

Open hybrid cloud for the Department of Defense

Freely move workloads to any public cloud or the edge, for better services or lower costs

“This Digital Modernization Strategy is the cornerstone for advancing our digital environment to afford the Joint Force a competitive advantage in the modern battlespace.”¹

DoD Digital Modernization Strategy

Executive summary

An open hybrid cloud is a key element of the U.S. Department of Defense (DoD) [Digital Modernization Strategy](#). With an open hybrid cloud, agencies can build and manage a full IT stack in a standard, unifying platform that works across bare metal, virtual machines, private clouds, public clouds, and at the edge. This approach provides the DoD the ability to freely move applications and workloads to whatever infrastructure provides the greatest capability to deliver on mission needs. Workload mobility can be determined by many factors, including data locality, compute availability, or which infrastructure provides the best pricing or services across public cloud, on-premise cloud, or tactical edge servers (e.g., for battlefield deployments).

To acquire an open hybrid cloud capability, agency developer teams need to build and deploy applications on an open container platform. Agencies that use a cloud service provider’s proprietary container platform, in contrast, may find that moving applications to another cloud requires significant time and effort.

This overview explains why open source platforms and services are critical to a successful open hybrid cloud strategy.

Mission value of open hybrid cloud for the DoD

DoD agencies are leading the way in modernizing legacy applications and moving them to public clouds. In fiscal year 2020, the DoD was responsible for 129 of the 272 government IT projects migrating to the cloud.² One factor leading this adoption is cost savings. Capital costs for datacenters, infrastructure, and people are converted to an ongoing operational expense. Another incentive is interagency data sharing. By moving applications into the cloud, programs can more easily break down disparate data sources, allowing cloud-native applications to share data from any internal or external source using application programming interfaces (APIs). In contrast, most legacy applications keep their data locked inside, leading to decisions made with incomplete data.

Agencies with hybrid clouds gain additional benefits. A hybrid cloud spans two or more environments, including any combination of public clouds, private clouds, and edge deployments (Figure 1).



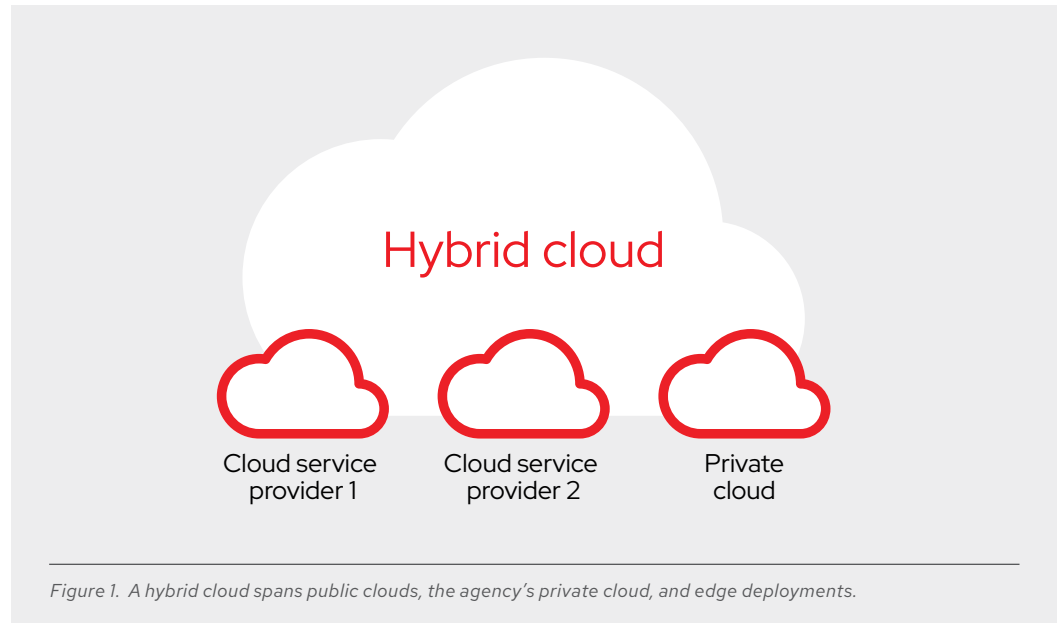
facebook.com/redhatinc
@RedHat
linkedin.com/company/red-hat

¹ Department of Defense. “DoD Digital Modernization Strategy,” July 12, 2019.

² Cornillie, Chris. “These IT Programs are Moving to the Cloud in FY 2020.” Bloomberg Government, May 16, 2019.

“Existing DoD cloud security is accomplished by compliance with controls and security guidelines largely derived from security best practices for on-premises computing. To expand use of cloud, DoD will continually update controls and guidance, and also begin to adopt technologies and security operations that are inherently cloud native ... Security will be automated to the maximum extent possible and leverage advanced cloud capabilities such as AI to provide high reliability and assurance without excessive cost or administrative burden.”¹

DoD Digital Modernization Strategy



Advantages of an open hybrid cloud for the DoD include:

- ▶ **Additional cost savings.** The agency can freely move workloads between public clouds to take advantage of new pricing or capabilities.
- ▶ **Cyber security advantage.** The agency can choose where to host workloads and data based on compliance, audit, policy, or security requirements. An agency might want to protect particularly sensitive workloads on a private cloud, for instance, while operating less-sensitive workloads in a public cloud.

Avoiding vendor lock-in

The mission advantages of a hybrid cloud result from the elasticity of using the cloud service provider's infrastructure services as needed, and being able to dynamically scale up or down based on demand. Use of the provider's other services, such as orchestration, database, storage, and developer services, while appealing, can lead to vendor lock-in.

To illustrate, imagine that soon after an agency has deployed workloads on public cloud A, public cloud B begins offering significantly lower costs or better artificial intelligence (AI) services. An agency that used cloud A's container orchestration platform cannot move workloads to cloud B without the risk of months of rework and millions or tens of millions of dollars in development costs.

To avoid vendor lock-in, use an open source container platform, like Red Hat® OpenShift®, instead of using the cloud service provider's own container platform. Applications deployed on an open source container platform can run on any major public cloud or edge servers without modification. These applications are infrastructure-agnostic.

To avoid making the application dependent on one public cloud, use the cloud service provider solely for Infrastructure-as-a-Service (IaaS). Use open source technologies for the container platform, integration, and database.

Red Hat approach

Red Hat offers open source technologies that help agencies build, deploy, and maintain workloads on any public or private cloud, moving them freely at any time:

- ▶ **Red Hat OpenShift Container Platform.** Container-based applications deployed on Red Hat OpenShift can run on any infrastructure, as virtual machines or on bare metal. The application behaves and is managed the same way on any infrastructure.
- ▶ **Red Hat OpenShift Application Services.** Applications distributed across multiple public and private clouds and edge servers can share data. Technologies include application hosting, integration, and messaging.

Many open source tools are available for the development pipeline and database.

Hybrid cloud agency considerations

Cloud service provider pricing and capabilities change frequently. By building an open hybrid cloud, the DoD retains the agility to adopt innovations or lower costs as soon as they become available, on any cloud service provider's platform. When selecting a container platform and services for an agency's hybrid cloud, preserve the agency's choice of cloud service provider by asking the following questions:

How much time and effort will be needed to move applications to another public cloud or on-premise? Migrating applications built using the cloud vendor's tools generally require significant recoding. Applications built using an open source container platform can be moved freely, with no modification.

Are the skills developed by personnel transferable beyond the cloud service provider?

Some container platforms require skills that apply only to a specific cloud service provider's ecosystem.

How quickly will you have access to innovations in software development, deployment, integration, and operations? The answer depends on the size of the developer community.

Learn more

Read more about how the [DoD partners with Red Hat](#). Learn about [Red Hat solutions for government agencies](#).



About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers integrate new and existing IT applications, develop cloud-native applications, standardize on our industry-leading operating system, and automate, secure, and manage complex environments. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500. As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.



facebook.com/redhatinc
@RedHat
linkedin.com/company/red-hat

North America
1 888 REDHAT1
www.redhat.com

**Europe, Middle East,
and Africa**
00800 7334 2835
europe@redhat.com

Asia Pacific
+65 6490 4200
apac@redhat.com

Latin America
+54 11 4329 7300
info-latam@redhat.com