Cisco Catalyst Blade Switch Series for Dell PowerEdge
Easy, Smart, and Flexible Blade Server I/O Solution

Challenges

Organizations of all types continue to invest in IT to develop new revenue opportunities, reduce costs, and improve service levels. However, this continuing investment is exacerbating facilities concerns for organizations, especially in the areas of power, cooling, rack space, and cable management. These challenges are especially salient in the area of server infrastructure, where application proliferation along with the widespread adoption of x86-based scale-out architectures has lead to significant server sprawl in the data center.

While blade servers offer a high-density, cost-effective solution for delivering scale-out x86 architectures, they significantly increase the number of network access switches and operational challenges. Cisco Catalyst® Blades Switches address these challenges with innovations such as virtual blade switch (VBS) technology. Cisco® blade switches provide an easy, smart, and flexible blade server I/O solution that enables customers to gain the full benefits offered by the blade server architecture.

Cisco Catalyst Blade Switches Overview

Cisco Catalyst Blade Switches are a comprehensive I/O solution for blade server network services that transparently extend network fabric from the blade server edge to clients at the network edge. The Cisco Catalyst Blade Switches product family includes Cisco Catalyst Ethernet blade switches and Cisco MDS 9000 family Fibre Channel blade switches, helping ensure blade server and virtual machine availability, simplify operations, and provide virtualized data center infrastructure while lowering total cost of ownership (TCO) and improving end-user and IT productivity. Cisco advanced network services in combination with simplified management help reduce TCO.

Dell PowerEdge M1000e Modular Blade Enclosure Overview

The Dell PowerEdge M1000e Modular Blade Enclosure represents the latest advancement in blade server and modular switch integration. Figure 1 shows front and back views of the cabinet.

Figure 1: Front and Back Views of Dell PowerEdge M1000e Enclosure

The Dell PowerEdge M1000e enclosure provides redundant power, cooling, and management infrastructure for the blades and I/O modules. The FlexIO architecture of the Dell PowerEdge M1000e, of which Cisco Catalyst Blade Switches are a crucial part, enables exceptional I/O flexibility and bandwidth.

Dell FlexAddress for PowerEdge M1000e

Dell FlexAddress provides a simple, low-cost way for customers to deploy and manage blade infrastructures while reducing data center downtime. Changes to the underlying hardware, whether upgrades or replacements, are transparent to the network. Since Dell FlexAddress does not add a management layer, it can easily integrate into the network management tools already in use in any data center today, such as CiscoWorks solutions.

Cisco Catalyst Blade Switches for Dell

Cisco has coordinated development with Dell to bring the Cisco Catalyst Blade Switches to the Dell M1000e blade server. The Cisco Catalyst Blade Switch 3032 offers an entry-level Gigabit switch for the Dell M1000e that helps customers connect servers to the external network using Gigabit connectivity. At the mid-high end are two configurations for the Cisco Catalyst Blade Switch 3130 for Dell.

Cisco Catalyst Blade Switch 3032 for Dell M1000E

The Cisco Catalyst Blade Switch 3032 for Dell M1000E (Figure 2) provides Dell customers with an integrated switching solution that dramatically reduces cable complexity by eliminating the need for each server blade to be networked individually. The Cisco Catalyst Blade Switch 3032 for Dell M1000E provides the following hardware configuration: 16 internal gigabit Ethernet ports connected to servers through the Dell M1000e backplane, up to eight gigabit Ethernet uplinks, one external console port.

Figure 2: Cisco Catalyst Blade Switch 3032 for Dell M1000E

Cisco Catalyst Blade Switch 3130 for Dell M1000E

The Cisco Catalyst Blade Switch 3130 for Dell M1000E has two configurations (Figure 3). The Cisco Catalyst Blade Switch 3130 can mix-and-match 1 Gigabit Ethernet and 10 Gigabit Ethernet switches, providing customers with a cost-effective migration path.

Configuration 1: Cisco Catalyst Blade Switch 3130G for Dell M1000E. This configuration allows customers to connect the switch to the existing network fabric using Gigabit Ethernet uplinks. Supports up to 8 Gigabit Ethernet uplink ports: 4 10/100/1000BASE-T ports and 4 Small Form-Factor Pluggable (SFP) Gigabit Ethernet ports (using Cisco TwinGig Converter Modules in the X2 slots).

Configuration 2: Cisco Catalyst Blade Switch 3130X for Dell M1000E. This configuration allows customers to connect the switch to the existing network fabric using Gigabit and 10 Gigabit Ethernet uplinks. Supports up to 4 10/100/1000BASE-T ports and 2 X2-based 10 Gigabit Ethernet ports.

Figure 3: Cisco Catalyst Blade Switch 3130 for Dell M1000E

Virtual Blade Switch

With the Cisco Catalyst Blade Switch 3130, Cisco has a unique technology called the VBS. Much like server virtualization technology, this switch virtualization technology treats the individual physical switches within a rack as one logical switch (Figure 4).

Figure 4: VBS Allows Up to Eight Switches to Be Treated as a Single Virtual Switch
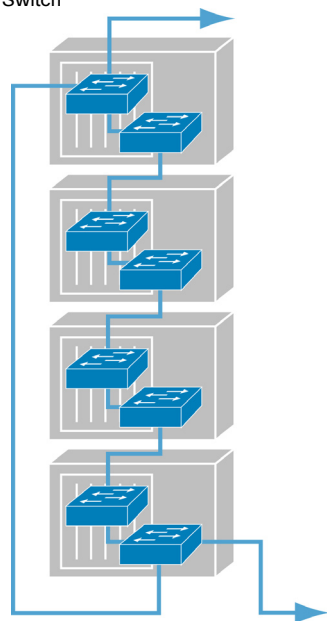
As with server virtualization technology, this innovation allows the switches to deliver better utilization, increased performance, and greater resilience while simplifying operations and management.

Benefits of Cisco Catalyst Blade Switches

Built on the market-leading Cisco hardware and Cisco IOS® Software, the Cisco Catalyst Blade Switches are engineered with innovative technologies specifically designed to meet the rigors of blade server–based application infrastructure. Specifically, the switch is designed to support blade servers in their new role by delivering scalable, high-performance, highly resilient connectivity while supporting ongoing initiatives to reduce server infrastructure complexity and TCO.

- **Easy:** Easy to operate and deploy
  - Fewer switches to manage with VBS technology, which solves problem of switch sprawl
  - Consistent management interface and tools throughout the Cisco data center and blade switch portfolio, which accelerates service provisioning and simplifies troubleshooting
  - VBS technology provides operational transparency and efficiency during replacement and addition of switches
- **Smart:** Feature-rich "server-smart" networking solution
  - Provides highly resilient LAN uplinks to increase blade server and virtual machine availability using innovations such as trunk failover and EtherChannel
  - Helps secure application servers and virtual machines by using private VLANs and access-control lists (ACLs)
  - Provides intelligent congestion management mechanisms to optimize network bandwidth using QoS
  - Provides advanced Layer 2 and 3, IPv4, IPv6, and multicast capabilities to facilitate smart end-to-end server networking in the data center

- **Flexible:** Flexible solution to scale resources and facilitate data center virtualization
  - Provides flexibility with VBS to configure network topology based on application needs such as performance, scalability, and resiliency
  - Provides investment protection and a flexible transition path with VBS and the capability to mix and match Gigabit Ethernet and 10 Gigabit Ethernet switches
  - Provides flexible options for configuration and management such as a command-line interface (CLI) and a GUI

Conclusion

The Cisco Catalyst Blade Switches product family designed for Data Center 3.0 provides the following benefits to server, storage, and network organizations:

- Lowers costs with VBS by reducing the number of cables required to connect blade servers
- Increases IT productivity with simplified and consistent management and troubleshooting tools
- Helps ensure blade server and virtual machine availability after live migrations with innovative LAN features
- Provides faster server deployments by taking advantage of an end-to-end virtualized Data Center 3.0 architecture

For More Information

See http://www.cisco.com/go/bladeswitch.