

# Service Provider Offers Active-Active Recovery Service



## Executive Summary

### CareTech Solutions

- Service Provider for Healthcare
- Troy, Michigan
- 700 Employees

### Challenge

- Build secure multitenant environment for healthcare customers
- Scale to serve more customers using more services
- Enhance disaster recovery service

### Solution

- Cisco Nexus Switches and Cisco MDS 9200 Multilayer Switch
- Overlay Transport Virtualization feature for Layer 2 LAN extension

### Results

- Strengthened disaster recovery service with active-active data centers
- Acquired 10Gbps bandwidth to support business growth and cloud-based service offerings
- Eliminated need to schedule maintenance windows for switch software upgrades

CareTech Solutions used Overlay Transport Virtualization to split server clusters between two data centers.

### Challenge

CareTech Solutions provides IT and web products and services to hospitals and health systems throughout the United States. In 2008-2010, the company won the award for IT outsourcing from KLAS, an independent researcher helping healthcare providers make technology decisions.

CareTech has grown steadily in a challenged economy, and anticipates a surge in business as recovery continues. To prepare for growth and respond to heightened customer interest in disaster recovery, CareTech built a second data center facility about one mile from the primary facility, connecting the two buildings over IP. “Our healthcare customers have come to appreciate the cost savings from shared equipment, so we wanted a secure, operationally efficient multitenant environment,” says Louie Caschera, Chief Information Officer for CareTech solutions.

Layer 2 connectivity between the two facilities would make it possible to split customers’ application clusters between the two sites, so that CareTech could move workload over the network if either facility went down. The environment is 95percent virtualized. “We already offered an active-standby configuration within one data center, and extending it to two data centers would provide even greater high-availability and disaster-recovery capabilities,” says Caschera. “While Layer 2 connectivity within one data center is easy, it is far more difficult across multiple sites.”

“One of the biggest benefits of the Cisco Nexus switching architecture is that CareTech has the assurance it needs to keep client applications highly available.”

– **Louie Caschera**  
Chief Information Officer  
CareTech Solutions

## Solution

CareTech built a scalable, resilient data center network using the Cisco Nexus® family of switches, Cisco® MDS 9200 Multilayer Switch, and Cisco ASA 5585 Adaptive Security Appliances. “Cisco Nexus Switches provide the 10Gbps bandwidth to support future cloud-based services,” says Joel Lumsden, Network Manager for CareTech Solutions. “They give us the flexibility to use Fibre Channel or Fibre Channel over Ethernet for storage access. And the Cisco Nexus 7000 OTV [Overlay Transport Virtualization] feature makes it much easier to extend customer LANs across our two facilities than it would be with MPLS [Multiprotocol Label Switching].”

Both data centers have a pair of Cisco Nexus 7000 Switches at the core. CareTech configured the Cisco Nexus 7000 Switches with Virtual Device Contexts (VDCs), making each physical switch act like multiple logical switches. One VDC is used for customer traffic; another carries shared services used by multiple customers, such as a document-imaging application, and the third is dedicated to OTV. CareTech plans to add more customer VDCs as the business grows.

Blade servers operating customer applications connect to the core network through Cisco Nexus 2248 and 2232 Fabric Extenders over 10 Gigabit Ethernet or Gigabit Ethernet. These fabric extenders aggregate into redundant Cisco Nexus 5000 Switches that connect to the core over 10 Gigabit Ethernet. CareTech can manage all of the fabric extenders through the Cisco Nexus 5000 Switch, minimizing IT overhead. Some customer servers’ access storage through a Cisco MDS 9200 Multilayer Switch and each building has a Cisco ASA 5585 Adaptive Security Appliance for firewall services.

CareTech currently uses OTV to provide high availability for shared services, splitting the server customers between the two data centers and configuring them in active-standby fashion. Firewall services traverse OTV, so CareTech can use OTV as the transport for the stateful failover link between the company’s shared internal firewalls.

CareTech is also currently testing OTV for a customer application that has been split between the two facilities. Both the operating system and application have a requirement for Layer 2 adjacency, and OTV satisfies this requirement.

Cisco built a proof of concept for OTV in Cisco’s offices. “After that, our IT team was able to implement OTV ourselves, with little assistance,” says Lumsden. “OTV is working very well, and we have had no issues.”

## Results

### Robust Disaster Recovery Service

Using the Cisco Nexus 7000 OTV feature, CareTech has successfully tested using VMware vMotion to move workload between data centers without interrupting customers’ production traffic. “Building an active-standby service in different buildings instead of different floors of the same building improves high availability and disaster recovery,” Caschera says. The company will soon begin using the Cisco Nexus 1000V, so that applications maintain the same IP address even when they move between physical servers and data centers, a requirement for many healthcare applications.

Building the disaster recovery service without OTV would have required in-depth expertise in MPLS. “Layer 2 extension is much simpler with OTV than MPLS, and avoids the risk of having one Spanning Tree domain,” says Lumsden. “And as a software feature of the Cisco Nexus 7000 Switch, OTV does not require dedicated hardware.”

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CareTech Solutions



### High Availability and Simplified Maintenance

CareTech regards the Cisco NX-OS In-Service Software Upgrade (ISSU) feature as an important enabler for a shared physical infrastructure. “When we move our entire shared environment to the Cisco Nexus environment, we will no longer have to coordinate with multiple customers for maintenance upgrades,” says Lumsden. CareTech has already taken advantage of ISSU to perform code upgrades on Cisco Nexus 7000 and 5000 Switches, with no impact on customers’ production traffic.

“One of the biggest benefits of the Cisco Nexus switching architecture is that CareTech has the assurance it needs to keep client applications highly available,” says Caschera. The company also expects ISSU to simplify business acquisitions by making it possible to integrate new servers into the environment without interrupting existing services.

### Business Agility

The Cisco Nexus infrastructure also simplifies business growth. “Part of our value proposition is that we have the infrastructure to quickly add data center resources, helping our customers remain agile,” says Caschera. “As the business grows, we can quickly and cost-effectively add more ports using Cisco Nexus 5000 Series Switches and Nexus 2000 Series Fabric Extenders. And configuration takes a few minutes, compared to a week or more in the previous environment.”

### Low Total Cost of Ownership

Use of the NX-OS operating system for all data center switches and the Cisco MDS Multilayer Switch simplifies management. “One of the biggest benefits of the Cisco NX-OS environment is being able to provide the same level of service as the business grows, but without adding more employees,” says Lumsden.

More savings come from lower data center space, power, and cooling requirements. Lower energy consumption also supports CareTech commitment to environmental sustainability.

### Next Steps

The company expects to eventually build a third data center and use OTV to enable active-active and active-standby configurations among all three facilities.

CareTech also plans to use the Cisco Nexus 1000V, a software-based switch that allows networking and security policies to follow each virtual server as it moves between physical servers. A major advantage will be freeing the company’s server teams from having to manage the networking components inside VMware. “Our staff will need very little training to step into the virtual networking realm, because the Cisco Nexus 1000V Switch is based on the same NX-OS used for our other Cisco Nexus switches,” Lumsden says.

## Product List

### Data Center

- Cisco Nexus 7000 Series Switches
- Cisco Nexus 5548, 5020, and 5010 Switches
- Cisco Nexus 2248 and 2232 Fabric Extenders
- Cisco MDS 9200 Multilayer Switch
- Cisco ASA 5585 Adaptive Security Appliance

## For More Information

To find out more about the Cisco Nexus family of switches, visit:  
[www.cisco.com/go/nexus](http://www.cisco.com/go/nexus).

To find out more about Cisco Data Center Business Advantage solutions, visit:  
[www.cisco.com/go/dc](http://www.cisco.com/go/dc).

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