Cisco Cloud Intelligent Network: Connect the World of Many Clouds

What You Will Learn

We live in a world of many clouds, where IT becomes IT as a service, and where people can collaborate dynamically and consume content on demand. The network is the platform that integrates computing within the data center and between clouds, and delivers cloud experiences to the end customer. Cisco® believes that an intelligent network is the foundation that connects the world of many clouds.

Cisco Cloud Intelligent Network

Customers are embracing cloud services, but with widely differing needs for size and scale, regulatory requirements, and security concerns. To successfully capture the cloud opportunity you must deliver cloud services tailored to the requirements of different industry segments. The network is a critical component to enabling your success, as it links clouds together and virtualizes connections within the cloud, between clouds, and beyond the cloud to the end customer.

The Cisco cloud portfolio enables customers to uniquely combine cloud applications with the Cisco Unified Data Center and Cloud Intelligent Network. It brings together computing, networking, and storage resources within the data center and connects clouds together between data centers to deliver a high-quality cloud experience to the end user.

The Cisco Cloud Intelligent Network exposes the intelligence in the network to support smarter decisions and offering of services that can meet specific customer groups' needs in what is becoming a world of many clouds.

What is a Cloud?

Cloud-based services are the next step in the evolution of the Internet. A cloud is a powerful combination of compute, network, storage, and management capabilities, providing a new generation of consumer and enterprise IT services that are available on demand and can be delivered economically to any device anywhere in the world without compromising security or functionality. This is happening now.

Cloud services are fundamentally changing the way businesses and individuals consume services: allowing IT to be delivered as a service, enhancing the way people collaborate, and changing how 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 industry-specific needs in areas such as healthcare, finance, media, and government (Figure 1).

Figure 1.   World of Many Clouds
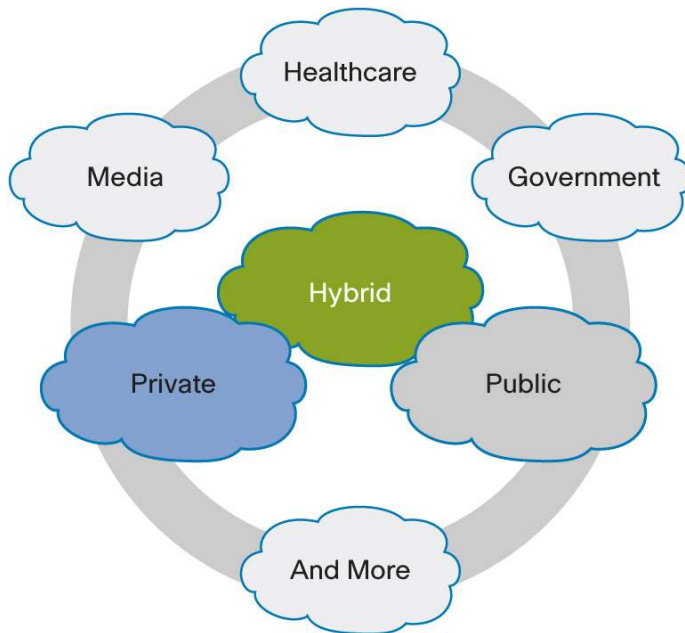
We're moving to a world of many clouds, where users seek to experience cloud services anywhere, anytime, on any device, and businesses want IT as a service.

Customer Challenges

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-based computing, the network, and storage, spread across multiple clouds comprised of many thousands of infrastructure elements and ever-increasing amounts of content. These components must work together securely on demand, delivering cloud services that empower people, wherever and however they choose to consume applications.

When implemented successfully, cloud services allow cloud providers to tightly align technology to 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.

Role of the Cloud Intelligent Network

Secure, reliable, and predictable delivery of cloud services is an essential part of comprehensive cloud service delivery. Whether your requirement 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.

The 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 together across the network using Multiprotocol Label Switching (MPLS) peering, scalable interconnections, and secure Internet gateway capabilities. With the Cloud Intelligent Network, providers can achieve highly secure, logical, and physical separation of services, helping to provide privacy and security for business and residential customers.

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

The Cisco cloud portfolio includes the 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.

## Three Essential Capabilities of the Cloud Intelligent Network

The Cisco Cloud Intelligent Network strategy encompasses three essential capabilities to support your cloud services in an increasingly complex market.

- **Cloud to Customer Connect** facilitates the delivery of enterprise-class services from the service delivery source to the ultimate user, while securely promoting service quality with business-oriented policy controls and context-aware security capabilities.
- **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. This requires extending the data center fabric across data centers and clouds as well as implementing technologies that support the network's close integration with cloud delivery.
- **Network management and automation** is of critical importance to cloud services due to the ever-increasing requirements for agility resulting from the dynamic nature of the cloud.

Virtual Desktop Use Case for Cisco Cloud Intelligent Network

It is common for cloud data centers and the network links between them to be overprovisioned for unexpected demand spikes. Cisco Cloud Intelligent Network can optimize the use of your infrastructure and make much of this excess provisioning unnecessary. Securely interconnecting data centers across a service provider's network extends the benefits of shared resource pools and features. With Cloud Intelligent Network, data centers and network capacity can offload to each other in real time, maintaining high performance while taking full advantage of distributed resources (Figure 2).

Figure 2.   Virtual Desktops with Cloud Intelligent Network
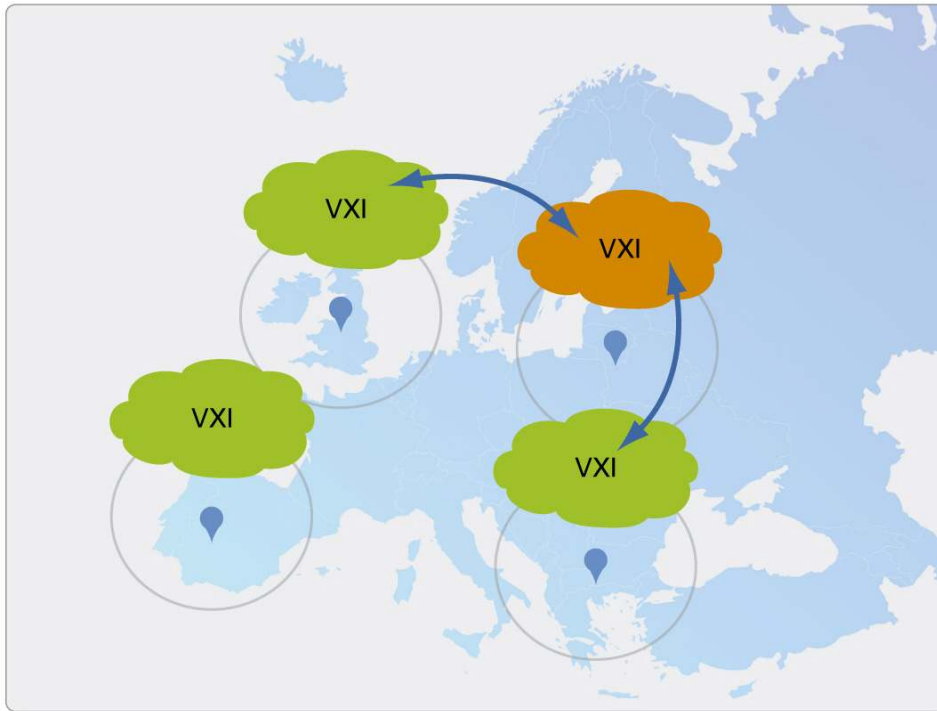
A prime example of real-world use of Cloud Intelligent Networking is Cisco's Virtualization Experience Infrastructure (VXI), an end-to-end systems approach that delivers the next-generation virtual workspace by unifying virtual desktops, voice, and video. When a demand surge in one location exceeds capacity thresholds, demand can be moved to other data centers, offloading to those with available capacity, to optimize and extend provisioning across all available data centers.

Costs decrease when data center resources are shared more efficiently and amortized across many different service offerings. The result is that purpose-built data centers are transformed into multiservice data centers using the power of virtualization and the capabilities of the Cisco Cloud Intelligent Network.

Why Cisco?

Enterprises, service providers, small and medium-sized businesses, and governments are looking for cloud services to reduce costs, improve efficiency, simplify their operations, offer innovative business models, and increase profitability. Cisco's strategy is to provide our customers and partners with a cloud architecture that combines data centers and intelligent networks with cloud services to meet the emerging needs across a world of many clouds.

Cisco's Unified Data Center architecture delivers automated provisioning and management of the shared fabric of compute, network and storage resources for the delivery of IT services within and between data centers. This architecture unifies and optimizes compute, storage and network resources that can be securely and rapidly repurposed and managed on demand to meet the needs of different customers or applications.

Cisco offers a market-leading collaboration suite as a cloud service, supporting an extensive ecosystem of third-party cloud services to be delivered through the Cisco cloud solutions. Innovative Cisco services that cloud providers can offer today include cloud collaboration, video, Infrastructure as a Service (IaaS), Security as a Service (SaaS), and many others. Through this flexible approach, Cisco's cloud architecture provides our customers with a competitive edge.

Cisco's 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 irrespective of user location and the number of cloud platforms involved in the service delivery. The network is a critical component to your success, as it links clouds together and virtualizes connections within the cloud, between clouds, and beyond the cloud to the end customer.

Only Cisco can transparently integrate the Cloud Intelligent Network, the Cisco Unified Data Center, and Cisco Cloud Applications to deliver security while redefining scalability, flexibility, and quality of service to any device in any location. Cisco provides the platform on which innovation is built, the kind of innovation that allows businesses to truly realize the promise of the world of many clouds.

To learn more about the Cisco cloud portfolio, visit http://www.cisco.com/go/cloudstrategy.

Printed in USA   C22-693141-01   02/13