

Cisco HyperFlex Multicloud Solutions

Establish your hybrid cloud architecture with Cisco HyperFlex systems as the foundation

Stay ahead with Kubernetes modernization

Your applications are quickly transitioning to collections of microservices. Usually they are implemented in containers that can run in any environment and any location in the core, cloud, or edge. Many applications are being modernized to deliver new business services. Specialized applications are opening new business opportunities. When they are implemented with artificial intelligence (AI) and machine learning (ML) algorithms, these workloads demand hardware acceleration in the infrastructure layer.

Your role, as part of the infrastructure or IT operations team, is to choose building blocks that support this transition with:

- **Flexibility and security** to run any workload in any cloud. You have the responsibility for deploying applications in production, so choosing enterprise-grade solutions is important.
- **Business-critical data** maintained in your core data center with enterprise applications executing on site or in the public cloud. You need to support increasingly compute-intensive big data and analytics applications, and be vigilant about security concerns because your data is your most important asset.
- **Always-on computing** at edge sites that extend business services to remote locations. For example, point-of-sale systems in retail locations; inferencing engines that detect anomalies in surveillance footage, and data aggregation at industrial sites.

Benefits

- **Simplified multicloud deployment** and management to ease your transition
- **Run your workloads securely and consistently** across multiple clouds
- **A common infrastructure building block** for data center and edge workloads—Cisco HyperFlex™ systems
- **A cloud-agnostic solution** with no vendor lock-in
- **Scale workloads easily** whether at the core, cloud, or edge

Container management challenge

Most organizations are adopting container management platforms to facilitate continuous integration and continuous delivery (CI/CD) methodologies. These platforms can simplify deployment and management of containers, but they require solving new problems, such as:

- **Creating container management** that is consistent across the data center, public cloud, and the edge
- **Establishing enterprise-grade** end-to-end visibility, security, and networking
- **Enabling the same agility** and new features that your developers experience in the public cloud
- **Delivering support** for specialized applications such as AI, ML, and edge computing
- **Managing a distributed stack** to support these capabilities in all domains

Cisco HyperFlex Multicloud platform

Our solution solves these issues with a common infrastructure building block for your core and edge—Cisco HyperFlex systems. The foundational infrastructure (Figure 1) supports the major container platforms. These are, in turn, managed by multicloud management tools that enable deploying containers into multiple clouds. The container platforms and multicloud management tools are directed by hybrid architectures from the leading cloud providers, including Amazon Web Services (AWS), Google Cloud, and IBM Cloud.

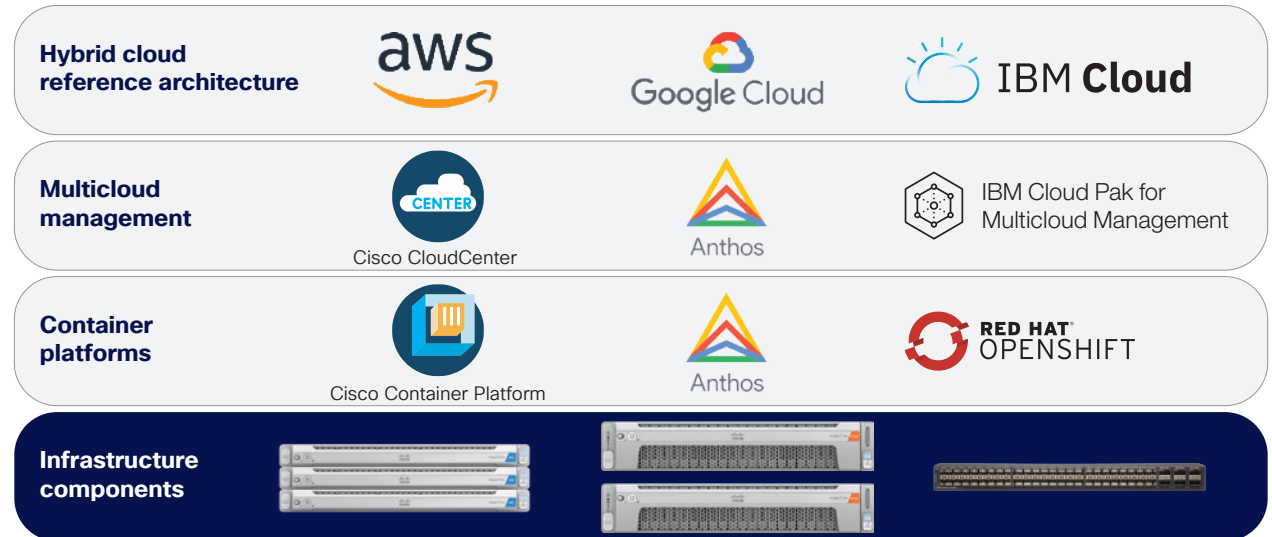


Figure 1. Hierarchy of multicloud platform components

Choosing Cisco HyperFlex as an enterprise-grade building block supports software-defined storage and computing, and sets you up for a smooth adoption of containerized applications and microservices. With Cisco HyperFlex systems as the infrastructure foundation, you gain the benefits of Cisco's flagship hyperconverged solution, including:

- **Reliable, persistent storage** for both virtualized and containerized applications
- **Simplified infrastructure** that can be deployed remotely using Cisco Intersight™ software as a service and doesn't require networking and storage administrators to get up and running
- **Independent scaling** of computing, storage, and even GPU acceleration resources, so you can tune your cluster with the balance your workloads require

- **Centralized, cloud-based management** through Cisco Intersight, management, monitoring, and a direct connection to the Cisco® Technical Assistance Center (TAC) for proactive support
- **Edge-optimized solutions** and consistent, large-scale deployment and management for remote locations

Manage a hybrid environment

Next you choose the hybrid architecture that can support virtualized and containerized workloads across all of your environments. You need a consistent environment to drive down costs and avoid security pitfalls inherent in complex solutions.

Since your developers are most likely already using the public cloud, you can choose your favorite cloud and use our integrated solutions to make them work seamlessly across all of your clouds—private and public—and at the network edge:

- **Google Cloud:** Managed by Google Cloud’s Anthos, this solution includes Google Kubernetes Engine (GKE) On-Prem, and it interoperates with other major cloud platforms.
- **Amazon Web Services (AWS):** Containers are managed through Amazon Elastic Kubernetes Service (EKS), or if you wish to deploy containers on AWS and other clouds, you can choose Cisco CloudCenter™ for multicloud management.
- **IBM Cloud:** IBM Cloud Pak for Multicloud Management supports multicloud and edge

applications. It uses Red Hat OpenShift for container management and supports AWS, Google Cloud, Azure, IBM Cloud, and on-premises private cloud.

Common architecture

Working with cloud technology leaders, we have developed hybrid architectures that can give you confidence and flexibility in your virtualized and containerized multicloud deployment, without being locked in to any one solution. All of our solutions implement a common approach, depicted in Figure 2. A Cisco HyperFlex cluster supports on-premises environments, including in the core data center and at the network edge. A common set of services support container management locally and into the public cloud that you choose. These services include:

- **Container platforms**
- **Microservices management**, including service discovery
- **Identity and access management** that secures both on-premises and public cloud environments
- **Monitoring, logging, and configuration management**

With a consistent set of services provided for all solutions, you can define your virtualized and containerized workloads, deploy in any cloud, and defy lock-in with the capability to deploy into your choice of cloud.

Enhanced support

Cisco HyperFlex systems give you simple and flexible core and edge infrastructure building blocks. With one of our three hybrid architectures we have developed with leading cloud providers, you can develop and deploy using the same interfaces your developers already prefer in the public cloud.

Choosing Cisco gives you the capability to expand your platform’s capabilities through any of the Cisco tools shown in green in Figure 2 and described in the sidebar. These enhancements help you establish an enterprise-grade environment that better supports workload deployment, resource monitoring, consistent networking, and security vigilance. Your choice can help you safely and efficiently extend your data center network from the core to the cloud and edge.

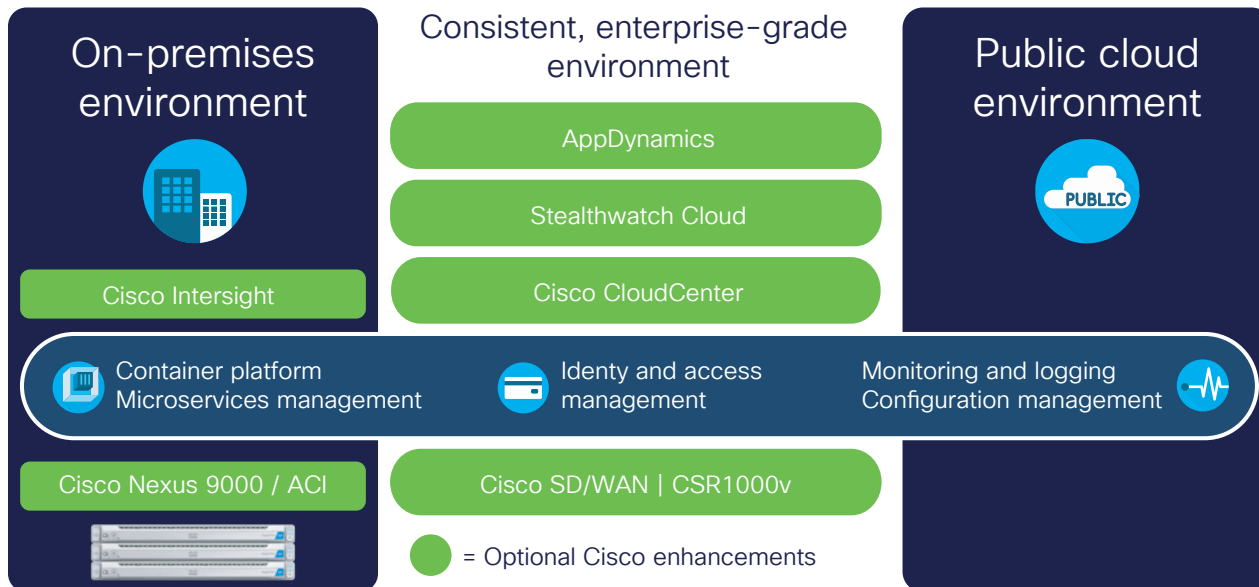


Figure 2. All of our simplified solutions can be enhanced with additional tools from Cisco

Enhanced value only Cisco can deliver

Cisco has built a comprehensive set of hybrid architectures with optional tools that enhance the management, functionality, and security of your multicloud environment. You have a choice of multicloud frameworks that you can use for virtualized and containerized support across all of your clouds. Here's how you can enhance your solution's functional characteristics:

- **Cisco Intersight:** This software-as-a-service management platform enables you to install, deploy, monitor, and maintain all of your clusters wherever they reside from an easy-to-use cloud-based portal. Direct connectivity to Cisco TAC simplifies and expedites problem resolution.
- **Cisco ACI® Multicloud:** Cisco Application-Centric Infrastructure (Cisco ACI) provides hardware-level support for software-defined networking. It can speed deployment, deliver hardware performance, and scale to any location or to any cloud with consistent, policy-based routing.
- **Cisco Nexus® 9000 Series Switches:** These industry-leading data center switches can operate as standard switches or they can support Cisco ACI.
- **Cisco CloudCenter:** This enhancement enables you to create abstract definitions of your virtualized or containerized workloads,

evaluate deployment performance and cost trade-offs, and then deploy in the cloud of your choice. Cisco CloudCenter takes care of all the details of translating your abstract definition into the specifics for the particular cloud you choose.

- **Cisco AppDynamics®:** AppDynamics discovers and maps your business application topology and measures how it uses IT resources so that you can make better-informed application placement decisions.
- **Cisco Stealthwatch® Cloud:** This comprehensive visibility and network traffic security analytics solution uses enterprise telemetry from your network infrastructure. It provides advanced threat detection, accelerated threat response, and simplified network segmentation using multilayer machine learning and entity modeling.
- **Cisco SD-WAN:** Increase user productivity by optimizing cloud and on-premises application performance with real-time analytics, visibility, and control. It helps your enterprise network reach into edge and cloud locations with policy-based efficiency, threat intelligence, and ease of management.
- **Cisco CSR 1000v Series:** This secure single-tenant router operates in the public cloud to securely connect your public cloud infrastructure to your enterprise data center.

The value of Cisco solutions

When you choose multicloud solutions based on Cisco HyperFlex systems, you can evolve your IT infrastructure. Our approach helps you optimize and modernize what you have and build on it. You have the option of public clouds you want to use today without limiting choices in the future. You gain a multicloud environment that enables your developers to use the same tools to manage their containerized environments regardless of their location. And you gain enterprise-grade support from the optional Cisco enhancements discussed in this overview.

Because we have established hybrid architectures with the major public cloud providers, our solutions can speed deployment and minimize risk. We help your operations teams accurately monitor your infrastructure, applications, and end-user response time, and maintain fast and secure connectivity.

For more information

Visit www.cisco.com/go/hyperflex.