Cisco Business Continuity and Workload Mobility Solution for the Cloud

EFFICIENCY, SECURE, RESILENCE, AGILIGY, SIMPLICITY AND SCALABILE REFERENCE DESIGNS FOR YOUR DATA CENTER

Unlocking Business Continuity and Workload Mobility for Your Critical Applications

We have worked with chief technology officers (CTOs) and chief information officers (CIOs) around the world to uncover the main factors influencing business continuity and workload mobility across their cloud infrastructure. We've partnered with both large and small enterprises and with service providers to answer their top five concerns related to Business continuity, Cisco's new business continuity and workload mobility solution for the cloud.

· Can you provide business continuity, workload mobility, and disaster recovery for my unique mix of applications, with lower infrastructure costs and less complexity for my operations teams? Yes.

· Can you provide a multisite design that reduces business outages and costly downtime, allowing my critical applications to be more secure and available? Yes.

· Can my operations teams perform live migrations of applications across sites while maintaining user connections, security, and stateful services? Yes.

· Does your multisite solution allow me to use idle standby capacity during "normal" operations and reclaim that capacity as needed during an outage event? Yes.

· Can a Cisco Validated Design greatly reduce my deployment risks and simplify my design process, saving my business significant time, money, and resources? Yes.

We developed the cloud solution to facilitate business continuity across metropolitan and geographically distant data centers for highly available workloads. This validated design addresses the multisite business continuity and stateful workload mobility requirements that are top priorities for both public and private cloud providers. In a recent IDG enterprise and cloud computing study, 84 percent of enterprises listed "enabling business continuity" as their primary reason for adopting cloud technologies. With Cisco VMDC, enterprises get a simple, secure, resilient, and agile cloud solution that spans multiple-site designs.

Validated Use Cases for Your Multisite Cloud Topologies

Cisco Business Continuity and Workload Mobility Solution directly addresses your multisite demands by enabling these critical business operations:

· Application business continuity across multiple data centers sites

· Stateful workload mobility across multiple data center sites

· Application disaster recovery and avoidance across multiple data center sites

· Application geo-clustering and load balancing across multiple data center sites

· Multi-site maintenance operations

· Site migration of business critical workloads

Cisco VMDC Solution is our reference architecture for cloud deployments and has been adopted by hundreds of the world's top service providers and enterprises. Cisco Business Continuity and Workload Mobility Solution integrates Cisco and third-party products across the cloud ecosystem into a validated end-to-end system that customers can deploy with confidence. The Cisco business continuity and workload mobility solution is grounded in the reality of today's cloud environment, providing design choices that match your applications needs. We realize that there is no "one size fits all" cloud design that's why we support both physical and virtual resources, bare-metal and virtual applications, multiple hypervisors and storage choices, and security-compliant designs with Federal Information Security Management Act (FISMA), Payment Card Industry (PCI), and Health Insurance Portability and Accountability Act (HIPPA), and other industry certifications.
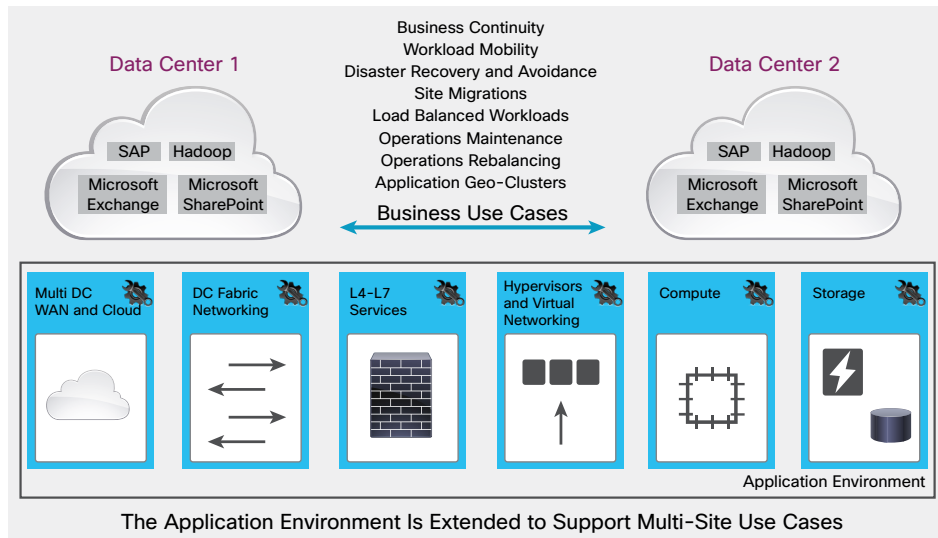
Application-Centric View of Business Continuity and Workload Mobility

Applications consume many resources across the cloud. The Cisco Business Continuity and Workload Mobility Solution extends the application environment across different sites to enable workload elasticity and more flexible deployment models.

The application environment spans a number of critical elements, including multisite WAN connections, data center fabrics, Layer 4 through layer 7 services, hypervisors, virtual switching, and computing and storage resources. If an application moves between sites, each element of the application environment must also adjust to the new location. Cisco has integrated the complete application environment between geographic sites, supporting the mobility of workloads within both private clouds and public clouds (Figure 1).
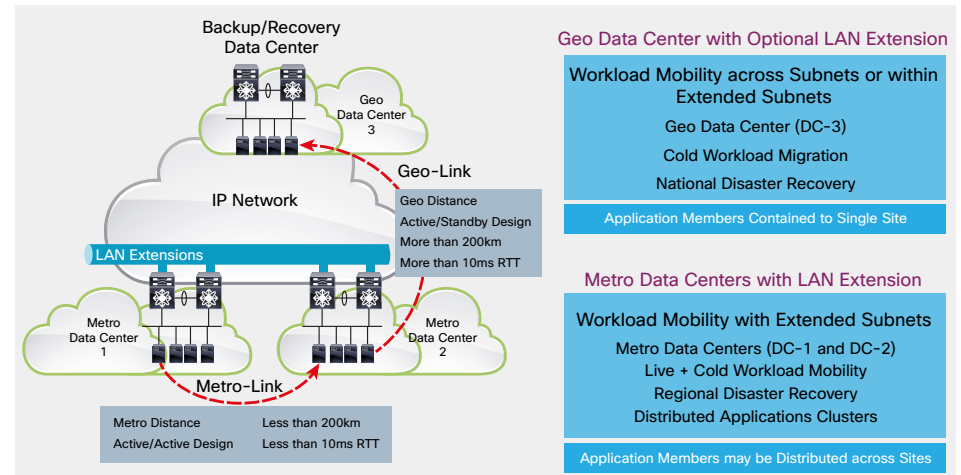
Figure 1. Cisco Business Continuity and Workload Mobility Solution: The Complete Application Environment to Support Multisite Use Cases

The Application Environment Is Extended to Support Multi-Site Use Cases

Solution Validated Using a Three-Site Design Model

The simplified Cisco Business Continuity and Workload Mobility design reduces deployment risk because we've validated performance across a real multisite topology, using real enterprise applications, on Cisco's latest cloud products. Our solution was validated using a three-site design model. The architecture connects two sites 75 km apart running an active-active metro-area network design, and a third site 1000 km away that provides backup and disaster recovery services (Figure 2).

Figure 2. Cisco Business Continuity and Workload Mobility Solution Was Validated Using a Three-Site Design Model

Benefits of the Cisco Business Continuity Cloud Solution

The Cisco Business Continuity and Workload Mobility Solution solution incorporates a wide range of Cisco cloud innovations and products. These products are integrated into the Cisco Validated Design to provide compelling benefits for private and public cloud providers:

- Lower capital expenditures (CapEx) and operating expenses (OpEx) for multisite designs: Cisco Business Continuity and Workload Mobility Solution helps customers implement the correct multisite design to achieve their particular application recovery point objective (RPO) and recovery time objective (RTO) goals. We provide a framework to help you first map your applications according to their levels of importance and, second, select the most cost-effective design options that meet your application needs, saving you time and money while reducing complexity.

- Little disruption to the application and users: For your most critical applications, Cisco Business Continuity and Workload Mobility Solution provides live workload migration that maintains user connections, security, and stateful services. For less critical applications, you can use cold migration with very little disruption. Cisco Business Continuity and Workload Mobility Solution also allows operators to preserve the IP addresses of moved applications.
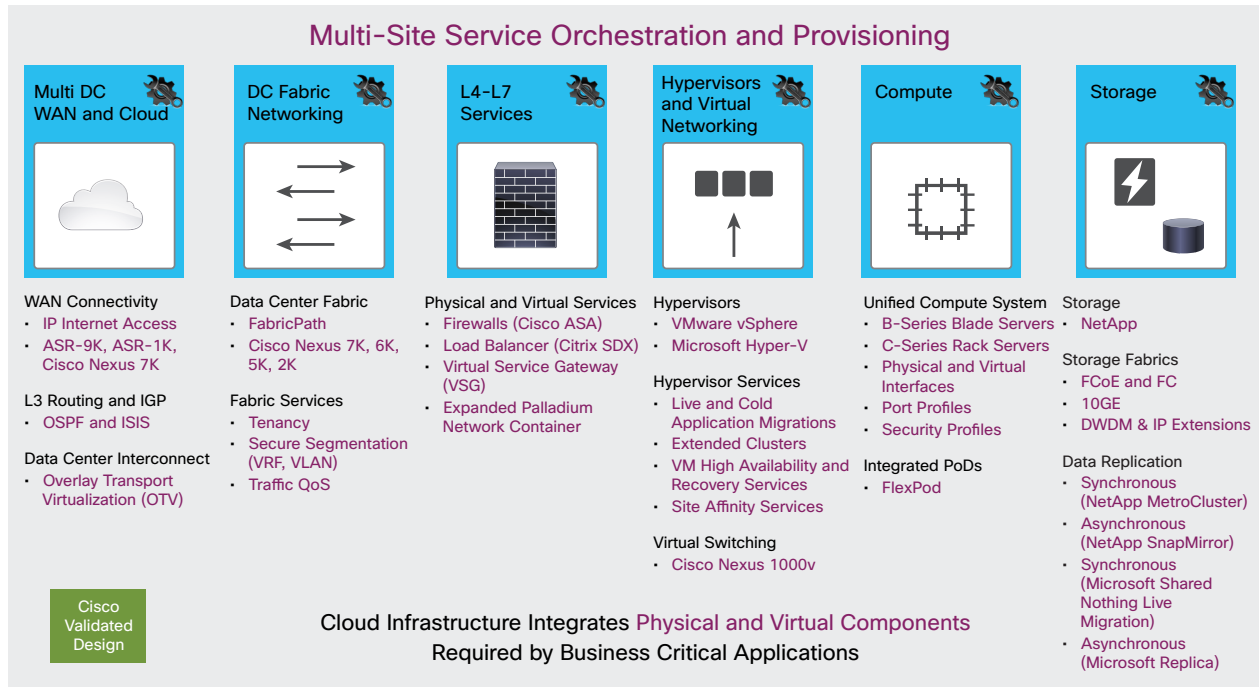
- **Operation simplicity:** This Cisco Business Continuity and Workload Mobility Solution release uses cloud service orchestration and resource provisioning products from Cisco and Cisco partners to support multisite environments.
- **End-to-end validation of the application environment:** This solution delivers validated guidelines across all the layers of the cloud data center. We support physical and virtual applications and services as well as multiple hypervisor choices.
- As Cisco continues to evolve, the architectural features of the cloud security system are **applicable to both existing VMDC and next-generation InterCloud solutions**.

Cisco Business Continuity and Workload Mobility Solution Architecture and Components

We realize that extending your application environment across multiple geographic locations involves many technologies and different skill sets for your teams. We've brought together best practices to address the critical factors that influence business continuity and workload mobility for your cloud. Cisco Business Continuity and Workload Mobility Solution designs conform to the Cisco Validated Design end-to-end system-level testing and documentation process.

Figure 3. Components Validated for the End-to-End Solution (Other Product Choices Also Are Supported)

Multi-Site Service Orchestration and Provisioning

Multi DC WAN and Cloud

WAN Connectivity
- IP Internet Access
- ASR-9K, ASR-1K, Cisco Nexus 7K

L3 Routing and IGP
- OSPF and ISIS

Data Center Interconnect
- Overlay Transport Virtualization (OTV)

DC Fabric Networking

Data Center Fabric
- FabricPath
- Cisco Nexus 7K, 6K, 5K, 2K

Fabric Services
- Tenancy
- Secure Segmentation (VRF, VLAN)
- Traffic QoS

L4-L7 Services

Physical and Virtual Services
- Firewalls (Cisco ASA)
- Load Balancer (Citrix SDX)
- Virtual Service Gateway (VSG)
- Expanded Palladium Network Container

Hypervisors and Virtual Networking

Hypervisors
- VMware vSphere
- Microsoft Hyper-V

Hypervisor Services
- Live and Cold Application Migrations
- Extended Clusters
- VM High Availability and Recovery Services
- Site Affinity Services

Virtual Switching
- Cisco Nexus 1000v

Compute

Unified Compute System
- B-Series Blade Servers
- C-Series Rack Servers
- Physical and Virtual Interfaces
- Port Profiles
- Security Profiles

Integrated PoDs
- FlexPod

Storage

Storage
- NetApp

Storage Fabrics
- FCoE and FC
- 10GE
- DWDM & IP Extensions

Data Replication
- Synchronous (NetApp MetroCluster)
- Asynchronous (NetApp SnapMirror)
- Synchronous (Microsoft Shared Nothing Live Migration)
- Asynchronous (Microsoft Replica)

Cisco Validated Design

Cloud Infrastructure Integrates **Physical and Virtual Components** Required by Business Critical Applications

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The high-quality Cisco Business Continuity and Workload Mobility Solution consists of Cisco Unified Data Center and Data Center Interconnect (DCI) solutions; other architectural components such as infrastructure abstraction, orchestration and automation, and analytics; and integrated services (Figure 3).

Why Cisco?

Because this type of infrastructure takes a holistic approach, Cisco provides customers with the potential to fundamentally change the economics of the data center, the management of the applications that run on it, and the productivity of the staff that operates it - enabling dramatic and sustained cost reduction. This kind of data center can be designed to efficiently enable change, automating management and security and delivering IT-as-a-service (ITaaS).

For More Information

- Solution blog: http://blogs.cisco.com/datacenter/business-continuity-and-workload-mobility-for-the-private-cloud-cisco-validated-design-part-1/
- Solution design guide: http://www.cisco.com/c/en/us/td/docs/solutions/Enterprise/Data_Center/VMDC/DCI/1-0-1/DG/DCI.html
- Cisco VMDC releases: http://www.cisco.com/go/vmdc
- Cisco TechWise TV episode, "Business Continuity for the Cloud": http://cs.co/9000my6i