Cisco Etherswitch Service Modules

Overview

Q. What are the Cisco® EtherSwitch® service modules?

A. The Cisco EtherSwitch service modules are integrated switching modules for Cisco routers. These are the first enhanced network modules (NME) that can take advantage of NME slots on Cisco integrated services routers. The EtherSwitch service modules expand the features of previous EtherSwitch network modules. These new modules are true service modules, meaning that they run an independent Cisco IOS® Software image and provide access through a reverse Telnet from the router. New features include the addition of IEEE 802.3af-compliant Power over Ethernet (PoE), local Layer 3 switching, support for Cisco Network Administrator and Cisco Emergency Responder, and on one module, Cisco StackWise™ interfaces.

Q. How does the "reverse Telnet" connection work?

A. Reverse Telnet uses an internal, virtual Telnet interface from the router to the module. The actual CLI command is service-module g x/y session. This technique allows a console-type access to the module without an external console connection.

Q. What are the benefits of using the EtherSwitch service modules?

A. Integrated switching and routing is a proven combination in the marketplace. It provides lower cost of ownership and ease of management for those customers interested in a single solution. Cisco StackWise interfaces expand the integration to a stack of Cisco Catalyst® 3750 and Catalyst 3750-E Series desktop switches, and the EtherSwitch service modules offer common software and features with those switches. Some specific benefits include:

- Single management platform
- Single maintenance contract (one Cisco SMARTnet® contract covers both router and switch)
- Shared redundant power supply with Cisco Redundant Power System 2300 (RPS 2300)
- Redundant physical links between the router and switch stack when using the Cisco StackWise connections
- Scalable, expandable switching densities that can grow with the needs of the customer

Q. What platforms will support the EtherSwitch service modules?

A. Table 1 shows platform support per module.

Table 1. Platforms Supported

Module	Platform
16 FE + 1 GE NME	• Cisco 2691 Multiservice Platform • Cisco 3725 and 3745 Multiservice Access Routers • Cisco 2811, 2821, and 2851 Integrated Services Routers • Cisco 3825 and 3845 Integrated Services Routers • Cisco 2911, 2921, and 2951 Integrated Services Routers • Cisco 3925 and 3945 Integrated Services Routers
23 FE + 1 GE NME-X	• Cisco 2821 and 2851 Integrated Services Routers • Cisco 3825 and 3845 Integrated Services Routers
24 FE + 1 SFP + 2 StackWise NME-XD	• Cisco 2851 Integrated Services Router • Cisco 3825 and 3845 Integrated Services Routers
48 FE + 2 SFP NME-XD	• Cisco 2851 Integrated Services Router • Cisco 3825 and 3845 Integrated Services Routers

Q. What is the difference between the EtherSwitch service modules and the existing EtherSwitch network modules and EtherSwitch high-speed WAN interface cards (HWICs)?

A. The EtherSwitch service modules are full-featured desktop switches in a blade form factor] They offer common features and software with the industry-leading Cisco Catalyst 3750 and Catalyst 3750-E Series desktop switches, with full integration into a Cisco router. Because the EtherSwitch service modules run a separate Cisco IOS Software image, the same image as the Cisco Catalyst 3750 and Catalyst 3750-E Series desktop switches, it will maintain real-time feature parity into the future. This means that customers will maintain two Cisco IOS Software images per router/switch module combination as well as individual configurations for these components. EtherSwitch service modules can provide inline power to IP phones, access points, and other powered devices, both those IEEE 802.3af compliant devices as well as Cisco pre-standard ones.

The EtherSwitch network modules are based on the Cisco Catalyst 2950 chipset and have their configuration integrated directly into the hosting router. This provides a single image and configuration file while forcing a feature lag from the compatible desktop switches. These modules can provide only Cisco pre-standard inline power to attached devices.

The EtherSwitch HWICs provide low-density integrated switching to all platforms with a HWIC slot. This provides a modular, integrated switching capability into those platforms, like the Cisco 1841/1941 and Cisco 2801/2901 Integrated Services Routers, which cannot support a network module or NME slot. These cards expand the switching options for those platforms with an NME slot, offering customers the ability to incorporate low-density switching or expand the switching capacity of the platform by a few ports. The EtherSwitch HWICs use a commercial chipset but are based on the same Cisco IOS Software code as the EtherSwitch network modules. They support both 802.3af as well as Cisco pre-standard PoE implementations.

Q. Why are the EtherSwitch service modules incompatible with the Cisco 2600/2600XM and Cisco 3600 Series routers?

A. The EtherSwitch service modules meet the NME standard and therefore draw more power than the Cisco 2600/2600XM and Cisco 3600 platforms can provide to a network module slot. Many of these platforms have reached end of sale (EOS) and no additional development effort is being done on them. At this writing, the Cisco 2600XM platforms have not reached end of sale, but cannot support the NMEs. The Cisco 2691 and Cisco 3700 series platforms, while not able to fully support the NME standard, have enhanced power to their NM slots and can support the new modules.

Q. How will the NME EtherSwitch Service Module seat in an Integrated Services Router Generation 2 Sevice Module slot?

A. When an NME EtherSwitch Service Module is installed in an Integrated Services Router Generation 2, the module must use an adapter card in order to be seated in a Service Module slot. When doing so, the EtherSwitchEtherSwitch Service Module will not be able to benefit from the enhanced internal connection options of a native Service Module. Instead the EtherSwitch Service Module will keep the same internal connection characteristics as in the Cisco 2800/3800 series.

Q. Should I expect the current EtherSwitch network modules and EtherSwitch HWICs to reach end of sale soon?

A. No plan for end of sale of either of these cards currently exists. The EtherSwitch HWICs are new and provide switching capabilities to those integrated service routers that do not have NME slots or do not need the features or density of the EtherSwitch service modules. The existing EtherSwitch network modules provide a switching option to the installed base of Cisco 2600/2600XM and Cisco 3600 Series routers and are supported in the Cisco 2691, Cisco 3700 Series, and the Cisco Integrated Services Routers. The EtherSwitch network modules offer the option of an external power supply for those implementations that require it.

Q. What are Small Form-Factor Pluggable (SFP) transceivers?

A. SFPs transceivers provide Gigabit Ethernet connectivity from the EtherSwitch service modules to distribution-layer switches. They are functionally equivalent to gigabit interface converters (GBICs) but are smaller.

Q. Which SFP transceivers are supported in the EtherSwitch service modules?

A. The following SFP interfaces are supported in EtherSwitch service modules:

- GLC-LH-SM
- GLC-SX-MM
- 1000Base-SX-MM
- GLC-ZX-SM
- GLC-T
- GLC-GE-100FX
- CWDM-SFP-1470
- CWDM-SFP-1610

Q. Do the EtherSwitch service modules interoperate with SFP transceivers from other vendors?

A. No, like other Cisco switches and routers, the EtherSwitch service modules do not interoperate with third-party SFP transceivers. The switch modules will shut down the port if an SFP transceiver is inserted that is not from Cisco.

Q. Can the 1000BASE-T SFP transceiver support 10/100/1000 Mbps speeds?

A. Yes, the copper SFP transceiver is supported at all three speeds.

Q. What are the part numbers and details?

A. Table 2 provides details per module.

Table 2. Product Details

Module Part Number	Ports	Supported Platforms/ Number per Platform	Maximum Powered Ports per Card
NME-16ES-1G	• 16x10/100 RJ-45 • 1x10/100/1000 RJ-45	• Cisco 2691/1 • Cisco 3725/2 • Cisco 3745/2 • Cisco 2811/1 • Cisco 2821/1 • Cisco 2851/1 • Cisco 3825/2 • Cisco 3845/2 • Cisco 2911/1 • Cisco 2921/1 • Cisco 2951/2 • Cisco 3925/2 • Cisco 3945/4	–
NME-16ES-1G-P	• 16 x 10/100 RJ-45 • 1 x 10/100/1000 RJ-45	• Cisco 3725/2 • Cisco 3745/2 • Cisco 2811/1 • Cisco 2821/1 • Cisco 2851/1 • Cisco 3825/2 • Cisco 3845/2 • Cisco 2911/1 • Cisco 2921/1 • Cisco 2951/2 • Cisco 3925/2	16

		• Cisco 3945/4	
NME-X-23ES-1G	• 23 x 10/100 RJ-45 • 1 x 10/100/1000 RJ-45	• Cisco 2821/1 • Cisco 2851/1 • Cisco 3825/1 • Cisco 3845/2	–
NME-X-23ES-1G-P	• 23 x 10/100 RJ-45 • 1 x 10/100/1000 RJ-45	• Cisco 2821/1 • Cisco 2851/1 • Cisco 3825/1 • Cisco 3845/2	24
NME-XD-24ES-1S-P*	• 24 x 10/100 RJ-45 • 1 x SFP-based Gigabit Ethernet • 2 StackWise interfaces	• Cisco 2851/1 • Cisco 3825/1 • Cisco 3845/1	24
NME-XD-48ES-2S-P	• 48-10/100 RJ-45 • 2x SFP-based Gigabit Ethernet	• Cisco 2851/1 • Cisco 3825/1 • Cisco 3845/2	48

* Only one EtherSwitch service module is supported in a platform when using the NME-XD-24ES-1S-P.

Q. How do I configure the EtherSwitch service modules?

A. The configuration of EtherSwitch service modules is done in two parts. First, configure the router connection. This is an internal Gigabit Ethernet connection to the router backplane and represents the logical connection between the switch modules and the router. Then issue the session command to connect to the command-line interface (CLI) of the EtherSwitch service module itself. At this point you may configure all of the ports and interfaces on the module. For specific details on configuring selected switch features, see the Cisco IOS Software 12.2(25)EZ release notes. You can also configure and manage the EtherSwitch service module using a combination of the Cisco Router and Security Device Manager (SDM) and the embedded EtherSwitch device manager. Both of these tools come pre-installed by default.

Q. Do the EtherSwitch service modules work in the same platform as the existing EtherSwitch network modules and HWICs?

A. Yes, you can use both the current EtherSwitch network modules and HWICs along with the EtherSwitch service modules. Because they do not share a common VLAN database, you do not need to connect the current EtherSwitch network modules with the new modules through intrachassis stacking. However you must continue to use intrachassis stacking to connect two of the current EtherSwitch network modules.

Because the EtherSwitch service modules are standalone switches on a blade, they do not require intrachassis stacking, nor do they support it. Connectivity between the current EtherSwitch network modules and the new service modules can be achieved in one of two ways: either at Layer 3 through the router backplane, or over a trunking connection using an external Ethernet cable. With the trunking approach, separate VLAN databases are maintained for the EtherSwitch service module and the aggregation of current modules in the platform. Because multiple VLAN database files are involved in the scenario described above, VLAN Trunking Protocol (VTP) should be used for pruning VLANs between the databases.

Q. How many switch ports can I install in each platform?

A. Table 3 shows the maximum switch port densities in Cisco routers.

Table 3. Maximum Switch Port Densities per Router Model

Platform	EtherSwitch HWICs	EtherSwitch Network Modules	EtherSwitch Service Modules	Maximum Switch Ports per Platform
Cisco 2691	–	1	1*, **	• 16 FE • 1 GE
Cisco 3725	–	2	2*, ***	• 48 FE • 2 GE

Cisco 3745	–	2	2*, ***	• 72 FE • 2 GE
Cisco 2801	2	–	–	• 16 FE
Cisco 2811	2	1	1*	• 32 FE • 1 GE
Cisco 2821	2	1	1	• 39 FE • 1 GE
Cisco 2851	2	1	1	• 64 FE • 2 GE SFP
Cisco 3825	2	2	2	• 88 FE • 3 GE (2 SFP)
	2	2	2	• 112 FE • 4 GE SFP
Cisco 2911	2	2	1	• 32 FE • 1 GE
Cisco 2921	2	2	1	• 32 FE • 1 GE
Cisco 2951	2	2	2	• 48 FE • 2 GE
Cisco 3925	2	2	2	• 48 FE • 2 GE
Cisco 3945	2	2	4	• 80 FE • 4 GE

* 16-port EtherSwitch service modules only.
** The Cisco 2691 cannot provide inline power to the EtherSwitch service modules.
*** The Cisco 3700 Series routers can support only Cisco pre-standard power, not IEEE 802.3af compliant power.

Software

Q. Which Cisco IOS Software releases support the EtherSwitch service modules?

A. The EtherSwitch service modules requires two Cisco IOS Software releases, one for the router and one for the switching module. Table 4 shows the minimum required Cisco IOS Software combinations.

Table 4. Minimum Cisco IOS Software Requirements

EtherSwitch Service Module	Switching Software Image	Router Image	Router Image Generation 2
NME-16ES-1G-P	12.2(25)EZ	12.3(14)T	15.0(1)M
NME-X-23ES-1G-P	12.2(25)EZ	12.3(14)T	Not supported
NME-XD-24ES-1S-P	12.2(25)EZ	12.3(14)T	Not supported
NME-XD-48ES-2S-P	12.2(25)EZ	12.3(14)T	Not supported
NME-16ES-1G	12.2(25)EZ	12.4(2)T	15.0(1)M
NME-X-23ES-1G	12.2(25)EZ	12.3(14)T	Not supported

Q. Can I upgrade images and feature sets independently on the module and hosting router?

A. As long as the minimum Cisco IOS Software release requirements are met, you may change images on either the router or the module without impacting the other. Each component may be upgraded independently, rebooted, and reloaded without impacting the other component.

Q. Which feature sets are supported?

A. Any feature set in the appropriate Cisco IOS Software release may be used. Both the router and the EtherSwitch service module usually ship with an IP Base feature set by default. You can purchase feature license upgrades and install them on both elements of the router/switch module solution.

Q. How do I purchase the feature set upgrades for the module?

A. To purchase enhanced feature sets for the module, select the upgrade feature sets for the Catalyst 3750 and Catalyst 3750-E Series Switches. Because the EtherSwitch service modules support the same Cisco IOS Software images as the Catalyst 3750 and Catalyst 3750-E Series Switches, the upgrade images are the same.

Q. How do I control the boot sequence of the EtherSwitch service modules and the hosting router?

A. The default behavior of the module is to boot automatically with the router. Using the boot manual global configuration command, the module can be booted separately from the router. With this approach, the router and EtherSwitch service module can be booted or reloaded individually.

Q. Is EnergyWise supported on the Ether Switch Service Modules?

A. Yes. EnergyWise is supported on all Ether Switch Service Modules

Q. What benefits does EnergyWise bring?

A. Cisco EnergyWise is an innovative architecture, reducing energy consumption across an entire corporate infrastructure. Cisco EnergyWise enables companies to measure the power consumption of network infrastructure and network-attached devices and manage power consumption with specific policies, reducing power consumption to realize increased cost savings, potentially affecting any powered device.

EnergyWise encompasses a highly intelligent network-based approach to communicate messages that measure and control energy between network devices and endpoints. The network discovers Cisco EnergyWise manageable devices, monitors their power consumption, and takes action based on business rules to reduce power consumption. Cisco EnergyWise thereby extends the network as a platform for the power control plane for gathering, managing, and reducing power consumption of all devices, resulting in companywide optimized power delivery and reduced energy costs.

PoE

Q. Can the EtherSwitch service modules provide PoE?

A. There are four models that support PoE and two that do not support PoE. The NME-16ES-1G-P, NME-X-23ES-1G-P, NME-XD-24ES-1S-P, and NME-XD-48ES-2S-P all support PoE, while the NME-16ES-1G and the NME-x-23ES-1G do not support any power options.

Q. Can I upgrade the non-PoE models to support PoE?

A. The EtherSwitch service modules do not support a field upgrade to add PoE. The modules must be ordered in the correct configuration.

Q. Can I use the external power chassis (PWR-Chassis-360W) with the EtherSwitch service modules?

A. No, the EtherSwitch service modules have no external connectors for additional power.

Q. Is the PoE IEEE 802.3af-compliant?

A. Yes the EtherSwitch service modules can provide IEEE 802.3af-compliant PoE when installed in the Cisco 2800 and 3800 Series Integrated Services Routers. When installed in the Cisco 3700 Series routers, the modules can provide only Cisco pre-standard PoE. The modules do not support PoE when installed in the Cisco 2691 Multiservice Platform.

Q. If a chassis uses both the current generation of EtherSwitch network modules and the new EtherSwitch service modules, is the solution still IEEE 802.3af-compliant?

A. A mixture of compliant and noncompliant modules makes the overall solution noncompliant. However, in this case, the EtherSwitch service modules can provide 802.3af-compatible PoE to devices, while providing only Cisco pre-standard power to other ports.

Q. Can the EtherSwitch service modules provide high-power IEEE 802.3af-compliant power to all ports?

A. The amount of power available to Ethernet ports is limited by the power supply capabilities of the hosting platform. Table 4 shows the maximum power available per platform for PoE applications.

Q. On the NME-X-23ES-1G-P EtherSwitch service module, does the 10/100/1000 port support PoE?

A. Yes, the 10/100/1000 Mbps Ethernet interface can be configured either as a Gigabit Ethernet uplink or can provide PoE for a 24th host port.

Q. Is the PoE capability redundant?

A. PoE redundancy depends on the platform being used. Table 5 indicates PoE redundancy options per platform for the EtherSwitch service modules.

Table 5. PoE Redundancy Options, Integrated Services Routers

Platform	PoE Redundancy	Method	Maximum Power Available
Cisco 2691	-	-	-
Cisco 3725	None	-	360W
Cisco 3745	Yes, Cisco Inline Power (ILP) only	Internally redundant power supplies, both chassis and PoE	360W
Cisco 2811	Yes, 802.3af and Cisco ILP	External redundancy with redundant power supply (RPS)-2300 and AC+IP internal power supply	160W
Cisco 2821	Yes, 802.3af and Cisco ILP	External redundancy with RPS-2300 and AC+IP internal power supply	240W
Cisco 2851	Yes, 802.3af and Cisco ILP	External redundancy with RPS-2300 and AC+IP internal power supply	360W
Cisco 3825	Yes, 802.3af and Cisco ILP	External redundancy with RPS-2300 and AC+IP internal power supply	360W
Cisco 3845	Yes, 802.3af and Cisco ILP	Internally redundant AC+IP power supplies	360W

Table 6. PoE Redundancy Options Integrated Services Routers Generation 2

Platform	PoE Redundancy	Method	Max Power Available	Max Power available with PoE Boost*
Cisco 2911	Yes, 802.3af and Cisco ILP	External redundancy with redundant power supply (RPS)-2300 and PWR-xx-POE internal power supply	200W	750W
Cisco 2921	Yes, 802.3af and Cisco ILP	External redundancy with RPS-2300 and PWR-xx-POE internal power supply	280W	750W
Cisco 2951	Yes, 802.3af and Cisco ILP	External redundancy with RPS-2300 and PWR-xx-POE internal power supply	370W	750W
Cisco 3925	Yes, 802.3af and Cisco ILP	Internally redundant PWR-xx-POE power supplies	520W	1040W
Cisco 3945	Yes, 802.3af and Cisco ILP	Internally redundant PWR-xx-POE power supplies	520W	1040W

* PoE Boost is a feature in which the 2nd power supply provides additional PoE ccapacity instead of redundancy. In Cisco 2911 – 2951, a 750W RPS2300 will provide PoE Boost. In Cisco 3925 and 3945, the 2nd internal power supply will provide PoE Boost.

Q. What is the capability of the Cisco RPS 2300 Redundant Power Supply?

A. The Cisco RPS 2300 can provide complete internal power supply redundancy for up to two attached networking devices. It has two power supply bays and can accept 1150W AC or 750W AC power supply modules. These power supply modules are also used with Cisco Catalyst 3750-E and Catalyst 3560-E Series Switches. For more information regarding the Cisco RPS 2300 please visit: http://www.cisco.com/en/US/products/ps7148/products_data_sheet0900aecd805bbef6.html

Features

Q. What are the features of the EtherSwitch service modules?

A. For an exhaustive list of switch-side features, please visit the Cisco Catalyst 3750 and Catalyst 3750-E product pages at: http://www.cisco.com/en/US/products/hw/switches/ps5023/index.html and http://www.cisco.com/en/US/products/ps7077/index.html.

The EtherSwitch service modules share common software and features with the Cisco Catalyst 3750 and Catalyst 3750-E Series of desktop switches. Specific features that result from integration in the router are:

- Full feature, wire-speed Layer 2 and near-wire-speed Layer 3 IP switching on the blade, with the router engine available to forward traffic to the WAN interfaces and process non-IP traffic
- Stateful firewall, intrusion prevention, and network analysis for all traffic processed by the router
- Wire-speed IP router access control lists (RACLs) on the switch modules, full Layer 3 and 4 ACLs on the hosting router for non-IP traffic

Q. What devices can I connect to the switch ports?

A. Switch ports can be used to connect any IP host device such as PC workstations, servers, IP phones, and printers. Ethernet connected non-IP devices can be attached such as hosts using legacy protocols (Internetwork Packet Exchange [IPX], AppleTalk, and Systems Network Architecture [SNA]). Additional switches or hubs can be connected to switch ports for further extension or segmentation of the LAN.

Q. Do the EtherSwitch service modules support Cisco SmartPorts?

A. SmartPorts are intelligent macros designed to make switch deployment more intuitive. SmartPorts allows the system administrator or network manager to define a series of templates for common switch port configurations. The EtherSwitch service modules support SmartPorts macros. Please see http://www.cisco.com/go/smartports for more information on the capability of Cisco SmartPorts.

Q. Do the EtherSwitch service modules support trunking?

A. Yes, the modules support both InterSwitch Link (ISL) and IEEE802.1q encapsulation on trunk ports.

Q. Do the EtherSwitch service modules support VLAN Trunk Protocol (VTP)?

A. Yes, the EtherSwitch service modules support VTP and VTP pruning for reducing network traffic by restricting flooded traffic to links destined for stations receiving the traffic.

Q. Do the EtherSwitch service modules support VLANs with numbers above 1005?

A. Yes, the EtherSwitch service modules support VLAN IDs in the full 1 to 4094 range allowed by the IEEE 802.1Q standard.

Q. Do the EtherSwitch service modules support Voice VLAN?

A. Yes, the EtherSwitch service modules supports Voice VLAN for creating subnets for voice traffic from Cisco IP phones.

Q. Can the EtherSwitch service modules control VLAN1 for security?

A. Yes VLAN1 minimization for reducing the risk of spanning-tree loops or storms by allowing VLAN1 to be disabled on any individual VLAN trunk link. With this feature enabled, no user traffic is sent or received on the trunk. The switch CPU continues to send and receive control protocol frames.

Q. How do the EtherSwitch service modules process ACLs?

A. IP ACLs can be processed in the switching application-specific integrated circuit (ASIC) directly on the module for inter-VLAN traffic or traffic outbound from any VLAN interface. Processing IP ACLs on the blade will result in very high near wire-speed performance and places no overhead on the router CPU. Although the switching ASIC is optimized for IP traffic, non-IP ACLs must be filtered by MAC address. The host router processes Layer 3 or 4 filtering in non-IP ACLs as well as ACLs for traffic going to interfaces off of the module. The hosting router

cannot apply ACLs to traffic that is switched directly between interfaces on the EtherSwitch service module or that remains within the stack if using Cisco StackWise technology.

Q. Do the EtherSwitch service modules support 802.1q tunneling?

A. 802.1Q tunneling allows customers with users at remote sites across a service provider network to keep VLANs segregated from other customers and Layer 2 protocol tunneling to ensure that the customer's network has complete shielded twisted pair (STP), Cisco Discovery Protocol, and VTP information about all users. This feature, also called Q-in-Q tunneling, is supported on the EtherSwitch service modules but not on the hosting routers.

Q. What maximum transmission unit (MTU) size is supported on the Fast Ethernet, Gigabit Ethernet, and SFP interfaces?

A. The Fast Ethernet interfaces support a maximum MTU size of 1500 or 1546 bytes. The Gigabit Ethernet and SFP interfaces support MTU from 1500 to 9000 bytes. MTU settings are global by type of interface. Individual interface MTU cannot be set.

Technology Overview

Q. What is Cisco StackWise technology?

A. The Cisco StackWise technology provides an innovative method for collectively using and extending the resources of a stack of units. Up to nine switches can be joined together to create a single switching unit with a virtual 32 Gbps stack interconnect. Furthermore, the entire stack can be managed as one unit with a single IP address. To the rest of the network, the stack operates as a single switch. With a unified management interface, the customer can with one command load a single image to all compatible switches on the stack. Cisco StackWise technology is optimized for Gigabit Ethernet deployment, bringing customers new levels of performance through the high speed interconnect, resiliency through advanced failover mechanisms, and ease of use through automated configuration and a single management interface.

Because of the Cisco StackWise technology, the NME-XD-24ES-1S-P EtherSwitch service module, along with the Cisco Catalyst 3750 and Catalyst 3750-E Series, is highly scalable. A stack can contain up to 252 Gigabit Ethernet ports. Switches within the stack can be added and removed without affecting user network access. New devices get the global configuration from the stack master, and replacement devices get the exact configuration of the old device. There is one configuration file with all stack member configurations.

Q. Can the EtherSwitch service module be a Stack Master?

A. Yes, the EtherSwitch service module can act as the Stack Master or Stack Member when using the NME-XD-24ES-1S-P module. Only the modules with the Cisco StackWise interfaces can join a stack.

Q. What is the bandwidth for the internal connection between the EtherSwitch service module and the hosting router?

A. Because the module is an NME, the internal connection speed is 1 Gbps. This is seen and configured on both the module and the router as a Gigabit Ethernet interface. The actual performance depends on the specific configuration and the performance of the hosting router.

Q. What is the bandwidth for the backplane connection between the EtherSwitch service module and the hosting router when installed in an Generation 2 ISR using an SM – NM adapter card?

A. Since an NME EtherSwitch Service Module installed in an Integrated Servcies Router Generation 2 needs an adapter card, it will keep the same internal connection characteristics as in the Cisco 2800/3800 series. This means connecting to the host router via an ePCI bus that will provide appr. 1Gbps of throughput to the CPU.

Q. What kind of performance can I expect from the EtherSwitch service module to the hosting router?

A. Performance going to the router varies depending on the raw performance capabilities of the platform and the specific configuration.

Q. Can I add any of the EtherSwitch service modules without Cisco StackWise interfaces to a stack of Cisco Catalyst 3750 Series Switches?

A. No, participation in a stack with the Cisco Catalyst 3750 Series desktop switches requires use of the Cisco StackWise interfaces. All other connections with external switches must be through trunking ports.

Q. What is the difference between intrachassis stacking and stacking with the Cisco Catalyst 3750 Series desktop switches?

A. Intrachassis stacking is a requirement for the current EtherSwitch network modules and HWICs that support two modules per chassis. Intrachassis stacking requires that the two switches are connected externally to the chassis with an Ethernet cable, and the connecting ports are configured with the stacking keyword. By doing this, access to the single VLAN database file stored on the router's flash is coordinated to prevent corruption of the file. Stacking with the Cisco Catalyst 3750 and Catalyst 3750-E Series desktop switches takes advantage of Cisco StackWise technology to create a single, virtual switch with a 32 GB redundant backplane. The two technologies are complementary, allowing the older generation of switches to be combined in a single router chassis for increased density, while supporting the technology of the Cisco Catalyst 3750 and Catalyst 3750-E Series desktop switches.

Management

Q. Can I manage the EtherSwitch service modules using the Cisco Router and Security Device Manager (SDM)?

A. SDM version 2.2 will support routers with the EtherSwitch service modules installed. SDM will allow the administrator to configure the internal Gigabit Ethernet interface for the module and launch the Switch Device Manager to configure the module itself.

Q. Can I manage the EtherSwitch service modules with Cisco Network Assistant?

A. Yes, Cisco Network Assistant supports the EtherSwitch service modules.

Q. Can I use the Cisco IE2100 to deploy the router and EtherSwitch service modules?

A. Yes, IE2100 series agents are embedded in Cisco IOS Software run on both components.

Q. Can I access the EtherSwitch service modules using Secure Shell (SSH) Protocol?

A. If you have an encryption image installed on the hosting module; that is, an image with the designation-K9 in the image name, you can use SSH Protocol to access and configure the EtherSwitch service modules.

For More Information

For more information about the Cisco EtherSwitch service modules, please visit http://www.cisco.com/en/US/products/ps5854/products_data_sheet0900aecd8028d15f.html or contact your local account representative.

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