

# DEPENDABLE, ENTERPRISE-CLASS DESKTOP SWITCHING



## NORTEL

### Product Brief

## Nortel Ethernet Routing Switch 4500 Series

The Nortel Ethernet Routing Switch 4500 Series is a Stackable system providing high-performance, convergence-ready, secure and resilient Ethernet switching connectivity. Available as a range of 11 model variants

#### Highlights of the Ethernet Routing Switch 4500 Series

- **Resilient** — Fail-safe Stacking, distributed trunking and power redundancy
- **Efficient** — Reduced power consumption, simplified converged deployments through PoE, advanced QoS and IP Phone port auto-configuration
- **Powerful** — Wire-speed performance, high-capacity Stacking; 40Gbps per Switch and up to 320Gbps per Stack, and up to 384 ports
- **Secure** — Comprehensive standards-based 802.1X, advanced filtering and Nortel's Secure Network Access solution
- **Flexible** — Mix-and-match Stacking capabilities; Fast Ethernet and Gigabit Ethernet in the same Stack, and 1GbE and 10GbE uplinks

supporting 10/100 and 10/100/1000 switching, Power-over-Ethernet and 10 Gigabit Ethernet uplink options, the Ethernet Routing Switch 4500 Series is ideally suited for Enterprise wiring closet and other network edge deployments.

The Ethernet Routing Switch 4500 Series (ERS 4500) provides genuine resilient Stacking, Layer 2 switching and Layer 3 routing, and advanced convergence features. This enables the ERS 4500 Series to deliver the scalability and resiliency required by today's application-driven Enterprise networks while reducing total operational costs. Indeed, ERS 4500 models are up to 40% more energy efficient than competitive products, ensuring superior total cost of ownership.

### Convergence-ready

For Businesses looking to bring together their major forms of communication — data, voice and video — onto a single infrastructure, the Ethernet Routing Switch 4500 delivers the functionality that makes converging these technologies simple.

Through support for standards-based Power-over-Ethernet (IEEE 802.3af PoE), power can be delivered to IP-based Phones, Wireless Access Points, CCTV Cameras and other powered devices. This eliminates the need to have separate power supplies for each unit, thereby reducing cabling and management costs when there are adds, moves or changes. Additionally, with Nortel's auto-discovery and configuration capability (ADAC), the ERS 4500



Ethernet Routing Switch 4500 Series

can automatically configure the Switch to ensure that the correct Quality-of-Service (QoS) and VLAN settings are applied, making mass IP Phone deployments quick and easy. Standards-based 802.1AB auto-discovery can also be used for non-Nortel devices.

### **Nortel Automatic QoS**

With Nortel Automatic QoS, an Ethernet Routing Switch 4500 supporting a Nortel Unified Communications solution automatically recognizes the special, private Differentiated Service Code Point (DSCP) values used by these applications and optimizes the management of Egress Queues. Without this automated functionality, operators would need to have detailed knowledge of how QoS works, and also the private DSCP values, to enable manual configuration for optimized Queue usage. This feature ensures that the process is automated and optimized, and protects against misconfiguration.

### **Intelligent Stacking solution delivering scalability, flexibility, resilience and performance**

Nortel's intelligent Stacking architecture not only provides high-bandwidth unit-to-unit connections without consuming

## **New features for the v5.3 Release**

The following new model, features and enhancements have been added to the ERS 4500 capabilities with the release of v5.3 Operating System software:

- ERS 4524GT-PWR model — 24 ports of 10/100/1000BASE-T with PoE, including 2 Combo Uplink ports
- Nortel Automatic QoS
- RADIUS Management Logging
- 802.1X/NEAP Last Assigned VLAN, Guest VLAN and other enhancements
- Show Environmental Command
- SNMP Trap enhancements for Dynamic ARP Inspection, DHCP Snooping and IP Source Guard
- ASCII Download Log
- Web User Interface enhancements
- MLT Trunk Group Disable/Enable command
- Disable CLI Audit Log command
- RADIUS Request Use Management IP Address
- Configurable Asset ID
- MAC Flush command

user ports, but it also allows flexible Stacking of any combination of up to eight Switches from within the Ethernet Routing Switch 4500 range. This creates an ideal solution for Enterprises with Fast Ethernet or Gigabit Ethernet users — or a combination of both — deployed or planned. As a single Stacked entity, all Switches are managed via a single IP Address and offer the same high resilience and common feature set, simplifying management and deployment across the network and the Enterprise.

The Ethernet Routing Switch 4500 combines high resiliency with high-performance Stacking, delivering up to 320Gbps throughput. Intelligent bi-directional traffic flows between Switches, ensuring that the most efficient paths are used for traffic forwarding. Added to this, the ability to distribute trunks or aggregations across different units in the Stack ensures that even in the unlikely event of a Switch or link failure, traffic continues to flow virtually uninterrupted for the remaining units in the Stack.

## **The 'Nortel Edge'**

Through embedding functionality within its converged networking solutions, Nortel is creating a new operational paradigm built around synergistic, communications-enabled networking and simplicity of design. The 'Nortel Edge' focuses on ensuring that the network is easy to deploy and adds an intelligence that reduces the burden of ongoing manageability, delivering additional benefits to businesses.

Real-time application environments require network intelligence and QoS, allowing the network to understand what to do with high-priority traffic in times of congestion. However, the configuration of QoS across the network can be time-consuming and if incorrectly executed, leads to a sub-standard solution for high-priority traffic. Nortel data, voice and application products can be enabled for optimized QoS across the network through the Nortel Automatic QoS feature.

Enabling the Automatic QoS functionality seamlessly configures QoS on Nortel IP Phones, Call Servers and Applications, and Ethernet Switches. This allows network managers to easily configure QoS across a Nortel converged infrastructure through a few simple commands or a single click of the mouse — delivering a consistent and optimized QoS configuration, and simple but effective optimization for end-to-end application performance; a tangible manifestation of the genuine business benefits of Nortel.

For seamless scalability, the Ethernet Routing Switch 4500 can deliver up to 384 ports, meeting almost any wiring closet requirements of scalability and port speed flexibility, allowing the network infrastructure to grow as the business requirements change.

### Securing access at the Edge

The Ethernet Routing Switch 4500 offers a wide range of flexible security options to ensure that only authorized personnel gain access to a company's LAN. Whether it is through use of an IEEE 802.1X-based EAP Client or through a device's MAC Address, network managers can validate that only those who have successfully been authenticated have access to specified resources. The ERS 4500 can also be used in conjunction with Nortel's innovative Secure Network Access solution for advanced policy-based and centralized user/device authentication.

For further flexibility, the Ethernet Routing Switch 4500 can support the authentication of multiple devices/ Users on a single port. For example, if a User's PC connects into the network via an IP Phone (Figure 1), the PC and the IP Phone can both be independently authenticated on that port. Additionally, if your company frequently has visiting users, support for a Guest VLAN allows these non-authenticated users to still use the network but to only have access to those resources that have been pre-defined for the Guests, such as Internet access.

Advanced security services also enable the Ethernet Routing Switch 4500 to actively protect the network against malicious network attacks by protecting DHCP services (DHCP Snooping), verifying and filtering ARP traffic via in-hardware processing (Dynamic ARP inspection), restricting IP traffic to registered end devices (IP Source Guard) as well as

Figure 1. Typical enterprise converged connectivity



controlling the flow of Spanning Tree BPDUs within the network (BPDU Filtering).

The Ethernet Routing Switch 4500 supports advanced packet classification and deep packet filtering of up to 128 bytes. These powerful filtering capabilities can block unwanted network traffic while ensuring that mission-critical traffic is forwarded with minimum delay.

### Secure and simplified network management

Nortel's Ethernet Switch Software is supported on all Ethernet Routing Switch 4500 models delivering simplified network operations and management by having a single image operate on any mixture of models in a Stack. This eliminates the need to worry about different software versions and capabilities on different products. The software image needs only to be loaded to the Base Unit of the Stack, which automatically loads it to other Switches. Even as Switches are added to an existing Stack, the ERS 4500 software will ensure that the new Switch diagnostics and software are appropriately upgraded to the software running on the Stack.

The on-board USB port enables network administrators to quickly and easily upload or download a configuration file via a USB stick. This allows the same configuration to either be deployed across several Switches, making configuration of new Switches seamless or serving as a backup in case a Switch were to fail. The USB port also allows for quick upload of new software images or quick staging of new units through

a simplified configuration capability. For added security, both the USB and consoles ports can be locked to prevent unauthorized intrusion.

The Ethernet Routing Switch 4500 supports secure management through access control lists, Simple Network Management Protocol (SNMPv3), Secure Shell (SSHv2), and RADIUS and TACACS+ authentication when connecting to the switch or stack.

The Ethernet Routing Switch 4500 can be managed through Nortel's Command Line Interface (NNCLI), which provides a common industry look and feel to CLI commands, helping to reduce training and operational costs. The ERS 4500 also provides GUI-based management via its Device Manager application and web-based interfaces for ease of use.

### Redundant power support

Adding Nortel's Redundant Power Supply 15 (RPS15) ensures that the Ethernet Routing Switch 4500 delivers the stable, redundant power support crucial for today's high-availability, mission-critical environments. The RPS15 Chassis can support up to three 600 Watt Power Supply Modules. Each Module can provide redundant power support to one ERS 4500 PoE Switch or up to four non-PoE models<sup>1</sup>.

Deployments in converged networks are greatly simplified through dynamic power management of the PoE ports, with the load sharing and redundant power offered by Nortel's RPS15. Combined, these features are designed

to ensure that devices requiring PoE can be added to the network without power ever becoming an issue.

### Lifetime warranty

All Ethernet Routing Switch 4500 Switches offer a lifetime warranty.

A Nortel product hardware warranty is supported for as long as the original end user continues to own or use the

product, including fan and power supply. In the event of a discontinuance of product manufacture, the Nortel warranty support is limited to five (5) years from this date.

### Summary

With more than 100 years in telecommunications, Nortel is uniquely positioned to provide an end-to-end

solution for converged networks. The Ethernet Routing Switch 4500 Series, along with other Nortel products, can increase profitability, streamline business operations, increase productivity, lower costs and help gain a competitive edge.

## Nortel Ethernet Routing Switch 4500 Series

Model	Link and Uplink Ports <sup>2</sup>
ERS 4526FX	24 x 100BASE-FX plus 2 x Combo 10/100/1000BASE-T or 100/1000BASE-SFP
ERS 4526T	24 x 10/100BASE-TX plus 2 x Combo 10/100/1000BASE-T or 100/1000BASE-SFP
ERS 4526T-PWR	24 x 10/100BASE-TX PoE plus 2 x Combo 10/100/1000BASE-T or 100/1000BASE-SFP
ERS 4550T	48 x 10/100BASE-TX plus 2 x Combo 10/100/1000BASE-T or 100/1000BASE-SFP
ERS 4550T-PWR	48 x 10/100BASE-TX PoE plus 2 x Combo 10/100/1000BASE-T or 100/1000BASE-SFP
ERS 4524GT	24 x 10/100/1000BASE-T, including 4 x Combo 10/100/1000BASE-T or 100/1000BASE-SFP
ERS 4524GT-PWR (New model)	24 x 10/100/1000BASE-T PoE, including 4 x Combo 10/100/1000BASE-T or 100/1000BASE-SFP
ERS 4548GT	48 x 10/100/1000BASE-T, including 4 x Combo 10/100/1000BASE-T or 1000BASE-SFP
ERS 4548GT-PWR	48 x 10/100/1000BASE-T PoE, including 4 x Combo 10/100/1000BASE-T or 1000BASE-SFP
ERS 4526GTX	24 x 10/100/1000BASE-T, including 4 x Combo 10/100/1000BASE-T & 1000BASE-SFP, plus 2 x 10GBASE-XFP
ERS 4526GTX-PWR	24 x 10/100/1000BASE-T PoE, including 4 x Combo 10/100/1000BASE-T or 1000BASE-SFP, plus 2 x 10GBASE-XFP

<sup>1</sup> A DC Connecting Cable is required to connect from an ERS 4500 to an RPS15 Power Supply; for non-PWR models, a DC-DC Converter is also required.

<sup>2</sup> ERS 4500 Series models that support the 100/1000BASE-X SFP capability, namely 4526FX, 4526T, 4526T-PWR, 4550T, 4550T-PWR, 4524GT, 4524GT-PWR, also support the T1 Ethernet over TDM Pluggable Transceiver.

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For more information, contact your Nortel representative, or call 1-800-4 NORTEL or 1-800-466-7835 from anywhere in North America.

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