

Cisco Cloud Application Centric Infrastructure

About Cisco cloud application centric infrastructure

Cisco® Cloud Application Centric Infrastructure (Cisco Cloud ACI) is a comprehensive solution for simplified operations, automated network connectivity, consistent policy management, and visibility for multiple on-premises data centers and public clouds or multicloud environments. The solution captures business and user intents and translates them into native policy constructs for applications deployed across various cloud environments. It uses a holistic approach to enable application availability and segmentation for bare-metal, virtualized, containerized, or microservices-based applications deployed across multiple cloud domains. The common policy and operating model drastically reduces the cost and complexity in managing multicloud deployments. It provides a single management console to configure, monitor, and operate multiple disjoint environments spread across multiple clouds.

Companies large and small have employed Cisco ACI™ on premises to remove complexity from the network and optimize it for application deployment and operations.

This architectural approach has also been adopted by over 65 ecosystem partners to automate workflows related to cloud management, orchestration, monitoring, and network services. As a result, IT organizations are able to work more strategically and deliver greater value to their company. Ultimately we want IT organizations to have the agility to deploy workloads in any location and any cloud, based on the business benefits and not technology limitations.

The Cisco Cloud ACI solution extends the successful capabilities of Cisco ACI in private clouds into public cloud environments. This solution introduces the Cisco Cloud Application Policy Infrastructure Controller (APIC), which runs natively in public clouds to provide automated connectivity, policy translation, and enhanced visibility of workloads in the public cloud. This solution brings a suite of capabilities to extend your on-premises data center into true multicloud architectures, helping to drive policy and operational consistency regardless of where your applications or data reside.

Trends and challenges

Enterprises have adopted digital initiatives to increase customer loyalty, create new revenue streams, and accelerate business growth. Enterprise application development in public and private clouds have reached a tipping point shifting toward containers. IT organizations are challenged to maintain governance, compliance, agility, flexibility, and TCO optimization for legacy, virtualized, and next-generation applications across multiple sites and clouds. The need for a solution that enables a consistent security and policy posture across all of these cloud environments has become critical for business continuity. As the adoption of multicloud strategy grows, the industry is demanding consistent policy, security, and visibility everywhere, with a simplified operating model. At the same time, the cost of the solution must be kept low to benefit from multicloud advantages.

Figure 1. Cisco Cloud ACI

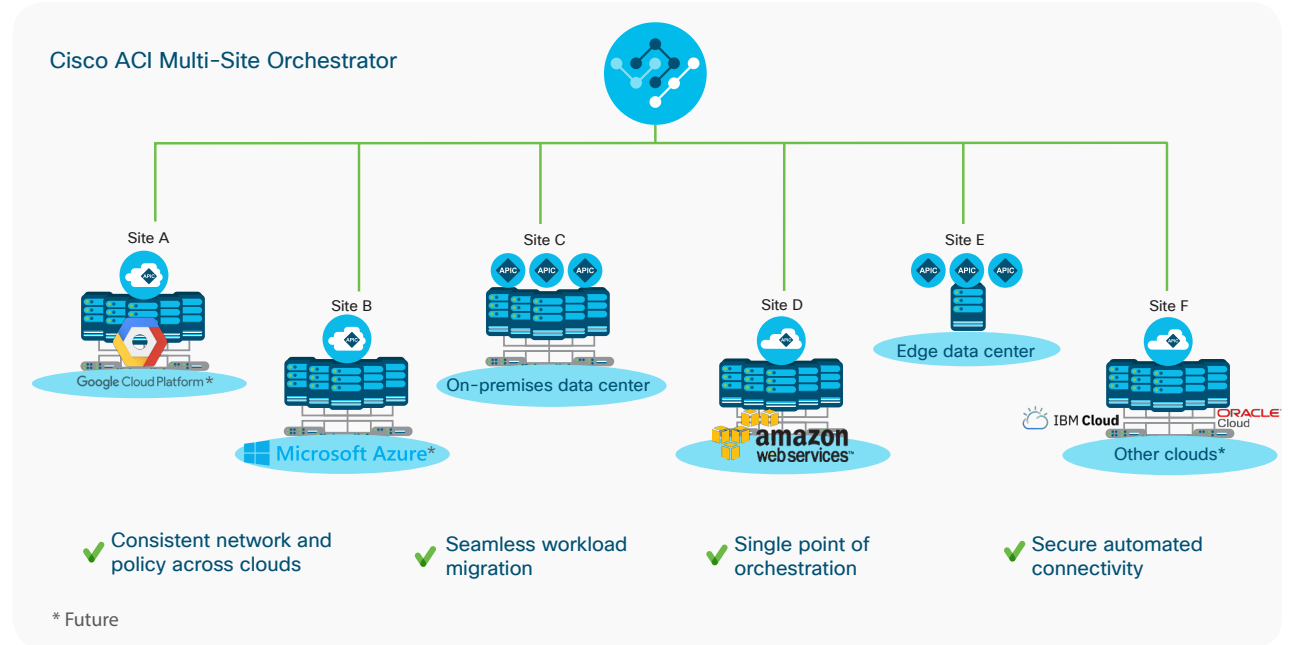
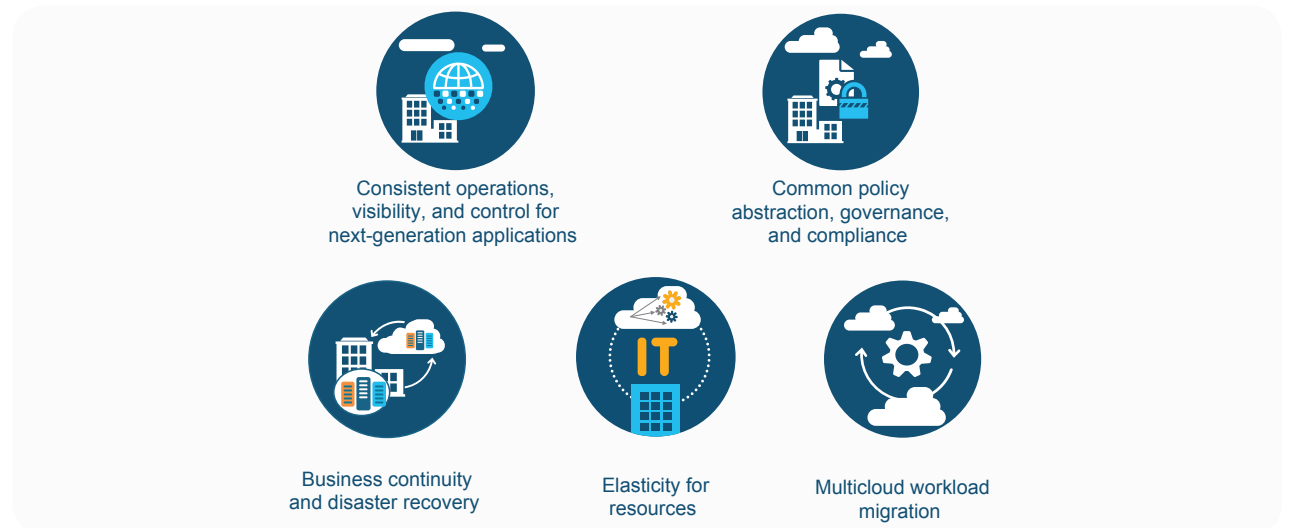


Figure 2. Cisco Cloud ACI solution capabilities



The main challenges in building a multicloud environment are:

1. Need for automated and secure interconnects between on-premises and multiple cloud instances.
2. Diverse and disjoint visibility and troubleshooting capabilities with no correlation across different cloud service providers; this results in complex governance and compliance models.
3. Multiple panes of glass to manage, monitor, and operate the multi-cloud instances.
4. Inconsistent segmentation capabilities.
5. Learning curve associated with each public cloud environment.
6. Inability to leverage consistent L4-L7 services integration in multicloud deployments.

Cisco ACI has delivered on the Software-Defined-Networking (SDN) promise of network automation and further simplified operations by delivering control and visibility based on application network policy. The next phase of Cisco ACI addresses extending this policy-driven automation from on-premises to multicloud instances. The Cisco Cloud ACI solution offers a coherent multicloud strategy delivering on the key pillars of automation, security, and simplicity.

Solution capabilities

Deploy next-generation applications across multiple clouds with consistent operations, visibility, and control

- Enable a common operational model across multiple cloud domains with simplified visibility and troubleshooting capabilities
- Integrate cloud-native services between on-premises data centers and public clouds
- Automate cross-domain service chaining of application traffic across various L4-L7 devices to scale and secure any application, anywhere

Enable common policy abstraction, governance, and compliance across heterogeneous cloud environments

- Implement a common whitelist policy model across a heterogeneous cloud infrastructure
- Simplify deployment of cloud-native, containerized, virtualized, or bare-metal applications with consistent segmentation policy, security, and visibility, in any cloud
- Deliver consistent application segmentation, governance, and compliance across multiple cloud instances

Enable business continuity and disaster recovery

- Allow organizations to maintain or quickly resume mission-critical applications using a back-up and recovery site in the public cloud
- Provide business continuity for organizations via always-on encrypted connectivity across every public cloud region and data center

Enable elasticity for resources across on-premises data center and cloud

- Automate and scale data center extensions into public cloud. Enable on-demand cloud bursting whenever on-premises data center workloads require additional cloud resources
- Provide on-demand agility, cost savings, and consistent security policy for any workload in any cloud location

Facilitate workload migration across multicloud environments

- Enable secure workload mobility across multiple cloud environments with consistent control and visibility
- Preserve the application policies, segmentation, and identity of the workload (IP mobility)

Solution benefits

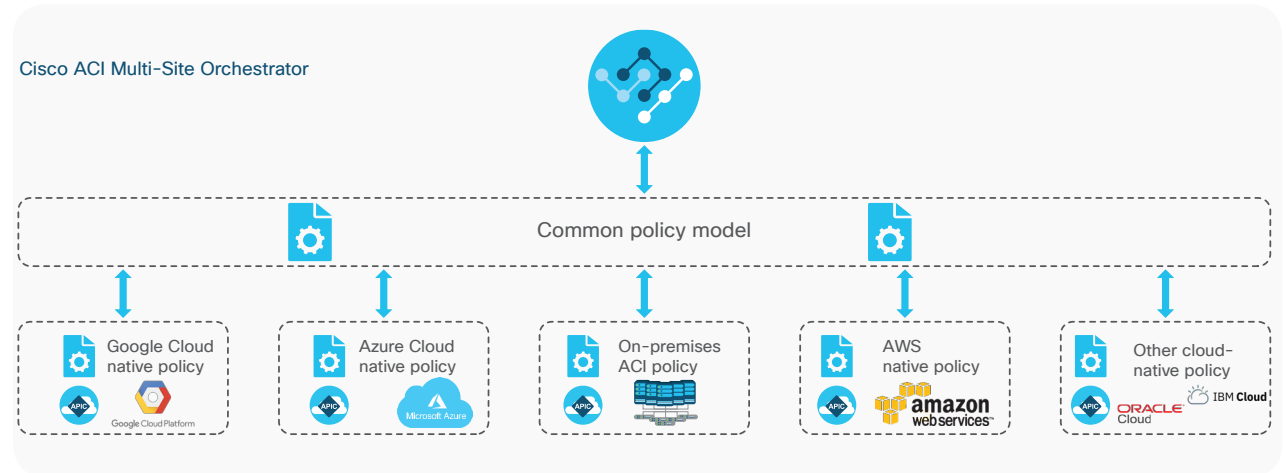
Automate and secure multicloud connectivity

With the Cisco Cloud ACI solution, organizations can use the same operating model on public cloud instances as they do with their on-premises data centers today. This solution provides a single management control point to automate inter-cloud connectivity, view the health of various cloud deployments, and consistently stretch policies into multiple cloud locations. The Cisco ACI Multi-Site Orchestrator acts as a single orchestrator for multicloud deployments and provides a normalized view of the various cloud sites in a single pane of glass. The Cisco ACI Multi-Site Orchestrator also provides an integrated view of application health across a multicloud to simplify troubleshooting and accelerate remediation.

Enable next-generation applications in cloud with common governance

The Cisco Cloud ACI solution enables businesses to focus on innovations by delivering applications in an agile manner. Application developers often choose the services offered by public clouds to innovate and add value to their business. But there are inherent risks associated with multicloud deployment models that require constant regulatory and compliance checks. With Cisco Cloud ACI, corporate IT can enable cloud-based application innovation while still providing consistent governance and control. This reduces potential application risks without compromising on application delivery timelines.

Figure 3. Common policy abstraction



Enable consistent security posture for risk mitigation and operational simplicity

The Cisco Cloud ACI solution ensures a common security posture across all locations for application deployments. The Cisco Cloud APIC translates ACI policies into cloud-native policy constructs, thus enabling consistent application segmentation, access control, and isolation across varied deployment models.

Optimize Total Cost of Ownership (TCO)

The Cisco Cloud ACI solution introduces the Cisco Cloud APIC, which can be deployed natively on public clouds for leveraging native-cloud resources. This provides the best-in-class solution by bringing in the advantages of on-premises policy architecture into cloud-native environments. The solution enables organizations to lower their operational costs by automating inter-cloud connectivity, using a common policy management model across all

the cloud environments, and leveraging existing investments. A single instance of Cisco Cloud APIC can manage cloud deployments spread across multiple geographic locations and provides visibility and monitoring in a central pane of glass.

Ease multicloud adoption

The Cisco Cloud ACI solution facilitates organizations' evolution to their next generation of cloud deployments. It provides a secure, automated solution with centralized policy management across the varied cloud environments. The solution enables organizations to get the most out of their cloud deployments by solving the cloud networking challenges inherent in these deployment models. It also provides a common architectural framework and open APIs for the ACI ecosystem to automate cloud orchestration and network services into ACI across private and public cloud application deployments.

The Cisco advantage

Cisco's comprehensive solution for today's multicloud deployments provides unique innovations to help organizations meet their deployment needs across on-premises, bare-metal cloud, and public cloud environments. Cisco ACI has the industry's broadest ecosystem integration and is the leading industry-trusted data center networking solution.

Piecemeal, nonintegrated solutions raise the complexity and cost of end-to-end digitization. Cisco Cloud ACI's solution can help organizations develop a holistic infrastructure strategy that takes an architectural approach toward solving the unique challenges of multicloud deployments. Using this architecture, Cisco can guide organizations in a step-by-step journey that optimizes their technology investments and accelerates solution deployments across any location and any cloud.

Figure 4. Cisco Cloud ACI solution benefits

