

Specifications

VLANs	Customizable VLAN support 1,024 configurable VLANs (802.1Q) 4K VLAN IDs Protocol-based VLANs
Traffic management/Routing	Optimized for best performance: BGP 4, RIPv1, RIPv2, OSPFv3, OSPF v2 (RFC 2328) with ECMP, OSPF (RFC 3101) DHCP/BootP Relay (RFC 3046) QoS (metering, remarking, DSCP/CoS) IEEE 802.1p (Priority Queues), IEEE 802.3x Flow Control IGMPv1 (RFC 1112) Multicast Snooping, IGMPv2 (RFC 2236) Multicast Snooping, IGMP v3 IGMP Filtering, IP Forwarding Jumbo Frame (9K), Static Routing IPv6 Host Management (PING, Traceroute) and Rate Limiting.
Security	Filtering based on: 802.1x port authentication MAC and IP address (source, destination) Application type (Telnet, FTP, SMTP, etc.) TCP flags (ACK, URG, PSH, RST, SYN, FIN) IP address range or TCP port range IP options and VLAN ID HTTPS SSH v2 and SNMP v1-3 RADIUS (authentication and accounting), OAM protocol, and TACACS+
CLI	Industry-based CLI (Cisco like); networking OS CLI
Cluster management	Clusters of switches can be managed from one central location using the optional Switch Center software: Group configuration downloads; Group image downloads; and scheduled downloads
Secure management	Automatic chassis detection; Management through CLI, telnet, Web; Secure management through HTTPS, SSH v1/v2, SNMP v1-3, sFlow (Version 5), RMON, ; Dual software images Switch Center for cluster management upgrade through TFTP, FTP and serial download. Network Time Protocol (multiple servers); Port Mirroring and detailed statistics and switch diagnostics
Virtualization management	Virtual Machine awareness: Virtual Switch Groups and focused ACLs/QoS/VLAN configurations Network Motion: Network attributes move with VMs in virtual environment and automated network failover, no additional configuration needed
Configuration tracking	Complete logging of all changes: Identification of the user, time, and date stamp, parameters changed (both old and new settings), changes attempted and denied, local log with option to export data to a remote server, system log or other utility in real time
Stacking	Up to eight switches can be in a stack with a Single IP address, one Configuration file, and one image file for all switches in the stack. Supports automatic discovery and configuration for new stack members

Why System x

System x® is the leading provider of x86 systems for the data center. The portfolio includes rack, tower, blade, dense and converged systems, and supports enterprise class performance, reliability and security. System x also offers a full range of networking, storage, software and solutions, and comprehensive services supporting business needs throughout the IT lifecycle.

For more information

To learn more about the BladeCenter 1/10G Uplink Ethernet Switch Module, contact your Lenovo marketing representative or Business Partner, or visit: lenovo.com/systems/servers

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BladeCenter 1/10G Uplink Ethernet Switch Module

Future-proof your data center



The world is changing. The increase in adoption of virtualization, Voice over Internet Protocol (VoIP), the growth of online education and gaming, and the amount of time consumers and businesses are spending on the web indicate the need for servers with more processing power, bigger and faster data pipes, and countermeasures for skyrocketing energy costs.

While 10 Gigabit Ethernet (GbE) has been available for a few years, recently it has moved to the top of IT department's list as a technology to consider. Many IT departments today, large and small, are assessing when and where 10 GbE makes sense for them. Some have specific applications that can benefit from 10 GbE. Others are investigating how 10 GbE can help them with their virtualization strategies. Many storage administrators consider 10 GbE to be the true convergence fabric. Storage

administrators are actively working on converging networking and storage fabrics into 10 GbE. There are many more reasons why IT departments are looking at 10 GbE, such as lower energy consumption, lower price and less complexity. It is no longer a matter of whether moving to 10 GbE makes sense, but when it should be done.

To address evolving networks, networking offers a leadership product for the BladeCenter® portfolio that helps meet the demand of networks in transition like no other switch in the blade market: the BladeCenter 1/10G Uplink Ethernet Switch Module.

The BladeCenter 1/10G Uplink Ethernet Switch Module offers the following features and benefits:

Includes six 1 GbE and three 10 GbE uplinks for unmatched upstream bandwidth

- If you need 1 GbE today you have it—at a price lower than some competitor's 1 GbE offerings.
- If you need 10 GbE in the future you have it—no need to invest in a new and expensive switch.

Supported in all five BladeCenter chassis in addition to the Multi-Switch Interconnect Module (MSIM) for BladeCenter H and BladeCenter HT.

Designed for extremely low power consumption.

Full Ethernet Layer 2 switching and Layer 3 routing functionality comes standard.

VMready® software helps simplify management, increase availability and security in a virtualized environment.

IPv6 compatibility with host management and full feature support.

Simplified management with stacking support and an industry standard CLI.

Priced at a fraction of the competition.

Lower cost, more features

The hey there! BladeCenter 1/10G Uplink Ethernet Switch Module offers a great price-performance ratio. Its six 1 GbE RJ45 links can be easily deployed in today's networks, while its three 10 GbE SFP+ ports provide an easy migration path to tomorrow's 10 GbE networks. Compared to other vendor's 10 GbE switches, the 1/10GE switch prepares you for the future and is only half the price of some alternative offerings in the market. Advanced Layer 3 routing protocols like Open

Shortest Path First (OSPF) and Border Gateway Protocol (BGP) are included in the switch price. Other blade Ethernet switch vendors require you to pay extra for these features.

Energy efficient design

With the growing focus on green technologies, energy efficiency helps not just the environment, but also the corporate bottom line. Just as BladeCenter is focused on reducing power and cooling, the BladeCenter 1/10G Uplink Ethernet Switch Module clearly delivers on the value of being green. The switch consumes only 40 watts, ideal for clients with power limitations at the rack or data center level. It enables clients to get more servers within their power envelope. More servers per rack can also help in reducing space requirements.

More bandwidth for future workloads

The three 10 GbE and six 1 GbE uplink ports on the 1/10G Uplink Ethernet Switch Module provide line-rate performance with zero packet drop. The non-blocking architecture is ideal for high performance computing (HPC) and Web 2.0 applications. The well-thought-out design of the module provides up to 100 Gbps of bidirectional port throughput. The switch allows server administrators to add more powerful servers to the BladeCenter chassis without worrying about the switches becoming bottlenecks.

Innovations for virtualization

As networks are exploding with new devices, managing these devices is a challenge. The 1/10G Uplink Ethernet Switch Module is designed to support stacking and advanced levels of

management, delivering exceptional value through virtualization and simplified management while also complementing Fabric Manager. Some examples of the value that can be realized are:

Simplified management:

- Stacking: a single switch image and configuration file can be used for up to eight switches, sharing only one IP address and one management interface.
- A VMready network switch sees virtualized network interface cards (vNICs) and servers that can help reduce the configuration complexity and the potential for failures, while also significantly improving the levels of security.
- Virtual machines (VMs) are configured only once, keeping their network attributes no matter where they move in the stack once they are configured, eliminating any ongoing administrative burden.

Plug–n–play: switches in a stack can be auto-discovered.

Increased application and network performance:

- Active/active NIC teaming on blade servers for improved bandwidth to servers, better redundancy, and faster failover.
- Active/active NIC teaming in conjunction with VMready minimizes VM failover time by moving policies in anticipation of network traffic on the new port.
- Active/active uplinks through distributed multilink trunks (link aggregation, or LAGs) or uplink ports from multiple switches can be trunked together to provide more bandwidth.

Integration into virtualization environments: VMready allows the BladeCenter 1/10G Uplink Ethernet Switch Module to configure itself dynamically to coexist with all leading VM providers. It automatically detects VM movement from one physical server to another, and instantly reconfigures its network policies across Virtual Local Area Networks (VLANs) to keep the network up and running without any interruption in traffic or impact to performance.

Server provisioning

As blade servers proliferate in network environments, server provisioning becomes ever more difficult. Server administrators must constantly add, remove or replace servers. With every server failure, reconfiguring network switches or assigning new IP addresses to servers requires scheduling and coordination between network and server personnel, which can take days. With the BladeCenter 1/10G Uplink Ethernet Switch Module and VMready, the task of server provisioning has become simple. Failures are detected instantly and backup servers come online immediately with no impact to users.

High availability

The BladeCenter 1/10G Uplink Ethernet Switch Module offers integrated, high-availability support in both Layer 2 and Layer 3 to help minimize single points of failure and deliver network reliability and performance. Layer 2 high-availability supports include:

- Link aggregation control
- Rapid spanning tree
- Cisco UplinkFast compatibility
- PortFast compatibility
- 802.1Q VLANs
- Broadcast storm control
- Controlled link failover with NIC teaming.

Virtual Router Redundancy Protocol (VRRP), PVRST+, Uni-Directional Link Discovery, Hot Links, and Hot-Standby further enables effective use of Layer 2 NIC teaming. A special extended version of VRRP allows multiple 1/10G Uplink Ethernet Switch Modules to process traffic in an active-active configuration at Layer 3. All switches concurrently process traffic, enabling maximum bandwidth and availability.

Easy integration

All BladeCenter Ethernet switch modules are designed with a standards-based approach that allows for easy integration into upstream Ethernet networks. An administrator can choose between an industry-standard CLI (comparable to Cisco) or the easy-to-use networking OS CLI. In addition, networking offers easy software upgrades through a web user interface, Trivial File Transfer Protocol (TFTP), telnet or serial download to make it

easy to adapt to existing maintenance procedures. Networking is working on a proactive process to notify clients of future updates and available enhancements.

Take the next step

Find out more about how the BladeCenter 1/10G Uplink Ethernet Switch Module can help you improve the availability, performance, scalability, manageability and security of your data center infrastructure—all while helping reduce total cost of ownership.

Specifications

Part number	44W4404
Uplinks	Six 1 Gb RJ45 ports Three 10 Gb SFP+ (Requires Optional SFP+ Transceiver or direct attach copper cable)
Internal ports	14 × 1 Gb ports and two 100 Mb management ports
Performance	Full Line Rate performance – 100 Gbps
Power consumption	40 W for the entire switch
Availability/Resiliency	Ready for mission-critical applications: Link Trunk Failover, NIC teaming; IEEE 802.1s, 802.1d, 802.1w (MSTP, MAC bridges, RSTP, VLAN tagging, provider bridges) ; PVRST+; Link Layer Detection Protocol (LLDP); Hot Links; VRRP (RFC2338 + active-active extension); Cisco EtherChannel compatibility Broadcast storm control; User configurable hashing options for LACP: SMAC, DMAC, SIP and DIP