



Software-defined Networks **Power Multicloud DevOps and Digital Business**

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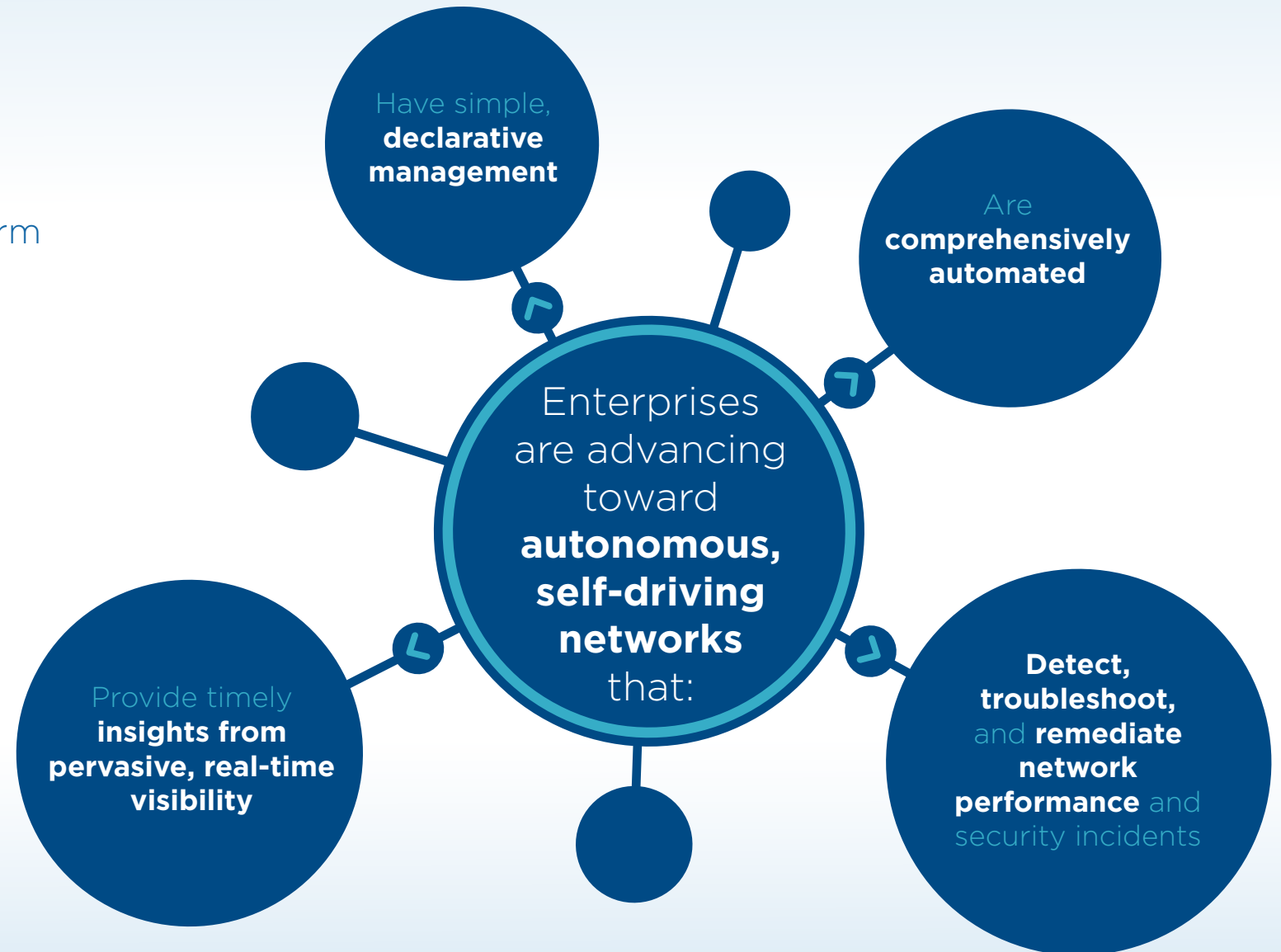


Modern Enterprise Networks Are All About Applications and Business Outcomes

IDC predicts that cloud, DevOps, and intelligent automation will radically transform network operations. As a result:

70% of IT departments

will RETHINK NetOps roles and staffing by 2022.



Source: IDC FutureScope: Worldwide Enterprise Network Infrastructure 2020 Predictions, #US45587119, October 2019

DevOps and Digital Innovation Are Accelerating Multicloud Usage

Developers and business decision makers drive cloud decisions.

Enterprises' Top Multicloud Drivers



93% of large enterprises have **adopted multicloud architectures** that include a mix of on-premises and public cloud platforms.

Source: IDC Multicloud Management Survey, 2019: Special Study, #US45020919, April 2019
n = 200 U.S.-based enterprise I&O decision makers using multiple infrastructure clouds

The Power of Containers and Kubernetes

Containers and Kubernetes provide open standards for consistent DevOps deployment, scaling, migration, and management across multiple clouds and on-premises infrastructure platforms.

67%

Today

Percentage of enterprises that have **already adopted DevOps methods** and tools to promote Agile development and faster innovation.

74%

Today

Percentage of organizations that are **implementing, piloting, or actively using microservices.**

80%

by 2024

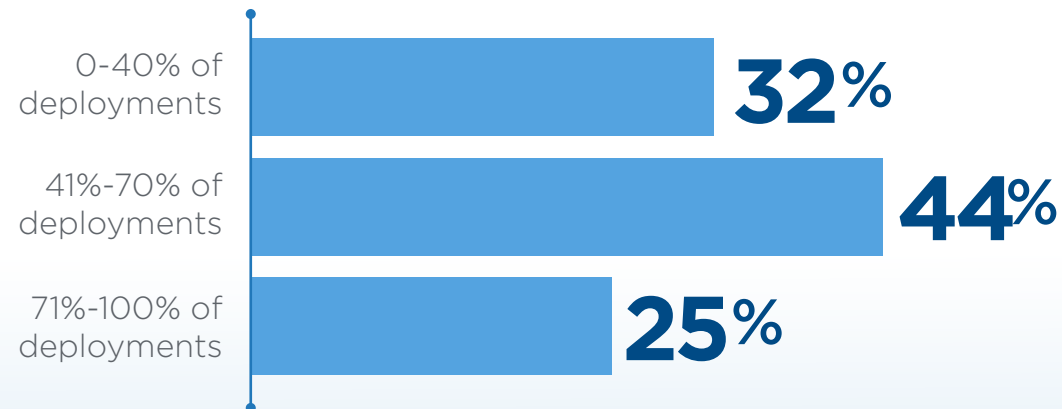
Percentage of all **new applications developed** using a programming language that will be deployed in containers.

Sources: IDC FutureScape: Worldwide Developer and DevOps 2020 Predictions, #US44636519, October 2019; IDC, PaaSView and the Developer, #US45301419, June 2019, n = 2,500; IDC FutureScape: Worldwide Cloud 2020 Predictions, #US44640719, October 2019

Many Apps Will Be Developed in the Public Cloud but Deployed in On-Premises Platforms

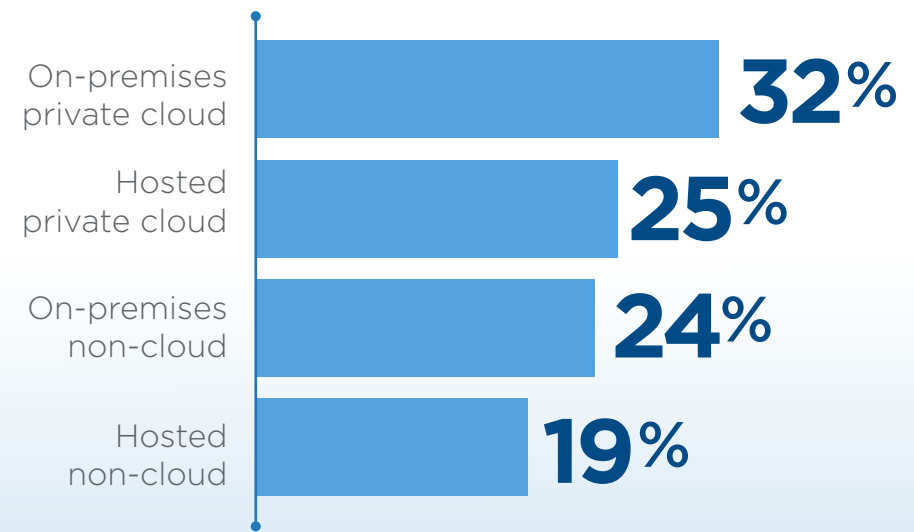
68% of developers noted that >40% of apps developed in the public cloud are not deployed in the public cloud in production.

Q. What percent of applications built on the public cloud for test and development purposes are ultimately NOT deployed in a public cloud in production (meaning they are deployed on-premises or in a hosted environment)?



Private cloud is the most common production-grade location of choice for apps that were originally developed in the public cloud.

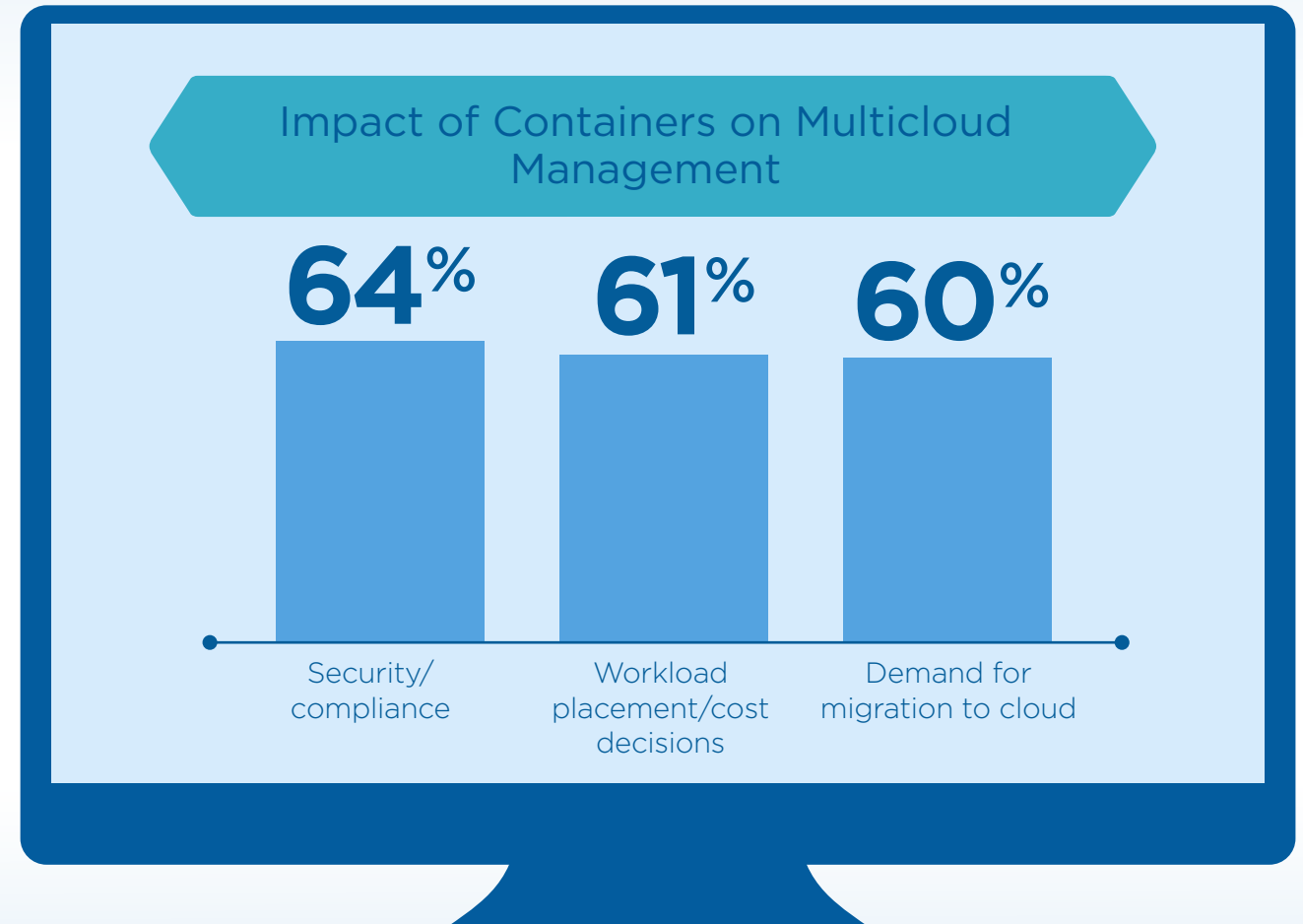
Q. Approximately what percent of applications developed and tested on public clouds are ultimately deployed in production elsewhere? Specify where.



Source: IDC, PaaSView and the Developer, June 2019
n = 2,051, 2,500

Containers Create Additional Multicloud Compliance and Networking Challenges

- › Traditional IT operations skills, workflows, and tools are built for domain-specific operations and slow rates of change.
- › Rapidly scaling infrastructure demands can drive unpredictable costs in a consumption-based world.

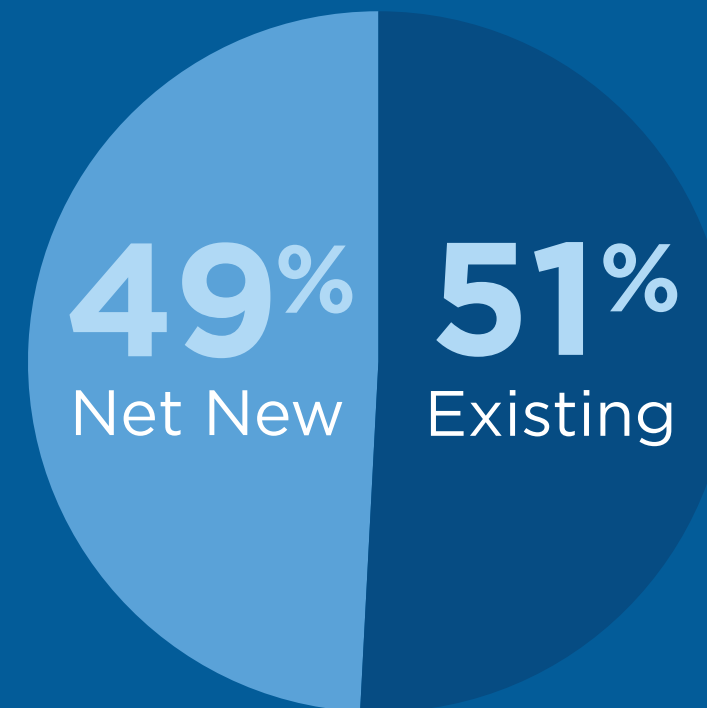


Cloud-native apps that **provide modern end-user consumer style experience** online must often integrate with existing systems of record, data stores, and workflows.

Modernization of Existing Stateful Workloads with Persistent Data Requirements Raises New Challenges

Source of Deployed Containers

- Network traffic patterns become less predictable and more distributed.
- Storage capacity requirements vary widely and need to scale quickly.
- Consistent application experience depends on reliable data access and infrastructure availability.
- Managing data mobility, cost, and performance is critical to success.



Both new and existing applications are becoming containerized

Source: IDC's Enterprise Infrastructure Market Pulse: 2Q19 Market View Insights into Deployments of Containers, #US45326519, June 2019, n= 413

Edge Computing Will Extend the Enterprise Network Footprint by 2023



By 2021, over
90%

of enterprises worldwide will rely on a mix of **on-premises/dedicated private clouds, several public clouds, and legacy platforms** to meet their infrastructure needs.

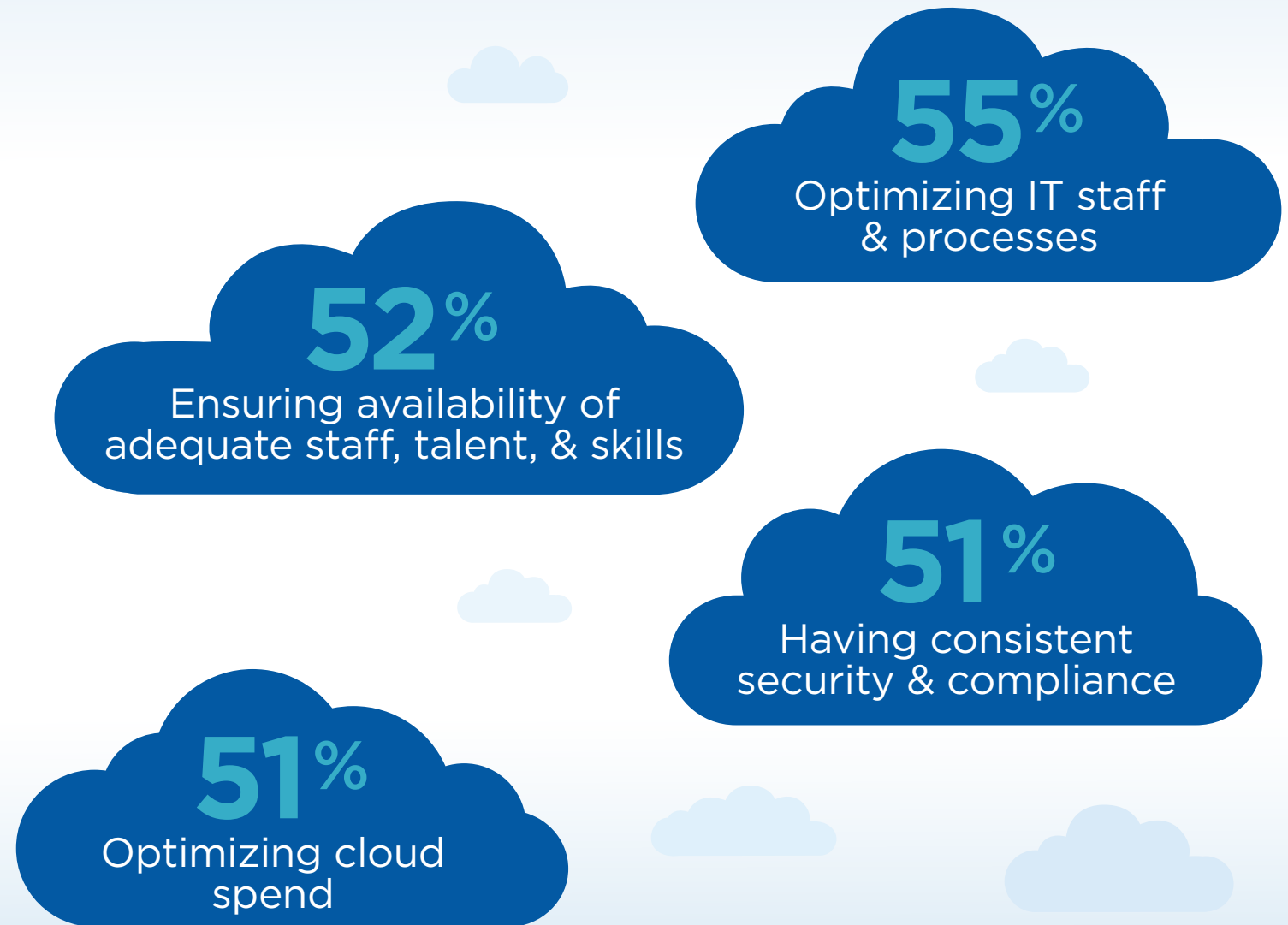
By 2023, over
50%

of **new enterprise IT infrastructure deployed will be at the edge** rather than corporate datacenters, up from less than 10% in 2019.

Sources: IDC FutureScape: Worldwide Cloud 2020 Predictions, October 2019;
IDC FutureScape: Worldwide IT Industry 2020 Predictions, #US45599219, October 2019

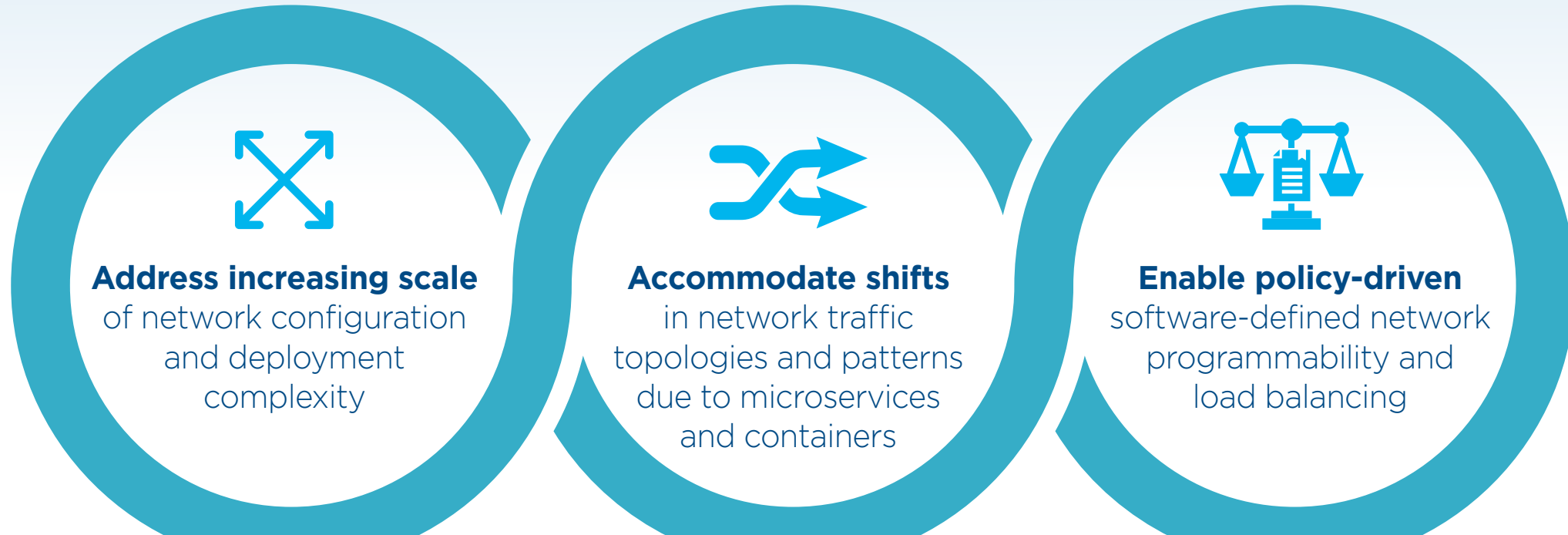
Most Pressing Multicloud Management Priorities Require Automation and Analytics

- Leveraging staff with automation and analytics.
- Ensuring consistent management and security available via on-premises and cloud/SaaS options.
- Unifying policies and controls across all datacenter, edge, and cloud platforms.
- Scaling investment in people and tools to match rapid evolution of clouds and containers.



Source: IDC Multicloud Management Survey, 2019: Special Study, April 2019
n = 200 U.S.-based enterprise I&O decision makers using multiple infrastructure clouds

Cloud Operations and Net Operations Converge



Address increasing scale
of network configuration
and deployment
complexity

Accommodate shifts
in network traffic
topologies and patterns
due to microservices
and containers

Enable policy-driven
software-defined network
programmability and
load balancing

Top multicloud management selection criteria:

54%

Ability to create
more standardized IT
environments

49%

Increasing process
automation and IT staff
productivity

49%

Strength of the vendor's
ecosystem

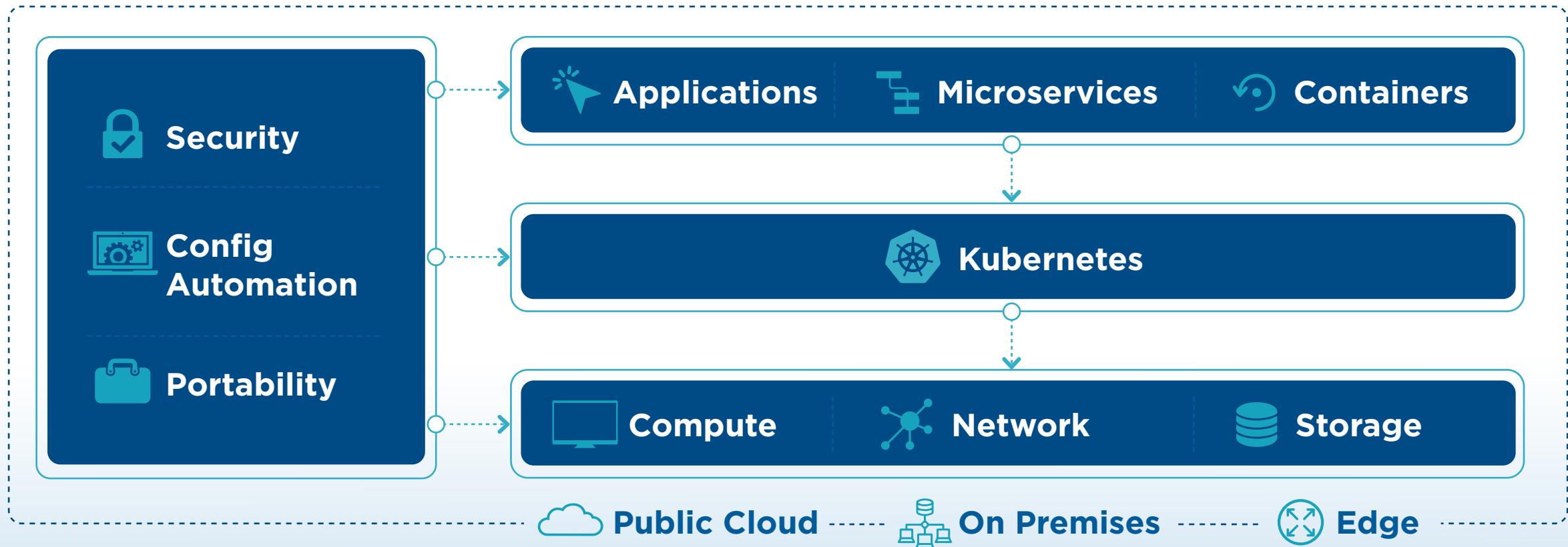
46%

Consistency of
multicloud visibility and
operations

IDC Multicloud Management Survey, 2019: Special Study, April 2019
n = 200 U.S.-based enterprise I&O decision makers using multiple infrastructure clouds

Consistent Automation Required Across Apps, Clouds, Datacenters, Networks, and Edge

- Kubernetes provides an open platform for application portability and policy control across diverse infrastructure options.
- Consistent Kubernetes APIs enable programmable configuration, migration, and optimization across clouds and on-premises resources.



Software-defined Networks Are Critical for Multicloud Digital Agility

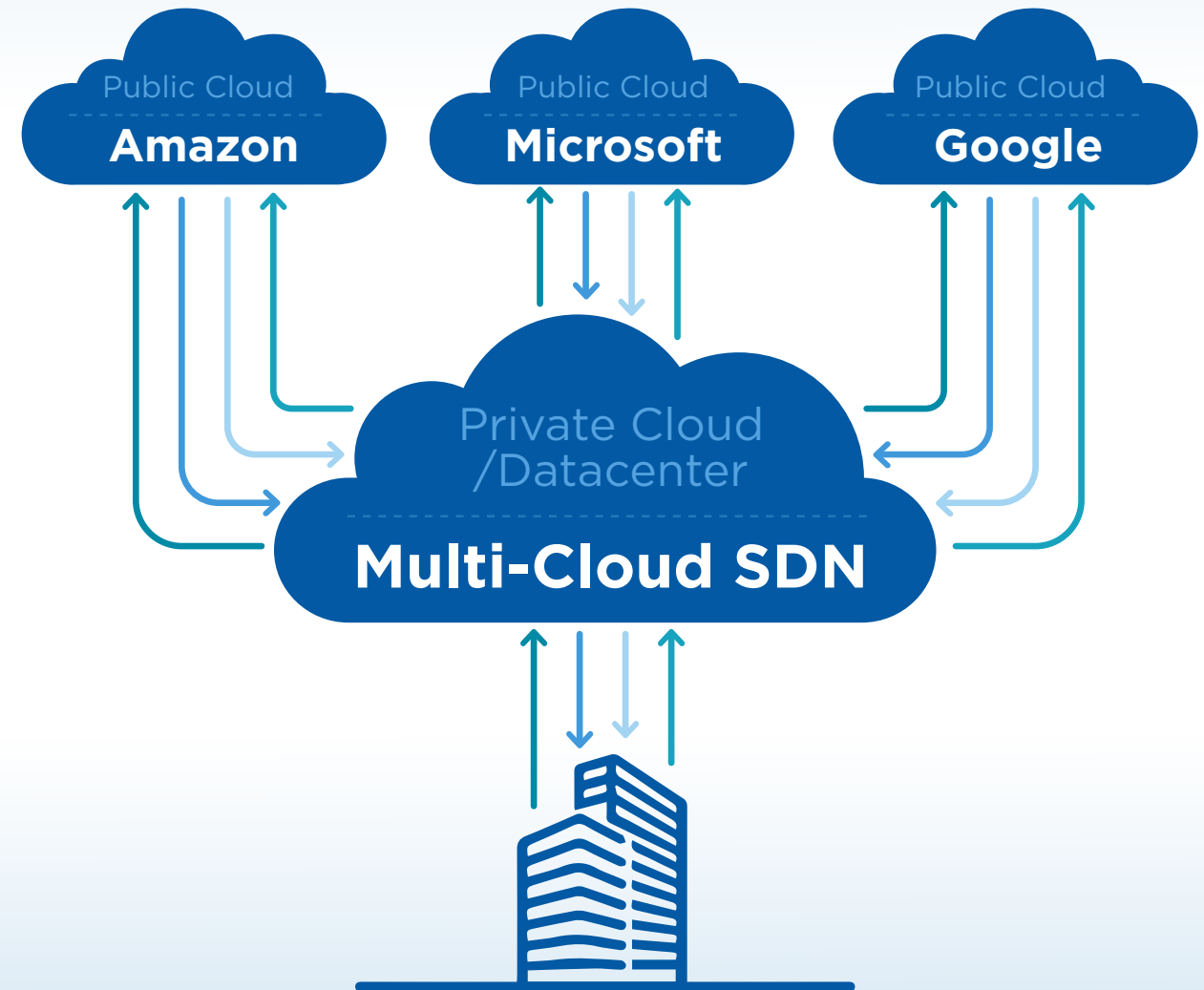
By 2023, more than

60% of large enterprises will adopt **multicloud software-defined networks (SDN)**

for operational simplicity and consistent network and security policies across hybrid IT environments.

SDNs overcome limits to business agility as app and infrastructure demands scale:

- > Automated provisioning
- > Programmatic management
- > Integration with cloud orchestration



Sources: IDC FutureScape: Worldwide Enterprise Network Infrastructure 2020 Predictions, October 2019;
IDC FutureScape: Worldwide Developer and DevOps 2020 Predictions, October 2019

Message from the sponsor

Cisco and Google Cloud differentiation

Networking & Security

Cisco ACI, SD-WAN and Stealthwatch Cloud*

Turnkey Operations

Pre-integrated systems, quick deployment, Cisco Intersight SaaS management

GKE on Enterprise Datacenters

Enterprise hyperconvergence and Kubernetes storage with Cisco HyperFlex

Integrated & Validated

GCP Marketplace, KubeFlow/AI Hub reference architectures, Cisco-supported bundles

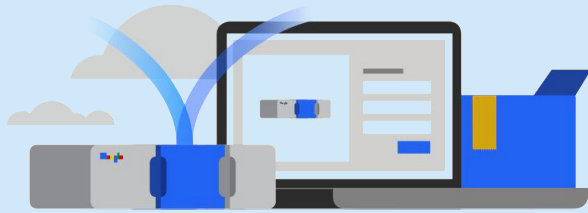
Application Performance Management

AppDynamics helps ensure a consistent application experience across multicloud environments

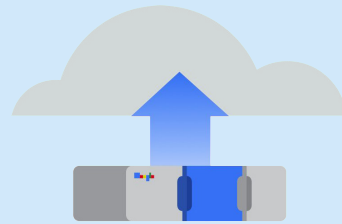
* Future releases

Message from the sponsor

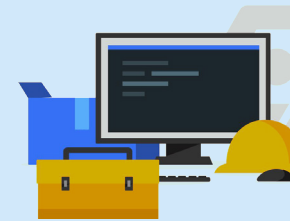
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We bring the cloud to you



The next generation
of hybrid cloud



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anywhere



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