



## Nortel 1/10 Gigabit Uplink Ethernet Switch Module for IBM BladeCenter™



While 10Gb Ethernet has been available for a few years, recently it has started to move to the top of IT departments list as a technology to look into and consider. Many IT departments today, large and small, are assessing what, when and where 10Gb makes sense for them. Some have specific applications that can benefit from 10Gb Ethernet. Others are investigating how 10Gb Ethernet can help them with their virtualization strategies. Others are now looking to iSCSI Storage Area Networks and the potential of converging networking and storage fabrics onto 10Gb Ethernet. There are many more reasons why IT departments are looking at 10Gb Ethernet, such as lower power, lower cost and less complexity—so it is not a matter of whether moving to 10Gb makes sense, but when it should be done.

To address evolving networks, **IBM®** introduces a new switch module for the IBM BladeCenter® portfolio that helps meet the demand of networks in transition like no other switch in the blade market.

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### Highlights

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This switch helps:

- **Improve application availability and boost application performance**
- **Enhance application and server security with network virtualization**
- **Ready your data center for the future with 1 Gigabit and 10 Gigabit Ethernet connectivity**
- **Simplify server deployment and management**

The world is changing. The increase in VoIP deployments, 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.

### Highlights

- Includes six 1Gb and three 10Gb Ethernet Uplinks for unmatched upstream bandwidth.
  - If you need 1Gb today you have it—at a price lower than some competitors' 1Gb offerings.
  - If you need 10Gb in the future you have it—no need for a new switch.
- Supported in all five IBM BladeCenter chassis in addition to the Multi-Switch Interconnect Module (MSIM) for IBM BladeCenter and IBM BladeCenter HT.
- Designed for extremely low power consumption.
- Full Ethernet Layer 2/3 functionality comes standard.

- Additional features: IPV6 compatibility\*, virtual switching\*, server provisioning and BLADE VMReady™\*.
- Priced at a fraction of the price of competitive blade switch offerings.

### Lower Cost, More Features

The Nortel 1/10Gb Uplink Ethernet Switch Module from BLADE Network Technologies offers a great price-performance ratio. Its six 1Gb RJ45 links can be seamlessly deployed in today's networks, while its three 10Gb SFP+ ports provide an easy migration path to tomorrow's 10Gb networks. Compared to other vendors' 10Gb switches, the Nortel 1/10 switch prepares you for the future and is about half the price of alternative offerings on the market—and more advanced routing protocols standard like Open Shortest Path First (OSPF) and Border Gateway Protocol (BGP). With some vendors, these features are a fee-based upgrade.

### Energy Efficient Design

With the growing focus on “Going Green,” energy efficiency helps not just the environment but also the corporate bottom line. Just as IBM BladeCenter is focused on reducing power and cooling, BLADE's Nortel 1/10Gb Uplink Ethernet Switch Module clearly delivers on the value of being Green. The switch consumes only 40 Watts. For some clients with power limitation at their rack or in their datacenter, the 1/10Gb Uplink Ethernet Switch Module can deliver exceptional value. It enables them to get more servers within their power envelope—and more servers per rack can help significantly reduce the space requirement, which for some is a scarce resource.



### More Bandwidth for Future Workloads

The three 10Gb and six 1Gb uplink ports on the Nortel 1/10Gb Uplink Ethernet Switch Module provide line-rate performance with near zero packet drop and a non-blocking architecture that's ideal for High Performance Computing and Web 2.0 applications. The well-thought-out design of the module provides up to 100 Gbps of bi-directional port throughput. The 1/10Gb Uplink 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 Nortel 1/10Gb Uplink Ethernet Switch Module is designed to support Stacking\*—which can deliver exceptional value through virtualization and simplified management as part of IBM Open Fabric Manager (OFM) with Nortel Extensions. Some examples of the value that can be realized are:

- **Simplified management:** a single configuration file can be used for up to eight switches, sharing only one IP address and one management interface.
- **Plug-n-play:** all 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 fast failover.
  - Active/active uplinks via distributed Multilink Trunks (LAGs) or uplink ports from multiple switches can be trunked together to provide more bandwidth.
- **Integration into VMware environments:** The VMReady™ feature allows the 1/10Gb Uplink switch to dynamically configure itself to coexist in any VMware environment. It automatically detects virtual machine movement from one physical server to another, and instantly reconfigures its network policies across VLANs to keep the network up and running without any interruption in traffic.

### 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 1/10Gb Uplink switch and Open Fabric Manager with Nortel extensions, the task of server provisioning has become as simple as 1-2-3. Now failures can be detected instantly and backup servers can come online immediately with minimal impact to end users and increased peace of mind for IT administrators.

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\* Coming in 2008

## High Availability

BLADE's Nortel 1/10Gb Uplink Ethernet Switch offers integrated, high-availability support in both Layer 2 and Layer 3 to help minimize single points of failure and ensure network reliability and performance. Layer 2 high-availability support includes Link Aggregation Control, Rapid Spanning Tree, Cisco UplinkFast compatibility, PortFast compatibility, 802.1q VLANs, broadcast storm control, and controlled link failover with NIC teaming. Virtual Router Redundancy Protocol (VRRP) Hot-Standby further enables effective use of Layer 2 NIC teaming. A special extended version of VRRP allows multiple Nortel 1/10Gb Uplink Ethernet Switches to process traffic in an active-active configuration at Layer 3. All switches can concurrently process traffic, enabling maximum bandwidth and availability.

## Seamless integration

All Nortel Ethernet Switch Modules from BLADE Network Technologies are designed with a standards-based approach

that allows for seamless integration into upstream Ethernet networks. An administrator can choose between an Industry-standard CLI (comparable to Cisco) and the easy-to-use Alteon AOS CLI. In addition, BLADE offers easy software upgrades through Web user interface, TFTP, Telnet or serial download to make it easy to adapt to existing maintenance procedures. BLADE is working on a proactive process to notify clients of future updates and available enhancements.

## Take the next step

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

## For more information

Visit [ibm.com/bladecenter](http://ibm.com/bladecenter) for more information on IBM BladeCenter and other BladeCenter options.

### 1/10Gb Uplink Ethernet Switch Module at a Glance

Interface options	
Uplinks	6 x 1Gb RJ45 ports 3 x 10Gb SFP+
Internal ports	14 x 1Gb ports 100Mb management port
Performance	
Full Line rate performance	104 Gbps
Availability/Resiliency	Ready for mission critical applications: <ul style="list-style-type: none"><li>• Link Trunk Failover, NIC teaming</li><li>• IEEE 802.1s, d, w, q and ad (MSTP, MAC bridges, RSTP, VLAN tagging, provider bridges)</li><li>• UplinkFast and Cisco Port Fast compatibility</li><li>• VRRP (RFC2338 + Nortel active-active extension)</li><li>• Cisco EtherChannel compatibility</li><li>• Broadcast storm control</li><li>• User configurable hashing options for LACP:<ul style="list-style-type: none"><li>• SMAC</li><li>• DMAC</li><li>• SIP</li><li>• DIP</li></ul></li></ul>
VLANs	<ul style="list-style-type: none"><li>• Customizable Virtual LAN support</li><li>• 1,024 configurable VLANs (802.1Q)</li><li>• Protocol-based VLANs</li></ul>
Traffic Management/Routing	Optimized for best performance: <ul style="list-style-type: none"><li>• BGP 4, RIPv1, RIPv2</li><li>• OSPF v2 (RFC 2328) with ECMP, OSPF (RFC 3101)</li><li>• DHCP/BootP Relay (RFC 3046)</li><li>• QoS (metering, remarking, DSCP/CoS)</li><li>• IEEE 802.1p (Priority Queues), IEEE 802.3x Flow Control</li><li>• IGMPv1 (RFC 1112) Multicast Snooping, IGMPv2 (RFC 2236) Multicast Snooping, IGMP v3</li><li>• IGMP Filtering, IP Forwarding</li><li>• Jumbo Frame (9K), Static Routing</li></ul>

Security	Filtering based on: <ul style="list-style-type: none"> <li>• 802.1x port authentication</li> <li>• MAC and IP address (source, destination)</li> <li>• Application type (Telnet, FTP, SMTP, etc.)</li> <li>• TCP flags (ACK, URG, PSH, RST, SYN, FIN)</li> <li>• IP address range or TCP port range</li> <li>• IP options and VLAN ID</li> <li>• HTTPS</li> <li>• SSH v1/v2 and SNMP v1-3</li> <li>• RADIUS (authentication and accounting) and TACACS+</li> </ul>
CLI	Dual CLI: <ul style="list-style-type: none"> <li>• Industry-based CLI (compare to Cisco)</li> <li>• Alteon AoS CLI</li> </ul>
Cluster Management	Clusters of switches can be managed from one central location: <ul style="list-style-type: none"> <li>• Group configuration downloads</li> <li>• Group image downloads</li> <li>• Scheduled downloads</li> </ul>
Secure Management	Flexible and secure: <ul style="list-style-type: none"> <li>• Automatic chassis detection</li> <li>• Management via CLI, telnet, Web, SNMP v1</li> <li>• Secure management via HTTPS, SSH v1/v2, SNMP v1-3</li> <li>• Dual software images</li> <li>• Element Management System (EMS) for cluster management</li> <li>• Upgrade via TFTP, FTP and serial download</li> <li>• Network Time Protocol (multiple servers)             <ul style="list-style-type: none"> <li>• Port Mirroring</li> <li>• Detailed statistics and switch diagnostics</li> </ul> </li> </ul>
Configuration Tracking:	Complete logging of all changes: <ul style="list-style-type: none"> <li>• Identification of the user, time and date stamp, parameters changed (both old and new settings)</li> <li>• Changes attempted and denied</li> <li>• Local log with option to export data to a remote server, system log or other utility in real time</li> </ul>



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