Multicloud Innovation  Powered by Containers and Kubernetes

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93% of Large Enterprises Have Adopted Multicloud Architectures With On-premises and Public Cloud Platforms

n=200 U.S.-based enterprise I&O decision makers using multiple infrastructure clouds
Enterprises Demand Choice When Choosing Production Application Deployment Locations

Drivers of cloud adoption for production-grade workloads:

- **Security**: 29%
- **Cost**: 27%
- **High Availability**: 26%
- **Application Performance**: 25%

47% of applications developed on public clouds are deployed elsewhere for production (including on-premises and hosted private clouds as well as traditional datacenters).

Source: IDC, PaaSView and the Developer, #US45301419, June 2019, n = 2,500
Digital Transformation Fuels Container Deployments

500M new **logical applications** published by 2023

1.6x Expected increase in number of **enterprise developers** by 2025

Enterprises currently **split container deployments 50/50** between those run on-premises versus those run in public clouds.

Modernization of existing apps fuels significant container demand, raising new challenges:

- Existing stateful workloads with persistent data requirements raise new challenges.

- 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.

By 2022, the acceleration of legacy app modernization and net-new development will lead to 35% of production apps being cloud native — utilizing microservices, containers, and dynamic orchestration.

Source: IDC FutureScape: Worldwide Developer and DevOps 2020 Predictions, #US44636519, October 2019
By 2023, Enterprise Architectures Will Be Highly Distributed, Containerized, Agile, and Hybrid

- **66%** of firms will be beyond piloting AI/ML as part of application development, with nearly 10% optimizing AI/ML across development, design, quality, security, and deployment.

- **50%+** of new enterprise IT infrastructure deployed will be at the edge rather than corporate datacenters, up from less than 10% in 2019.

- **50%** of enterprise applications will be deployed in a containerized hybrid cloud/multicloud environment to provide agility, delivering a frictionless deployment and management experience.

- **40%** of organizations will release code to production daily for select applications, up from 3% in 2019.

Enterprises Looking to Unified VMs, Kubernetes, and Multicloud Management Processes and Tools

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% 2024
Percentage of all new applications developed using a programming language that will be deployed in containers.

70% of enterprises will deploy unified VMs, Kubernetes, and multicloud management processes and tools to support robust multicloud management and governance across on-premises and public clouds by 2022.

Most Pressing Multicloud Management Priorities

- Having automation and analytics working as staff multipliers.
- Having a choice of 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 I&O decision makers using multiple infrastructure clouds
Containers Create Additional Multicloud Management Concerns

- Traditional IT operations skills, workflows, and tools are built for domain-specific operations and slow rates of change.
- Shifting infrastructure demands can drive unpredictable costs in a consumption-based world.
- Security and compliance challenges arise when infrastructure and workload change and scale on the fly.

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

Source: IDC Multicloud Management Survey, 2019: Special Study, April 2019
n = 200 U.S.-based enterprise I&O decision makers using multiple infrastructure clouds
Currently, what aspects of container management are top priorities for the organization managing production applications?

- **Automation**: 37% Increasing use of automation
- **Infrastructure Cost**: 33% Managing cost and life cycle of container infrastructure
- **Multicloud**: 31% Optimizing container runtime costs across multiple clouds

Source: IDC Containers and Cloud Management Survey, May 2019

n = 189 enterprise IT decision makers representing U.S. organizations with $1+ billion annual revenues
Currently, what aspects of container management are the **top priorities** for your development and DevOps organizations?

**Integration**
- Integration of CI/CD tool chains and microservices management
- **42%**

**Infrastructure**
- Managing cost and life cycle of container infrastructure
- **39%**

**Monitoring**
- Deploying and updating monitoring agents across development tool chains
- **37%**

**Images**
- Consistent management of container images and registries
- **37%**

Source: IDC Containers and Cloud Management Survey, May 2019
n = 189 enterprise IT decision makers representing U.S. organizations with $1+ billion annual revenues
Kubernetes Provides Operational Consistency Across Clouds, Datacenters, and Edge Infrastructure

- Enables flexible choice of infrastructure and workload placement.
- Provides common policies and consistent multicloud automation.
- Offers API access and programmability.
- Has a strong ecosystem that fuels open source innovation.

Security

Config Automation

Portability

Applications

Microservices

Containers

Kubernetes

Compute

Network

Storage

Public Cloud

On Premises

Edge
Google Cloud and HPE GreenLake: A strategic partnership

Technology:
- Delivering a true hybrid cloud solution
- Jointly validated designs for Anthos with HPE SimpliVity, HPE Nimble Storage dHCI, and HPE Synergy

People:
- Plan, migrate, and deploy
- Enabling advisory and professional services
- Collaborative support services

Economics:
- Choice in how customers consume
- as-a-Service model for Anthos with HPE Greenlake

Empowering organizations and their innovators to embrace hybrid cloud
Message from the sponsor

Expanding choice of Containers as a Service for HPE validated designs for Anthos

▷ Faster value
  Accelerate app and services deployment

▷ Simplified IT
  Free up people to do their best work

▷ Cloud economics
  No capital investment, no overprovisioning

▷ Proper control
  Performance, latency, risk, cost

Google Cloud + HPE GreenLake