

RIVO MULTITRADE OPTICAL SYSTEMS

Core Switch Two-to-One Virtualization Technology



Overview

VSS technology allows for the grouping of two Cisco Catalyst 6500 switches into a single virtual switch.

Key Takeaways

Two-to-one switch virtualization allows two physical core switches to operate as a single logical switch, simplifying management, enhancing redundancy, and improving network resiliency.

Two-to-one virtualization technology enables two independent physical switches to function as a single logical switch, sharing the same configuration, management IP, and forwarding state. This approach is widely used in core and distribution layers to provide high availability, seamless failover, and simplified network topology. By virtualizing two switches, the network treats them as a single device, reducing the complexity of spanning-tree domains and enabling loop-free topologies.

Key Technologies Cisco StackWise Virtual (SV)

- **Functionality:** Connects two Cisco Catalyst 9000 switches using a StackWise Virtual Link (SVL) over 10G, 40G, or 100G interfaces, forming a single logical switch.
- **Control Plane:** One switch acts as the Active unit, the other as Standby, but both forward traffic simultaneously.
- **Redundancy Features:** Includes Stateful Switch Over (SSO), Non-Stop Forwarding (NSF), and Dual Active Detection (DAD) to prevent split-brain scenarios.

- Multi-Chassis EtherChannel (MEC): Allows uplinks to distribution switches to be combined into a single EtherChannel, eliminating blocked links in spanning-tree and increasing bandwidth .
- Deployment Example: Two Catalyst 9500 core switches connected via 40G SVL links appear as a single core switch to the distribution layer, ensuring high availability and operational simplicity .

Aruba VSX (Virtual Switching Extension)

- Functionality: Two ArubaOS-CX switches operate as a distributed, redundant architecture, each maintaining independent control while synchronizing state via a unique database .
 - High Availability: Designed for always-on access, VSX supports upgrades without downtime and provides redundancy similar to Multi-Chassis Link Aggregation (MC-LAG) and Virtual Switching Framework (VSF).
 - Topology Simplification: VSX allows two chassis to appear as a single logical switch, enabling cross-chassis link aggregation and reducing spanning-tree complexity .
- Benefits
- High Availability: Continuous operation even if one switch fails, with seamless failover.
 - Simplified Management: Single management IP and unified configuration for both switches.
 - Enhanced Bandwidth: Multi-chassis EtherChannel allows aggregation of multiple links across switches.
 - Topology Optimization: Reduces blocked links in spanning-tree, creating loop-free and efficient network designs.

- Scalability: Extends stacking beyond physical chassis, supporting cross-rack or cross-floor deployments .

Practical Considerations

- Link Requirements: SVL or VSX interconnects typically require high-speed links (10G, 40G, or 100G) for synchronization and traffic forwarding.
- Redundancy Planning: Ensure proper configuration of DAD or equivalent mechanisms to prevent split-brain scenarios.
- Compatibility: Only supported on specific switch models (e.g., Cisco Catalyst 9000 series for StackWise Virtual, Aruba 8400/8320 for VSX).
- EtherChannel Configuration: Multi-chassis EtherChannel must be configured to fully leverage the logical switch benefits. Two-to-one virtualization is a strategic approach for modern campus and data center networks, providing operational simplicity, high availability, and optimized traffic flow while reducing the complexity of traditional multi-switch topologies .

Article Content

Core Switch Two-to-One Virtualization Technology

At its core, Cisco VSS is a network system technology that allows multiple Cisco Catalyst Series Switches to amalgamate into a

Cisco Catalyst 9000 Platform StackWise Virtual White Paper

Cisco® Catalyst® 9000 platform StackWise® Virtual technology allows the clustering of two physical switches together

Integrating the Virtual Switching System in Cisco Data Center ...

VSS technology allows for the grouping of two Cisco Catalyst 6500 switches into a single virtual switch. A VSS

H3C S7500X Enterprise Core Switch Series

MDC virtualizes one S7500X switch into multiple logical switches, enabling multiple services to share one core switch. The 1:N

To replace your two core switches with a Virtual Switching System (VSS

We are planning to replace these two independent cores with a VSS (Virtual Switching System) pair. Could you

Cisco Switch Virtualization

One way of solving this problem is to create a logical switch. Cisco switches offer some technologies to convert two or more physical

H3C S10500 Series Switches

MDC virtualizes one S10500 switch into multiple logical switches, enabling multiple services to share one core switch. The 1:N

Core Switches vs Ordinary Switches: Key Differences for Data Center ...

Discover the key differences between core switches and ordinary switches. Learn how core switches enhance network reliability,

CloudEngine 12800 Series High-Performance Core Switches

The CE12800 uses industry-leading CSS technology, which can virtualize a maximum of four physical switches into one logical

Cisco StackWise Virtual Explained 2025: Comparison & Deployment

StackWise Virtual delivers stacking-like simplicity to the distribution and core layers, combining high performance,

Create and configure a virtual switch with Hyper-V

Learn how to create and configure a virtual switch for use by the Hyper-V host and guest virtual machines.

Cisco Catalyst 9000 Platform StackWise Virtual White Paper

Cisco® Catalyst® 9000 platform StackWise® Virtual technology allows the clustering of two physical switches together

How to enable Virtualization Technology on Lenovo PC computers

How to enable Virtualization Technology on Lenovo PC computers Virtualization can be used to create virtual representations of

Multicore and Virtualization: An Introduction | CMU Software ...

The boxes labeled C1 through C4 on the left represent cores in a multi-core processor, whereas on the right they

Enable Virtualization on Windows | Microsoft Support

Enabling virtualization gives you access to a larger library of apps to use and install on your device. If you upgraded your device from

How to Enable Virtualization in BIOS/UEFI (VT-x & AMD-V)

Learn how to enable virtualization technology (Intel VT-x or AMD SVM) in BIOS/UEFI. Step-by-step instructions for

What is Server Virtualization? Complete Guide with Types, Benefits,

Server virtualization is a technology that partitions a single physical server into multiple isolated virtual servers using

What is Nested Virtualization for Hyper-V? | Microsoft Learn

Nested virtualization in Hyper-V lets you run Hyper-V inside a VM. Learn how it works, supported scenarios, and when

Hyper-V

Hyper-V is a native hypervisor developed by Microsoft; it can create virtual machines on x86-64 systems running Windows. It is

Replacing one core switch with two new core switches

I will have to replace our old core Cisco switch C4506-E with two new core switches C9500 that will be located in two

Network function virtualization

Network function virtualization (NFV) is a network architecture concept that leverages IT virtualization technologies to virtualize

Virtualization (VT-x/AMD-V)

Navigate to Security tab, then press Enter on Virtualization. Select Intel (R) Virtualization Technology, Press Enter, choose Enable

What is CPU Virtualization & How to Enable it in BIOS?

One of the main advantages of CPU virtualization is that it allows you to run two different

Virtualization in Cloud Computing and Types

Virtualization is the fundamental technology that powers Cloud Computing. It allows you to create multiple simulated

Virtualization Architecture in System Design

The framework and techniques used to create and manage virtual instances of computer resources, such as hardware

How to Enable Intel Virtualization Technology | Easy Guide!

How to Activate Virtualization Technology to Use Software on a PC To enable virtualization on your PC, your Intel or

Computers, Monitors & Technology Solutions | Dell USA

Computers, Monitors & Technology Solutions | Dell USA

How to Enable Intel VT-x in Your Computer's BIOS or UEFI Firmware

If you have an Intel CPU and uninstalling Hyper-V didn't solve your problem---or your virtualization app reported that

How to Enable Virtualization in BIOS: IT Guide | Syncro

Get a step-by-step guide for how to enable virtualization in BIOS for ASUS, Dell, HP, Lenovo, Dell, and Windows

Network Functions Virtualization

Network Functions Virtualization (NFV) is a technology that virtualizes traditional network functions, like routing, load

Create and configure a virtual switch with Hyper-V

Learn how to create and configure a virtual switch for use by the Hyper-V host and guest virtual machines.

Cisco Catalyst 9000 Platform StackWise Virtual White Paper

Cisco® Catalyst® 9000 platform StackWise® Virtual technology allows the clustering of two physical switches together

How to enable Virtualization Technology on Lenovo PC computers

How to enable Virtualization Technology on Lenovo PC computers Virtualization can be used to create virtual representations of

Multicore and Virtualization: An Introduction | CMU Software ...

The boxes labeled C1 through C4 on the left represent cores in a multi-core processor, whereas on the right they

Enable Virtualization on Windows | Microsoft Support

Enabling virtualization gives you access to a larger library of apps to use and install on your device. If you upgraded your device from

How to Enable Virtualization in BIOS/UEFI (VT-x & AMD-V)

Learn how to enable virtualization technology (Intel VT-x or AMD SVM) in BIOS/UEFI. Step-by-step instructions for

How To Enable or Disable Hardware Virtualization on Dell Computers

Enable or disable Hardware Virtualization on Dell computers. Power on your computer. Press F2 when the Dell logo

How to enable virtualization technology on HP laptop PCs

Learn how to how to enable virtualization technology on HP laptop PCs. Follow the steps

What are hypervisors?

Why are hypervisors important? Hypervisors provide the foundation for modern virtualization practices and are crucial

Cisco Catalyst 6500 Series Switches

Find software and support documentation to design, install and upgrade, configure, and troubleshoot Cisco Catalyst

What is Server Virtualization? Complete Guide with Types, Benefits,

Server virtualization is a technology that partitions a single physical server into multiple isolated virtual servers using

What is Nested Virtualization for Hyper-V? | Microsoft Learn

Nested virtualization in Hyper-V lets you run Hyper-V inside a VM. Learn how it works, supported scenarios, and when

Hyper-V

Hyper-V is a native hypervisor developed by Microsoft; it can create virtual machines on x86-64 systems running Windows. It is

Replacing one core switch with two new core switches

I will have to replace our old core Cisco switch C4506-E with two new core switches C9500 that will be located in two

Core Switch Two-to-One Virtualization Technology

At its core, Cisco VSS is a network system technology that allows multiple Cisco Catalyst Series Switches to amalgamate into a

Cisco Catalyst 9000 Platform StackWise Virtual White Paper

Cisco® Catalyst® 9000 platform StackWise® Virtual technology allows the clustering of two physical switches together

Integrating the Virtual Switching System in Cisco Data Center ...

VSS technology allows for the grouping of two Cisco Catalyst 6500 switches into a single virtual switch. A VSS

H3C S7500X Enterprise Core Switch Series

MDC virtualizes one S7500X switch into multiple logical switches, enabling multiple services to share one core switch. The 1:N

To replace your two core switches with a Virtual Switching System (VSS

We are planning to replace these two independent cores with a VSS (Virtual Switching System) pair. Could you

Cisco Switch Virtualization

One way of solving this problem is to create a logical switch. Cisco switches offer some technologies to convert two or more physical

H3C S10500 Series Switches

MDC virtualizes one S10500 switch into multiple logical switches, enabling multiple services to share one core switch. The 1:N

Core Switches vs Ordinary Switches: Key Differences for Data Center ...

Discover the key differences between core switches and ordinary switches. Learn how core switches enhance network reliability,

CloudEngine 12800 Series High-Performance Core Switches

The CE12800 uses industry-leading CSS technology, which can virtualize a maximum of four physical switches into one logical

Cisco StackWise Virtual Explained 2025: Comparison & Deployment

StackWise Virtual delivers stacking-like simplicity to the distribution and core layers, combining high performance,

Core Switch Two-to-One Virtualization Technology

At its core, Cisco VSS is a network system technology that allows multiple Cisco Catalyst Series Switches to amalgamate into a

Cisco Catalyst 9000 Platform StackWise Virtual White Paper

Cisco® Catalyst® 9000 platform StackWise® Virtual technology allows the clustering of two physical switches together

Integrating the Virtual Switching System in Cisco Data Center ...

VSS technology allows for the grouping of two Cisco Catalyst 6500 switches into a single virtual switch. A VSS

H3C S7500X Enterprise Core Switch Series

MDC virtualizes one S7500X switch into multiple logical switches, enabling multiple services to share one core switch. The 1:N

To replace your two core switches with a Virtual Switching System (VSS

We are planning to replace these two independent cores with a VSS (Virtual Switching System) pair. Could you

Cisco Switch Virtualization

One way of solving this problem is to create a logical switch. Cisco switches offer some technologies to convert two or more physical

H3C S10500 Series Switches

MDC virtualizes one S10500 switch into multiple logical switches, enabling multiple services to share one core switch. The 1:N

Core Switches vs Ordinary Switches: Key Differences for Data Center ...

Discover the key differences between core switches and ordinary switches. Learn how core switches enhance network reliability,

CloudEngine 12800 Series High-Performance Core Switches

The CE12800 uses industry-leading CSS technology, which can virtualize a maximum of four physical switches into one logical

Cisco StackWise Virtual Explained 2025: Comparison & Deployment

StackWise Virtual delivers stacking-like simplicity to the distribution and core layers, combining high performance,

Contact Us

Continue your research online:

Website: <https://rivomultitrade.co.za>

Technical inquiry: <https://rivomultitrade.co.za/contact.html>

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

