ıı|ıı|ıı
CISCO

The bridge to possible

Cisco Cloud Network Controller

A multicloud networking evolution

To keep up with escalating demands on the business and network, networking professionals are seeking to broker, connect, build, and govern their networks not only in the data center, but across a vast multicloud landscape. Businesses see many advantages to moving to hybrid cloud or multicloud. Some of the key business drivers motivating the move are:

Agility

Rapid response to business demands

Improved customer satisfaction and retention
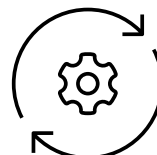
Flexibility

Choice of infrastructure best suited to application needs

Availability and mobility

Total cost of ownership

Flexible consumption model

Scalable infrastructure

ılıılı
CISCO

The bridge to possible

However, as companies move to hybrid and/or multicloud, they are faced with numerous challenges:

Connectivity

How do I connect applications across on- premises, public cloud, and edge networks?
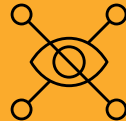
Zero trust and security

How do I maintain a consistent security posture that is agnostic to where my applications and clients are located?
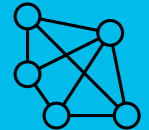
Visibility

How do I observe and analyze connectivity, traces, logs, and metrics across heterogeneous networks?

Application networking

How can I enable application intent to dynamically drive network behavior?

Cisco Cloud Network Controller provides enterprises with networking tools necessary to accelerate their hybrid-cloud and/or multicloud journey.
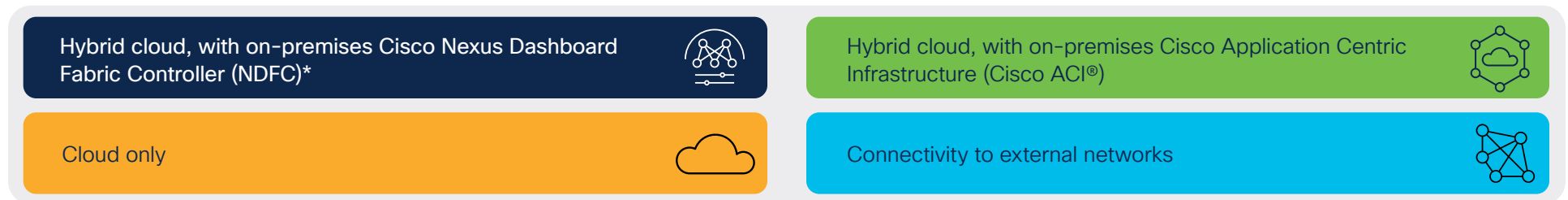
Cisco Cloud Network Controller enables:

- Seamless connectivity for any workload at scale across any location
- Operational simplicity and visibility across a vast multisite, multicloud data-center network
- Easy L4-7 services integration
- Consistent security and segmentation
- Business continuity and disaster recovery

Cisco Cloud Network Controller provides the ability to connect and consume public clouds, accelerating business agility to support hybrid or multicloud environments.

Utilizing cloud-native constructs, the solution enables automation that accelerates infrastructure deployment and governance and simplifies management to easily connect workloads across multicloud environments. The Cisco Cloud Network Controller vision is to support enhanced observability, operations, and troubleshooting across the entire environment.

Cisco applies its deep expertise in on-premises environments to augment the capabilities provided by public-cloud providers, to enable organizations to fully align cloud environments with their existing security policies, routing policies, and other requirements, to support multicloud transformation without compromise. Flexible deployment options let organizations configure routing separately from security. This allows enterprises to leverage Cisco Cloud Network Controller to connect their resources while security is governed by separate teams.

ılıılıı
CISCO

The bridge to possible

Cisco Cloud Network Controller along with Cisco Nexus® Dashboard orchestration supports a variety of deployment models to align to diverse customer environments and use cases, including:

Hybrid cloud, with on-premises Cisco Nexus Dashboard Fabric Controller (NDFC)*	Hybrid cloud, with on-premises Cisco Application Centric Infrastructure (Cisco ACI®)
Cloud only	Connectivity to external networks

This solution runs natively in public clouds (AWS, Microsoft Azure, and Google Cloud) to provide automated connectivity, network policy translation, and enhanced visibility of workloads in the public cloud. It brings a suite of capabilities to extend on-premises data centers into true multicloud architectures, helping to drive connectivity and operational consistency, regardless of where your applications or data reside.

* New

Solution benefits

Some of the key benefits of Cisco Cloud Network Controller include the following:

Optimize total cost of ownership (TCO)

The Cisco Cloud Network Controller solution can be deployed natively on public clouds, leveraging native-cloud resources. This provides a 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- and intra-cloud connectivity, utilizing single-policy and seamless automated connectivity across any data center and across all the cloud environments, while leveraging existing investments.

Ease multicloud adoption with automated connectivity and routing

The Cisco Cloud Network Controller solution facilitates organizations' evolution to their next generation of cloud deployments. It provides a secure, automated solution with centralized network and network security policy management across 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. This allows for seamless integration into existing orchestration workflows to deliver network services across private and public cloud deployments.

Secure multicloud connectivity with segmentation and network policy

The Cisco Cloud Network Controller solution lets organizations support security group rule management to enable microsegmentation across varied cloud environments. This lets security teams logically divide the cloud into distinct security segments down to the individual workload level, then define security controls and deliver services for each unique segment.

Single interface for simplicity

Cisco Cloud Network Controller lets organizations use the same operating model on public-cloud instances as with on-premises data centers–today. Through Cisco Nexus Dashboard, this solution provides a single management control point to automate intra- and inter-cloud connectivity, view the health of various cloud deployments, and consistently stretch network and network security policies across multiple cloud locations. Cisco Nexus Dashboard Orchestrator acts as a single orchestrator for hybrid-cloud, multicloud, and cloud-only deployments and provides a normalized view of the various clouds through Nexus Dashboard's single pane of glass. The Cisco Nexus Dashboard Orchestrator also provides an integrated view of network health across multiple on-premises and cloud environments to simplify troubleshooting and accelerate remediation.

CISCO
The bridge to possible

Service integration

Cisco Cloud Network Controller automates service chaining of application traffic across various L4–L7 devices to scale and secure any application, thus enabling organizations to choose any third-party or native load balancer or firewall device. It provides support for load balancing to optimize performance and availability of workloads and applications. It also lets organizations group together secure applications and workloads to align with existing security and compliance policies. For example, an organization could ensure that traffic from a specific application always goes through a firewall when accessing the internet.

Visibility and troubleshooting

Cisco Cloud Network Controller provides enhanced visibility and troubleshooting within a multicloud environment. It supports:

- Visibility to see endpoints managed and present in cloud environments
- Drift configuration, tracking configuration changes, and providing notifications. With this feature, if an administrator makes changes on a cloud dashboard, Cisco Cloud Network Controller issues a notification that configuration drift has occurred, what the changes were, and when they were made
- Single pane of glass monitoring and management of route tables, subnets, peering, attachments, and other networking configuration criteria
- Inventory of brownfield networks and gateways and a path for the solution to start managing the brownfield assets within a customer's cloud account

Solution building blocks

Cisco Cloud Network Controller is the main architectural component of this multicloud solution. It is the unified point of automation and management for the solution fabric including network and security policy, health monitoring, and optimizes performance and agility. The complete solution includes:

Table 1.   Cisco Cloud Network Controller solution

Cisco Cloud Network Controller	Cisco Nexus Dashboard orchestration and visibility	Cisco Catalyst® 8000V or cloud-native router
Cisco Cloud Network Controller enables businesses to connect and consume public clouds and unlock the efficiency, flexibility, and innovation of hybrid-cloud and multicloud environments by enabling observability and automation of any workload in any location.	Multicloud networking orchestration and policy management, disaster recovery, and high availability, as well as provisioning and health monitoring.	Utilize the Catalyst 8000V or native-cloud router to bridge the WAN edge and the cloud edge, apply policies from end to end, and optimize applications to enhance user experience.

alialia
CISCO

The bridge to possible

Key use cases

IT organizations approach their multicloud strategy by breaking it down into three pieces:

- **First:** Take stock and make a plan across teams and technologies. Optimize what they have, adopt new skills, and modernize to meet new requirements. Establish connections, security, and processes to create a highway for rapid change and delivery of new services.

- **Second:** Extend the data center where it needs to go. IT can become the one-stop shop for private and public resources and to make them secure, consistent, and seamless for their environment.

- **Third:** Optimize, because "good multicloud starts at home." For those workloads and data to land on premises, they need private and hybrid cloud platforms that offer self-service consumption and the ability to move workloads seamlessly from private cloud to public cloud and the edge.

How Cisco Cloud Network Controller can help:

Cisco Cloud Network Controller puts people in control of their public and private cloud resources in a secure way using single pane of glass management. IT teams can easily connect and manage infrastructure anywhere, from core to edge.

Some of the key uses include the following:

Intra-cloud connectivity

Cisco Cloud Network Controller enables organizations to build Intra-cloud networks in minutes and utilize cloud-native functionalities. Intra-cloud connectivity lets organizations maintain consistent security and segmentation across their diverse environments. It lets them:

- Extend segments across regions

- Automate route propagation across virtual networks

- Automate L4-L7 services insertion

Inter-cloud connectivity

Cisco Cloud Network Controller lets organizations significantly reduce the time to build inter-cloud networks, to extend their network across clouds. It supports secure connectivity between clouds, with consistent security and segmentation. Organizations can:

- Abstract and orchestrate different cloud constructs and languages

- Automate route propagation across clouds

- Automate L4-L7 services insertion

On-premises data centers

With Cisco Cloud Network Controller, organizations can build hybrid-cloud networks quickly, extending their network across on-premises and public clouds. It lets them:

- Support simplified connectivity for hybrid cloud

- Abstract and orchestrate different clouds constructs and languages

- Enable connectivity between clouds with consistent security and segmentation

External network connectivity

Cisco Cloud Network Controller lets organizations support external network connectivity. It enables:

- Standards-based IP connectivity to any network

- Secure connectivity to external networks, data centers, campuses, and branches

The bridge to possible

The Cisco advantage

Cisco's comprehensive solutions for today's multicloud deployments provide 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. The Cisco Cloud Network Controller solution can help organizations develop a holistic infrastructure strategy that takes an architectural approach toward solving the unique challenges of hybrid-cloud and 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.

L4-L7 services insertion

Cisco Cloud Network Controller supports L4-L7 services insertion in hybrid-cloud environments, with consistent security and segmentation. It lets organizations:

· Automate firewall and load balancer insertion

· Automatically update routing and security policy to insert L4-L7 services

· Integrate with third-party L4-L7 services and cloud-native L4-L7 services

Brownfield VPC onboarding

Cisco Cloud Network Controller supports brownfield Virtual Private Cloud (VPC) onboarding. It allows you to copy configurations from the existing TGW, clone route tables, and create new Security Group (SG) rules.

· Allows easy, safe, and fast migration and rollback

· Ability to use Cisco Cloud Network Controller with brownfield environments

· Brownfield VPC attachment can be automated by Cisco Cloud Network Controller

Important links

Cisco Cloud Network Controller

Cisco Application Centric Infrastructure (ACI)

Cisco Nexus Dashboard Fabric Controller (NDFC)

Cisco Nexus Dashboard

Cisco Catalyst 8000V