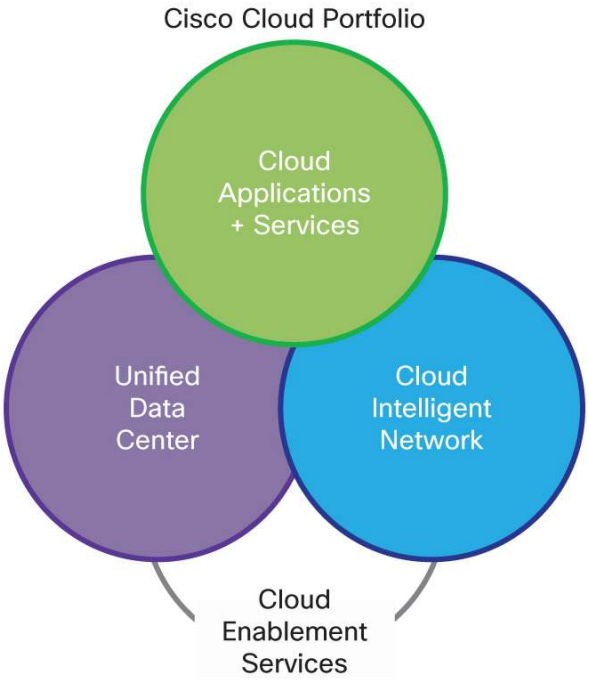
Cisco Cloud Portfolio: Enabling the World of Many Clouds

What You Will Learn

We live in a world of many clouds, in which IT becomes IT as a Service (ITaaS), and in which people can collaborate dynamically and consume content on demand. The Cisco® cloud portfolio is a set of capabilities that enable customers to uniquely combine cloud business applications and services with the Cisco Unified Data Center and Cisco Cloud Intelligent Network (Figure 1).

Figure 1. Cisco Cloud Portfolio Combines Cloud Business Applications and Services with Cisco Unified Data Center and Cisco Cloud Intelligent Network



Cisco's cloud strategy combines computing, networking, and storage resources within the data center; connects clouds together; and delivers a high-quality cloud experience to the end user. Cisco combines cloud solutions with industry-leading ecosystem partners to offer integrated services, including collaboration, security, infrastructure as a service (IaaS), and video delivery, that are pretested for private, public, and hybrid cloud use.

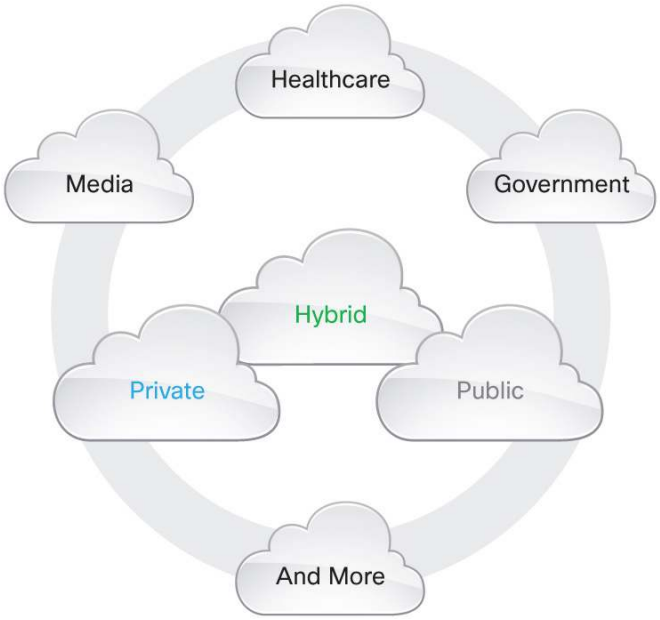
Introduction to Cloud Computing

Cloud computing is the next step in the evolution of the Internet. A cloud is a powerful combination of computing, networking, storage, and management resources, enabling a new generation of consumer and enterprise IT services that can be available on demand and delivered economically to any device anywhere in the world without compromising security or function. Cloud computing is happening now.

Clouds are fundamentally changing the way that businesses and people consume services: enabling IT to be delivered as a service, evolving the way that people collaborate, and changing the way that content is delivered. Clouds help the world to operate more simply, with greater agility and improved economics.

Early cloud discussions described a single, one-size-fits-all, giant cloud serving all customer needs. In reality, there are many types of clouds: private clouds, public clouds, hybrid clouds, and clouds built to meet the needs of specific industries such as healthcare, media, and government (Figure 2).

Figure 2. Types of Clouds



We are moving to a world of many clouds, in which users experience cloud services anywhere, at any time, and on any device, and in which businesses want IT as a service.

Customer Challenge

Enterprises, service providers, small businesses, and governments are looking for cloud solutions to solve some of their biggest business and technology challenges: reducing costs, creating new levels of efficiency, and facilitating innovative business models that promote revenue growth.

The challenge and opportunity of the world of many clouds is to bring together cloud computing, the network, and storage, spread across multiple clouds composed of many thousands of infrastructure elements and an ever-increasing amount of content that must work together securely on demand, delivering cloud services that empower people wherever and however they choose to consume applications.

When implemented successfully, the cloud will allow cloud providers to tightly align technology with business priorities; service providers to deliver new services and content to their customers; governments and emerging countries to consolidate and advance technology faster; partners to deliver cloud-ready networks, data centers, and cloud services to their customers; and consumers to instantly access new services and content.

The main challenge in the world of many clouds is to decide which cloud model is right for each organization and opportunity, and to understand how best to connect with other clouds to achieve the full cloud potential: bringing together the people, processes, and technology to securely deliver cloud services, such as collaboration and video, in ways that benefit people however they choose to consume their services and applications.

Cisco's Cloud Strategy

Cisco's cloud strategy is a set of capabilities that uniquely combines cloud business applications and services with Cisco Unified Data center and Cloud Intelligent Network. It brings together computing, networking, and storage resources within the data center and connects clouds between data centers to deliver a high-quality cloud experience to the end user.

The Cisco portfolio works with technologies from industry-leading ecosystem partners to offer integrated solutions and services including collaboration, security, IaaS, and video delivery that are pretested for private, public, and hybrid clouds.

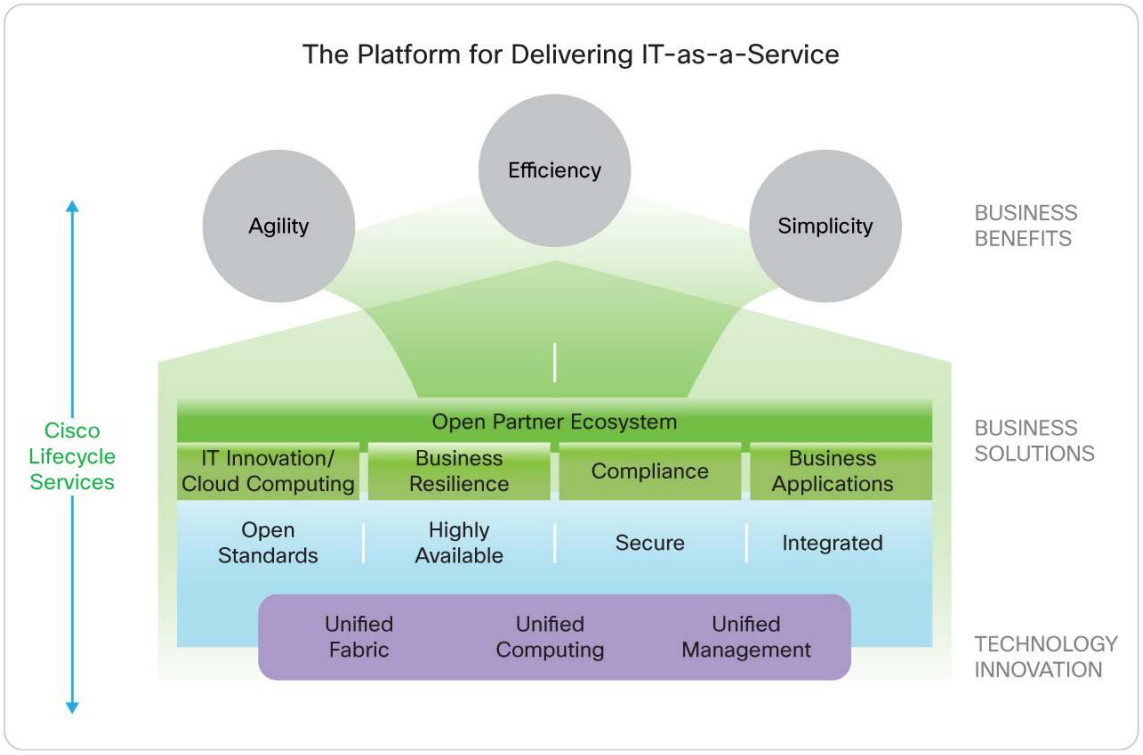
Cisco cloud security helps customers reduce risk through the Cisco SecureX Architecture®, which delivers consistent security policies and enforcement, up-to-date threat intelligence, greater scalability, and improved performance. Cisco cloud security helps remove cloud barriers so that customers can achieve the economies of scale and efficiency of cloud computing.

The Cisco cloud portfolio is delivered to customers by Cisco partners: trusted experts who will listen to your challenges and design and implement a solution that will help your business thrive and adapt to change. Cisco's cloud strategy is supported by a portfolio of cloud enablement services (professional services) to help design, build, and manage cloud solutions and services offered by Cisco and our partners.

Cisco Unified Data Center

Cisco Unified Data Center is a simplified architecture that provides more efficient network operations, delivers greater IT agility for business innovation, and incorporates an open system for supporting multiple cloud and virtualization strategies. Cisco Unified Data Center architecture has three main components: Cisco Unified Fabric, Cisco Unified Computing System (Cisco UCS®), and Cisco Unified Management (Figure 3).

Figure 2. Cisco Unified Data Center Components



Cisco Unified Fabric

Delivery of high-performance IT services is critical to the data center, and Cisco has built its reputation on intelligent network delivery. The Cisco Unified Fabric component of Cisco Unified Data Center is based on the Cisco Nexus® family of switches and integrated network services that provide high-speed connectivity, high availability, security, and consistent quality of experience for data center applications.

Cisco's fabric-based approach eliminates the tiered silo approach and inefficiencies of multiple network domains and replaces it with a flatter, unified fabric that consolidates SAN and network-attached storage (NAS) network segments over one high-performance, fault-tolerant fabric.

As enterprises become increasingly reliant on virtual resources, they encounter a correspondingly increased demand on their existing network infrastructure. The Cisco Unified Fabric architecture delivers massive scalability and resiliency by creating large pools of virtualized network resources that allow existing and new virtual assets to be easily moved and reprovisioned. Cisco's architecture simultaneously preserves the existing IT resources and eliminates the complexity of introducing new virtual machines and applications in the future.

Cisco Unified Computing System

Data center efficiency begins with system-level infrastructure that integrates computing with access and storage networking into a scalable platform for x86-based applications. The Cisco Unified Computing System is the result of true innovation and engineering, not just the integration of two existing technologies, and Cisco UCS is reducing data center costs and increasing data center efficiency in every type of industry and vertical segment. Only Cisco UCS provides a single, open, programmable management interface that can scale to hundreds of blades and

thousands of virtual machines. Only Cisco UCS can deliver a unified operational model across physical, virtual, and cloud infrastructures.

Cisco UCS uses model-based service templates to automate the entire server configuration process, and each template can easily configure one or hundreds of servers using role- or service-based policies. These templates can reduce the number of configuration steps from more than a hundred to just two. Meanwhile, IT managers have greater visibility and control over the entire computing environment.

When used within the Cisco Unified Fabric framework, Cisco UCS gives IT managers a wire-once platform for providing highly elastic and agile pools of virtualized resources. Cisco Fabric Extender Technology (FEX Technology) also reduces the number of interfaces, cables, and switches needed to support Cisco blade servers. This consolidation alone cuts the cost of per-server infrastructure in half and also reduces energy and cooling requirements. Through open APIs, Cisco UCS also gives data centers exceptional flexibility in platform choice and network integration and migration.

Cisco Unified Management

Simplicity and speed are essential to the flexibility required of IT. Cisco offers the industry's only self-service, open management platform for integrating all data center resources, including resources for computing, applications, network services, security, storage, and cloud computing. The Cisco Unified Management component of Cisco Unified Data Center allows transparent management across physical and virtual resources to simplify and accelerate delivery of IT services within the data center or in a cloud environment.

Cisco Unified Management solutions include Cisco UCS Manager, which provides centralized and embedded management of all computing hardware and software components; Cisco Network Services Manager, which provides fast and automatic provisioning and deployment of various network components; and Cisco Intelligent Automation for Cloud, which provides the functions to support an IT service catalog, self-service provisioning, automation, and service orchestration. Cisco Intelligent Automation for Cloud is optimized for Cisco UCS and Cisco Nexus infrastructure, but it is designed for heterogeneous IT environments, offering sophisticated service management functions such as policy-based governance, service assurance, lifecycle management, and pay-per-use tracking. In many cases, Cisco Unified Management solutions can completely automate maintenance tasks previously performed manually, thereby reducing complexity and accelerating time to service. Open APIs allow integration with an open ecosystem of application, virtualization, storage, and system management partners to extend the unified management concept even further within the data center.

Through its considerable investment in cloud-based solutions, Cisco also provides complete and automated cloud management through the Cisco Unified Management self-service portal, allowing data center personnel, for the first time, to effectively control every aspect that affects cloud performance, security, and reliability from the hardware layer all the way up the stack to cloud-based applications with its Cisco UCS and Cisco Network Services Manager components.

Cisco Cloud Intelligent Network

Secure, reliable, and predictable delivery of cloud services is an essential part of comprehensive cloud service delivery. Whether your need is to deliver private or hybrid cloud services at disparate campuses or enterprise-class public cloud commercial services, today's demanding users are rarely prepared to accept a best-efforts approach to service access.

To help ensure your success in meeting your users' requirements, Cisco has developed a comprehensive set of solutions called the Cisco Cloud Intelligent Network that are designed to work together transparently. The Cisco Cloud Intelligent Network integrates with the Cisco Unified Data Center to provide a powerful end-to-end delivery platform for cloud services.

The Cisco Cloud Intelligent Network extends beyond the walls of individual data centers to provide peering and interconnect capabilities between data centers, allowing service integration, flexibility, and agility for provisioning entertainment-, information-, and communication-based services. Data center resources are securely joined across the network using Multiprotocol Label Switching (MPLS) peering, scalable interconnect, and secure Internet gateway capabilities. With the Cisco Cloud Intelligent Network, providers can achieve highly secure, logical, and physical separation of services, helping provide privacy and security for business and residential customers.

Cisco believes that an intelligent network is the fundamental foundation that connects the world of many clouds. The Cisco Cloud Intelligent Network has intelligence and scalable policies that are built into the network to provide a consistent and secure user experience regardless of the user location and number of cloud platforms involved in the service delivery.

The Cisco Cloud Intelligent Network strategy encompasses three areas necessary to uniquely enable your cloud services in an increasingly complex market:

- Cisco Cloud Customer Connect supports the delivery of enterprise-class services from the service delivery source to the ultimate user while securely helping ensure that quality-of-service (QoS) requirements are met with business-oriented policy controls and context-aware security capabilities.
- Cisco Cloud-to-Cloud Connect addresses the growing need to connect clouds and optimize the sourcing of data and content from the decentralized delivery centers within the cloud. Meeting this challenge requires extending the data center fabric across data centers and clouds as well as implementing technologies that provide close integration of the network with the cloud delivery solution.
- Cisco Network Management and Automation is of critical importance in the cloud world because of the ever-increasing requirements for agility mandated by the dynamic nature of the cloud.

Cisco's cloud portfolio includes Cisco Cloud Intelligent Network as the common platform to connect the consumer, the enterprise, and the service provider to innovative capabilities within, between, and beyond the cloud. The result is an entirely new way to create dynamic interconnections and harness capabilities that facilitate an integrated approach to service delivery.

Cisco Cloud Applications and Services

IT focus is shifting to service delivery as content and applications are increasingly being delivered on demand and to mobile users. Organizations can achieve significant benefits by taking advantage of applications and services offered through the cloud to:

- Deliver consistency of service across devices
- Help to ensure access to an always-current version
- Support easy service procurement and activation
- Enable rapid deployment at scale
- Are inherently "business-to-business ready" for customers, partners, and suppliers
- Shift IT spending from capital expenditures (CapEx) to operating expenses (OpEx)

- Allow organizations to focus on “core” or “context,” as appropriate

The critical factor is still making sure deployments work and making sure your teams can work. Cisco is focused on providing a compelling user experience with every service delivered from the cloud. These services can be provided anywhere, on any device, at any time with the security, performance, and reliability previously possible only with traditional on-premises deployments.

Cisco offers a portfolio of cloud-based business applications and services for enterprises to consume directly or as a service from a Cisco partner or service provider:

- Hosted services that include Cisco Hosted Collaboration Solution (HCS) and Cisco TelePresence® Callway. Through our service provider partners, these services support organizations that want access to market-leading enterprise voice and telepresence services and collaboration applications without the overhead of on-premises implementation and maintenance.
- Cisco’s Collaboration Cloud portfolio, an innovative set of applications and services that allow users to enjoy a rich, interactive, and compelling user experience enabled by the industry-leading suite of Cisco Unified Communications; Cisco TelePresence; Cisco Customer Contact Services; Cisco WebEx® Meetings, Instant Messaging, and TelePresence; and other applications in the market. The Collaboration Cloud portfolio is now available as a hosted service from the cloud from Cisco and from a select group of Cisco partners and service providers, without compromising the user experience.
- Cisco Videoscape™, an innovative service-provider solution that is reinventing the delivery of television experiences.
- Cisco Cloud Security solutions, providing effective, scalable, and always-updated web and email security. Cisco ScanSafe Cloud Web Security analyzes web requests for malicious, inappropriate, or acceptable content. Cisco Cloud Email Security helps protect organizations from spam, viruses, and blended threats.
- Extensive portfolio of third-party cloud services and applications, pretested for Cisco cloud solutions.

Cisco Cloud Applications and Services help companies give users what they need to collaborate: when, where, and how they need it. With flexible deployment models based on cloud provisioning, Cisco solutions support the mobile, social, visual, and virtual aspects of effective collaborative environments. The applications support more natural collaboration, helping people hear and see one another, meet, share ideas and content, and improve their working relationships and productivity.

Enabling Providers to Deliver Cisco Collaboration Services

Cisco enables providers to deliver cloud services with integrated pretested Cisco and partner infrastructure solutions. Building on Cisco’s end-to-end collaboration architecture and Cisco-validated designs, partners can build cloud and collaboration services based on a continuingly evolving and expanding portfolio of Cisco collaboration solutions and architectural blueprints and light-touch services. These designs help ensure security and full management across the collaboration suite for a multimedia, consistent user experience, anywhere, with any content, on any device, and in any consumption model. To create a comprehensive ecosystem of cloud solutions, Cisco partners use Cisco TelePresence Exchange System and Cisco Hosted Collaboration Solution.

Delivering Cisco Collaboration Cloud Applications

Cisco Collaboration Cloud Applications and Services allow companies to deploy flexible cloud provisioning models to give users what they need to collaborate whenever, wherever, and however they need it. Using world-class partners to lead the service implementations, collaboration offerings delivered by Cisco include Cisco WebEx Meetings, Instant Messaging, and TelePresence, and Cisco TelePresence.

Cloud Enablement Services Portfolio

The Cloud Enablement Services portfolio allows you to accelerate deployment of your cloud solutions and applications and include professional and technical services to facilitate optimal operation of collaboration and video technologies in a cloud. Cisco and our partners offer deep expertise in four cloud service categories: cloud strategy, cloud planning and design, cloud implementation, and cloud optimization. Cisco and our partners have the services experience and expertise to help you accelerate your time to market, reduce costs, and quickly realize a return on your cloud investment.

Cisco Cloud Enablement Services include:

- Cloud Enablement Services for Building IaaS Clouds
- Cloud Enablement Services for Adopting Clouds

Cloud Enablement Services for Building IaaS Clouds

Cloud Enablement Services for Building IaaS Clouds provide customized strategy, planning and design, implementation, and optimization based on your targeted private cloud offering. Drawing on extensive experience delivering secure end-to-end virtualized data centers, Cisco provides a comprehensive, architectural approach for enabling IaaS that considers the people, processes, and technologies involved across your network, compute, and storage resources. Services include Cloud Strategy Service, Cloud Planning and Design Service, Cloud Implementation Service, and Cloud Optimization Service - all with a focus on cloud security.

Cloud Enablement Services for Adopting Clouds

Cloud Enablement Services for Adopting Clouds deliver the expert help you need to accelerate the adoption of a public cloud model based on your current environment and business goals. The service allows businesses to optimize existing infrastructure to realize the full benefits of a public cloud. To facilitate your decision making around a cloud migration, Cisco Cloud Enablement Services for Adopting Clouds provide two service modules, Cloud Adoption Strategy Services and Cloud Adoption Planning Services.

Why Cisco

Enterprises, service providers, small and medium-sized businesses (SMBs), and governments are looking to cloud computing to reduce costs, improve efficiency, simplify their organization, offer innovative business models, and increase profitability. Cisco’s strategy is to empower our customers and partners with a unified cloud platform that combines unified data centers and cloud intelligent networks with cloud applications to meet the unique needs of customers across a world of many clouds.

Cisco Unified Data Center Architecture delivers automated provisioning and management of the shared fabric of computing, networking, and storage resources for the delivery of IT services within and between data centers. This architecture unifies and optimizes computing, storage, and networking resources, which can be securely and rapidly repurposed and managed on demand to meet the needs of different customers or applications, providing fundamental dynamic capabilities needed for cloud computing.

The Cisco Cloud Intelligent Network is a fundamental foundation that connects the world of many clouds. It has intelligence and scalable policies that are built into the network to provide a consistent and secure user experience regardless of the user location and number of cloud platforms involved in the service delivery. The network is a critical component of your success, linking clouds together and virtualizing connections within the cloud, between clouds, and beyond the cloud to the end customer.

Cisco offers a market-leading collaboration suite as a cloud service, enabling an extensive ecosystem of third-party cloud services. Cisco services that cloud providers can offer today include cloud collaboration, video delivery, IaaS, security as a service (SaaS), and many more. Through this flexible approach, Cisco's cloud architecture gives our customers a competitive edge.

Cisco's cloud portfolio transparently integrates the three pillars of cloud computing - Cisco Cloud Intelligent Network, Cisco Unified Data Center, and Cisco Cloud Applications - to deliver security while redefining scalability, flexibility, and QoS for any device in any location. Cisco is the platform on which innovation is built: the kind of innovation that enables businesses to truly achieve the promise of the world of many clouds.

For More Information

For more information, visit http://www.cisco.com/go/cloudstrategy.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

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