

Architecting the Future: The Building Blocks for IT Transformation

Government agencies understand that the cloud is a critical part of the foundation for IT transformation. The task now is to build on that foundation – not just migrating more applications to the cloud but taking full advantage of cloud’s innate capabilities. That means moving away from data center-first approach and toward a secure, scalable hybrid and multi-cloud architecture. And it means building cloud-native apps based on microservices and containers, and leveraging Kubernetes to manage those containers. And for many, it also means adopting DevSecOps to create a culture of continuous improvement.

But agencies won’t get there all at once. Here is a look at how agencies are building toward this future.



More than 75% of global organizations will be running containerized applications in production by 2022, up from less than 30% in 2020.

Different Drivers, Different Speeds

In government, agencies are adopting cloud-native architectures in three waves:

Cohort 1: So-called pathfinder organizations, often found in the intelligence community, adopt DevSecOps, cloud-native technology and related solutions at scale for mission-critical work.

Cohort 2: Defense agencies and others that initially embraced open-source technology to accelerate their move to cloud-native are moving toward more of an enterprise cloud-native approach.

Cohort 3: Risk-averse civilian agencies are looking for mature products with Federal Risk and Authorization Management Program (FedRAMP) approval and managed services options.

80% of enterprises, by the end of 2021, will be able to shift to cloud-centric digital infrastructure in half the time it took before the pandemic.



The Building Blocks

Open source tools and technologies make it possible to quickly build, deploy and manage containerized or cloud-native applications on hybrid cloud infrastructures. Here are some of the common building blocks that agencies choose:

A set of common and consistent application programming interfaces (APIs) that make it easy to connect public and private cloud platforms in a hybrid, multi-cloud environment.

Hybrid cloud managers, or HCMs, which provide a unified dashboard for the cloud dashboards, effectively masking the underlying cloud infrastructures and simplifying their use.

A cloud application platform based on Cloud Foundry – an open source, multi-cloud application platform that uses Kubernetes for orchestration and management – to develop cloud-native containerized applications, which then can be deployed on any platform within a hybrid cloud environment.

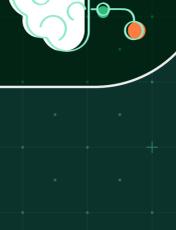
An enterprise-class container management solution that enables IT and DevOps professionals to more easily deploy, manage, and scale container-based applications and services.

An application delivery solution, also known as Platform as a Service (PaaS), which can handle all the heavy lifting involved in developing, deploying and automating the life-cycle management for cloud-native containerized applications.

\$331.2 billion is the amount of projected public cloud spending by 2022.



At least 90% of new enterprise apps will embed AI by 2025.

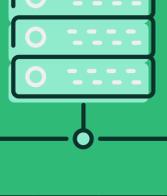


Kubernetes: Three Options

In many cases, the linchpin of a cloud-native environment is the Kubernetes cluster, a set of node machines for running containerized applications. It provides the ability to schedule and run containers across different platform – whether they are physical or virtual, and whether they are on premises or in the cloud.

Here are three basic approaches:

Bare Metal Servers
Kubernetes on racks of bare metal servers delivers a scalable container infrastructure without the overhead of virtualization.



Virtual Machines
By integrating Kubernetes clusters with your virtual machine (VM) infrastructure, you can run containers on top of VMs and take advantage of snapshots, disaster recovery, and other capabilities of the VM infrastructure.



Cloud Service Providers
By installing Kubernetes on cloud-based compute instances, you can leverage an infrastructure-as-a-service platform to manage the full lifecycle of all your resources.



\$8.2 billion is the expected size of the container market by 2025.



A Unified Approach

The goal is to unify these clusters to ensure consistent operations, workload management and enterprise-grade security. Here are the key attributes of an enterprise-grade solution

Agnosticism – The ability to manage any Kubernetes-based platform in both private and public clouds.



Seamless hybrid cloud support – The ability to manage applications across the multi-cloud environment, as well as in airgap installations and edge deployments.



Centralized identity and access management capabilities – Including support for key industry standards, such as Lightweight Directory Access Protocol (LDAP) and Security Assertion Markup Language (SAML).



Centralized visibility and troubleshooting – Providing a unified interface that works across multiple clusters.



Centralized policies – Allowing centralized configuration of policies across the full environment.



\$4.3 billion is the projected market for application container technologies in 2022.

From the Data Center to the Tactical Edge

The flexibility of Kubernetes clusters is key. Look for a Kubernetes solution that is designed to run in a variety of environments – not just in the data center or cloud but at the tactical edge – that is, where users are working the field, meeting the mission where it is. Such environments lack the infrastructure found in traditional IT settings. According to Gartner, organizations should look for solutions that address four key requirements:

1. Reduced latency.

2. Requirements for offline or autonomous operation.

3. Optimized bandwidth utilization.

4. Adherence to regulatory or security guidelines based on the physical placement of the applications and data in an explicit location, such as a province or country.



1.7 million developers worldwide use Kubernetes.



For federal agencies looking to transform their operations, simply being in the cloud isn’t good enough. Open source, cloud-native technology and tools provide agencies with building blocks for a modern enterprise that has the flexibility, scalability and security needed to meet their mission requirements, both now and in the future.

SUSE RGS delivers multi-cloud and hybrid cloud Kubernetes capability that unifies the entire cloud experience. A single fabric allows agencies to access multiple clouds and services across the entire ecosystem.

For more information: <https://susergs.com>



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