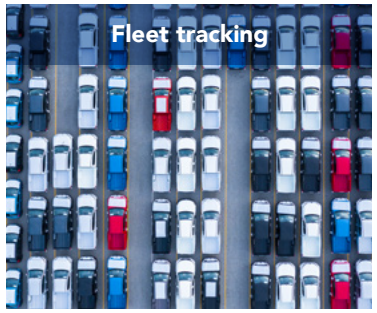
Speed, reliability and availability
Latency mitigation and network bandwidth reduction decreases congestion and improves SaaS performance significantly.

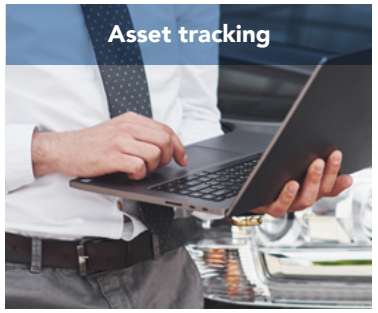
Efficient
Concurrent services optimize pricing models.

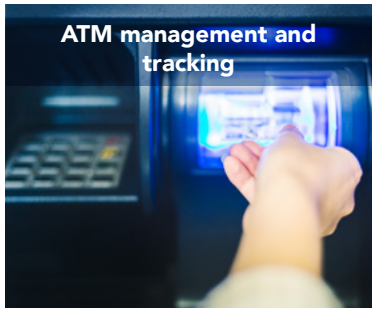
Smart Solutions at the Edge Driven by the Internet of Things

ESTABLISHED









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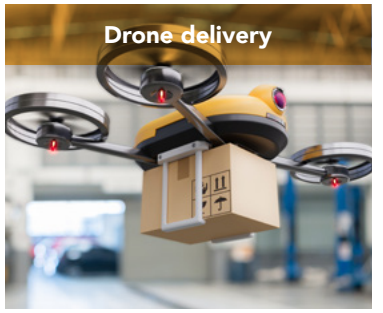

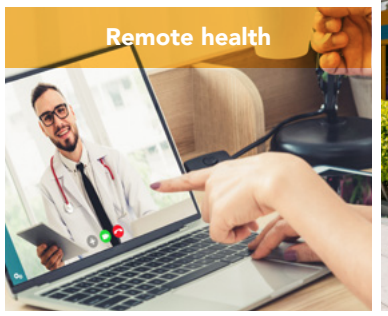

Requirements of Smart Solutions at the Edge

Latency

Ability to analyze events captured by IoT devices and to respond in a limited time frame.

Connectivity

IoT environments (field, shop floor) are often limited in connectivity and rely on local wireless connections without a strong and continuous link with the core.

Endpoint density and location

Diversity of endpoints located in multiple disseminated locations, often in harsh environmental conditions.

Data intensity

Large volumes of (streaming) data, impossible to be sent to a central location to be analyzed and stored.

Security/Privacy

Managing locally sensible data helps maintain high standards of security and privacy with local regulations.

Essential Guidance

Due to the pressures of COVID-19 and the acceleration of digital transformation, enterprises should review all aspects of their datacenter architecture including captive, colocation, cloud and the edge.

Given the key role that the colocation datacenter plays in the hybrid multicloud environment, consider what applications and workloads should sit at this heart and the underlying infrastructure.

Choose a datacenter services vendor whose capabilities and strategies are most closely aligned with your infrastructure requirements to support back office and customer-facing workloads and applications.

Evaluate your datacenter services partner based on their provision of geographic footprint; security and connectivity to IT-, network- and cloud-service providers; sustainability and resiliency; and support for software-defined and edge services.

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Customer needs are met through low-latency private lines, OTN, MPLS-VPN, high-speed Internet connections and other flexible connectivity options.

Cloud-Connectivity

Extensive cloud node coverage offers secure, stable, fast connections to multiple cloud platforms, such as eCloud, AliCloud, AWS, Microsoft Azure and Google Cloud.

Integrated Service Capabilities

End-to-end offerings mesh cloud implementation, migration, security, managed services and local support to companies.

Business Ecosystem

A global platform is integrated with major international and local carriers, the cloud, Internet service providers and media content providers.

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IDC Asia/Pacific
80 Anson Road
#38-00 Fuji Xerox Towers
Singapore 079907
T 65.6226.0330

idc.com

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