Dell Networking 8100 Series

The Dell™ Networking 8100 10-Gigabit Ethernet switches are high-density Layer 3 core and aggregation switches engineered to deliver unprecedented performance, and accelerate workloads in demanding campus and business environments. Purpose-built to deliver advanced functionality and energy-efficient operation for small and large enterprises, these switches feature high density up to 384 10-Gigabit ports, 40GbE uplinks, High Availability (HA) stacking and simplified manageability.

Purpose-built for next generation campus environments

The Dell 8100 Switch series are line-rate, high density 10/40Gb Ethernet switches designed for Enterprise campus and mid-market core and aggregation deployments requiring high throughput and availability. These high density 24-port and 48-port 10Gb switches are ready for converged Ethernet environments supporting virtualization, iSCSI storage, and 10Gb traffic aggregation. Together with the PowerConnect 1 GbE switch portfolio, the 8100 switches enable a campus fabric composed of 1 and 10GbE ports offering full routing functionality. Up to six switches can be stacked and managed with a single IP address to deliver network performance and resiliency for enterprise networks.

Enabling network convergence

The 8100 Series support converged fabric requirements for SAN and LAN networks with loss-less operation for iSCSI environments with DCB (Data Center Bridging). iSCSI traffic can also be monitored at the fabric level, allowing the administrator to track active iSCSI sessions. In addition, these switches deliver simplified connectivity with Dell EqualLogic™ arrays. The iSCSI Auto-Configuration feature automatically detects the arrays and configures the switch for optimal throughput. This feature is enabled by default, streamlining the process to just connecting a cable.

10 Gb performance and high availability

The 8100 Series brings the benefits of 10 and 40Gb Ethernet to a compact and reliable switching platform, with the quality and great service of Dell. Operating at wire speed, the 8100 switches can deliver up to 960 Mpps throughput and a data rate of up to 1.2Tbps (full duplex) for both Layer 2 and Layer 3 environments for wire-speed 10Gb and 40Gb Switching.

The 8100 Series is designed for non-stop networking with high availability stacking, 10- and 40GbE capabilities, dual hot-swap, redundant power supplies, and removable fan modules. Up to 384 10GbE ports can be managed from a single screen using the highly-available stacking architecture, and the entire stack can be redundantly linked back to the rest of the network at 40Gb via the QSFP+ stacking ports.

Fast stack failover enables sub-50ms failover scenarios within the same stack. These switches also incorporate dual firmware images to allow for image promotions or image redundancy in a network.

Other key features

- Up to 64 10GbE ports of copper or fiber with module options in a 1RU form factor
- Non-stop forwarding and fast failover in stack configurations
- Converged network support for DCB, with Priority Flow Control (802.1Qbb), ETS (802.1Qaz), DCBx, iSCSI TLV Support
- IPv4 and IPv6 routing, including OSPFv1/2/3 and routing enhancements and improved multicast operation
- Private VLAN extensions and Private VLAN Edge support
- Unidirectional Link Detection (UDLD) support
- AAA Authorization, TACACS+ Accounting, and RADIUS Support for comprehensive secure access support
- Pre-defined Administrative profiles/roles for switch access to management functions
- USB auto-configuration rapidly deploys the switches in minutes without setting up complex TFTP configurations or sending technical staff to remote offices.
- Designed to be easy on campus budgets with energy savings from the power cord to the ports
- Energy Efficient Ethernet (IEEE 802.3az) ports reduce per port power consumption when link is idle or if ports are inactive
- Efficient power supplies and multi-speed fan operation help decrease cooling and power costs
- Tool-less Enterprise ReadyRails™ mounting kits reduces time and resources for switch rack installation
- Operation in environments up to 50°C, helps reduce cooling costs in temperature constrained deployments

Lifetime Warranty*

Select Dell Networking switches are backed a Lifetime Limited Warranty with Basic Hardware (repair or replacement) for life. Details at Dell.com/LifetimeWarranty

*Select Networking products carry a Lifetime Limited Warranty with Basic Hardware Service (repair or replacement) for life. Repair or replacement does not include troubleshooting, configuration, or other advanced service provided by Dell ProSupport. For more details see dell.com/lifetimewarranty

Scalable high density, Layer 3 10/40Gb Ethernet switches for aggregation and core switching in a compact 1U form factor.
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<td>24x 10GBASE-T auto-sensing GbE switching ports; upgradable QSFP+/4x10Gbe/stacking ports</td>
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| **Port configuration**   | Resilient HA stacking with up to 6 switches  
Auto-negotiation for speed, duplex mode and flow control  
Auto MDI/MDIX Port mirroring  
Flow-based port mirroring  
Broadcast storm control  
Supports DCB requirements including PFC (802.1Qbb), ETS (802.1Qaz), DCBx, iSCSI TLV 2.2, iSCSI Optimization  
Up to 8,160 Routes Supported  
Ease-of-Use Compliant Macro for setting up storage connections  
Ports support 1Gb and 10Gb transceivers for SFP/SFP+ and 100Mb, 1Gb and 10GBASE-T for RJ-45 environments and 40Gb transceivers for QSFP environments  
sFlow  
UDLD |  
| **Management**           | Web-based management interface; Industry-standard CLI accessible via Telnet, Out-of-Band Ethernet or Local Serial Port SNMPv1, SNMPv2c and SNMPv3 supported; LLDP-MED; SNTP; iSCSI Auto Configuration; Multiple configuration file upload/download supported; TFTP transfers of firmware and configuration files; Dual firmware images on-board; Four RMON groups supported (history, statistics, alarms and events); Statistics for error monitoring and performance optimization including port summary tables; BootIP/DHCP IP address management supported; Syslog remote logging capabilities; Pre-defined roles for simplified administration of the switch |  
| **Quality of service**   | Layer 2 Trusted Mode (IEEE 802.1p tagging); Layer 3 Trusted Mode (DSCP); Layer 4 Trusted Mode (TCP/UDP); Advanced Mode using Layer 2/3/4 flow-based Policies, including metering/rate limiting, marking and bandwidth guarantees; 8 Priority Queues per Port; Adjustable Weighted-Round-Robin (WRR) and Strict Queue Scheduling; Port-based QoS Services Mode; Flow-based QoS Services Mode; IPv4 and IPv6 support |  
| **Security**             | Switch access password protection and strong password support; User-definable settings for enabling or disabling Web, SSH, Telnet, SSL management access; IP Address filtering for management access via Telnet, HTTP, HTTPS/SSL, SSH and SNMP; RADIUS and TACACS+ remote authentication for switch management access; SSLv3 and SSHv2 encryption for switch management traffic; Management access filtering via Management Access Profiles; IEEE 802.1x-based edge authentication, 802.1x monitor mode to aid in.1x troubleshooting; Up to 100 Access Control Lists (ACLs) supported with up to 1k rules per ACL (2K Ingress rules, 1K Egress rules); TACACS+ per-command authorization; TACACS+ accounting |  
| **VLAN**                 | IEEE 802.1Q tagging and port-based, up to 4,000 user-configurable VLANs (up to 1000 simultaneous); Private VLAN and edge extensions |  
| **Layer 2 multicast**    | IGMP v1/v2/v3 snooping; IGMP snooping for IP multicast support; IGMP Querier PIM-SM, PIM-DM |  
| **Other switching features** | Link Aggregation with support for up to 72 link aggregation groups (LAGs) per switch and up to 8 member ports per LAG (IEEE 802.3ad); LACP support (IEEE 802.3ad); Support for unicast NLB (multicast NLB not supported); Jumbo frame support up to 9K |  
| **Availability**         | Spanning Tree (IEEE 802.1d) and Rapid Spanning Tree (IEEE 802.1w) with Fast Link Support; Multiple spanning trees (IEEE 802.1s); Spanning Tree optional features – STP root guard, BPDU guard, BPDU filtering; Dual firmware images; Supports Virtual Redundant Routing Protocol (VRRP); Cable diagnostics; SFP/SFP+ transceiver diagnostics |  
| **Layer 3 routing protocols** | Static routes; Routing Information Protocol (RIP) v1/v2; Open Shortest Path First (OSPF) v1/v2/v3; Virtual Redundant Routing Protocol (VRRP); Classless Inter-Domain Routing (CIDR); Internet Control Message Protocol (ICMP); ICMP Router Discover Protocol (IRDP); Address Resolution Protocol (ARP); Internet Group Management Protocol (IGMP) v1/v2/v3, Distance-Vector Multicast Routing Protocol (DVMRP); DHCP – Helper/Relay |  
| **Layer 3 routing performance** | Up to 512 RIP Routes  
Up to 8K IPv4/4K IPv6 OSPF Routes  
Up to 2,000 Multicast Forwarding Entries  
Up to 4,000 ARP entries |  

**Port types**
- Dell 8132 Switch: 24x 10GBASE-T auto-sensing GbE switching ports; upgradable QSFP+/4x10Gbe/stacking ports
- Dell 8132F Switch: 24x SFP+ 10Gb/1Gb ports; upgradable QSFP+/4x10Gbe/stacking ports
- Dell 8164 Switch: 48x 10GBASE-T auto-sensing GbE switching ports; 2 fixed QSFP+ ports; upgradable QSFP+/4x10Gbe/stacking ports
- Dell 8164F Switch: 48x SFP+ 10Gb/1Gb ports; 2 fixed QSFP+/4x10Gbe/stacking ports

**Port configuration**
- Resilient HA stacking with up to 6 switches
- Auto-negotiation for speed, duplex mode and flow control
- Auto MDI/MDIX Port mirroring
- Flow-based port mirroring
- Broadcast storm control
- Supports DCB requirements including PFC (802.1Qbb), ETS (802.1Qaz), DCBx, iSCSI TLV 2.2, iSCSI Optimization
- Up to 8,160 Routes Supported
- Ease-of-Use Compliant Macro for setting up storage connections
- Ports support 1Gb and 10Gb transceivers for SFP/SFP+ and 100Mb, 1Gb and 10GBASE-T for RJ-45 environments and 40Gb transceivers for QSFP environments
- sFlow
- UDLD

**Management**
- Web-based management interface
- Industry-standard CLI accessible via Telnet, Out-of-Band Ethernet or Local Serial Port
- SNMPv1, SNMPv2c and SNMPv3 supported
- LLDP-MED
- SNTP
- iSCSI Auto Configuration
- Multiple configuration file upload/download supported
- TFTP transfers of firmware and configuration files
- Dual firmware images on-board
- Four RMON groups supported (history, statistics, alarms and events)
- Statistics for error monitoring and performance optimization including port summary tables
- BootIP/DHCP IP address management supported
- Syslog remote logging capabilities
- Pre-defined roles for simplified administration of the switch

**Quality of service**
- Layer 2 Trusted Mode (IEEE 802.1p tagging)
- Layer 3 Trusted Mode (DSCP)
- Layer 4 Trusted Mode (TCP/UDP)
- Advanced Mode using Layer 2/3/4 flow-based Policies, including metering/rate limiting, marking and bandwidth guarantees
- 8 Priority Queues per Port
- Adjustable Weighted-Round-Robin (WRR) and Strict Queue Scheduling
- Port-based QoS Services Mode
- Flow-based QoS Services Mode
- IPv4 and IPv6 support

**Security**
- Switch access password protection and strong password support
- User-definable settings for enabling or disabling Web, SSH, Telnet, SSL management access
- IP Address filtering for management access via Telnet, HTTP, HTTPS/SSL, SSH and SNMP
- RADIUS and TACACS+ remote authentication for switch management access
- SSLv3 and SSHv2 encryption for switch management traffic
- Management access filtering via Management Access Profiles
- IEEE 802.1x-based edge authentication
- 802.1x monitor mode to aid in.1x troubleshooting
- Up to 100 Access Control Lists (ACLs) supported with up to 1k rules per ACL (2K Ingress rules, 1K Egress rules)
- TACACS+ per-command authorization
- TACACS+ accounting

**VLAN**
- IEEE 802.1Q tagging and port-based, up to 4,000 user-configurable VLANs (up to 1000 simultaneous)
- Private VLAN and edge extensions

**Layer 2 multicast**
- IGMP v1/v2/v3 snooping
- IGMP snooping for IP multicast support
- IGMP Querier PIM-SM, PIM-DM

**Other switching features**
- Link Aggregation with support for up to 72 link aggregation groups (LAGs) per switch and up to 8 member ports per LAG (IEEE 802.3ad)
- LACP support (IEEE 802.3ad)
- Support for unicast NLB (multicast NLB not supported)
- Jumbo frame support up to 9K

**Availability**
- Spanning Tree (IEEE 802.1d) and Rapid Spanning Tree (IEEE 802.1w) with Fast Link Support
- Multiple spanning trees (IEEE 802.1s)
- Spanning Tree optional features – STP root guard, BPDU guard, BPDU filtering
- Dual firmware images
- Supports Virtual Redundant Routing Protocol (VRRP)
- Cable diagnostics
- SFP/SFP+ transceiver diagnostics

**Layer 3 routing protocols**
- Static routes
- Routing Information Protocol (RIP) v1/v2
- Open Shortest Path First (OSPF) v1/v2/v3
- Virtual Redundant Routing Protocol (VRRP)
- Classless Inter-Domain Routing (CIDR)
- Internet Control Message Protocol (ICMP)
- ICMP Router Discover Protocol (IRDP)
- Address Resolution Protocol (ARP)
- Internet Group Management Protocol (IGMP) v1/v2/v3
- Distance-Vector Multicast Routing Protocol (DVMRP)
- DHCP – Helper/Relay

**Layer 3 routing performance**
- Up to 512 RIP Routes
- Up to 8K IPv4/4K IPv6 OSPF Routes
- Up to 2,000 Multicast Forwarding Entries
- Up to 4,000 ARP entries
Specifications: Dell Networking 8100 high-performance 10/40 GbE Enterprise Switches

IEEE 802.1Q
- VLAN Tagging
- Q-in-Q Tagging
- Q-in-Q VLAN Trunking

IEEE 802.1s
- Multiple Spanning Tree Protocol (MSTP)

IEEE 802.1v
- Protocol-based VLANs

IEEE 802.1W
- Rapid Spanning Tree Protocol (RSTP)
- Rapid Spanning Tree Protocol (RSTP)

IEEE 802.3ad
- Link Aggregation Control Protocol (LACP)

IEEE 802.3ae
- 10 Gigabit Ethernet (10GBASE-T)

IEEE 802.3ba
- 40 Gigabit Ethernet (40GBase-SR4, 40GBase-CR4) on optical ports

IEEE 802.3u
- Fast Ethernet (10BASE-T) on mgt ports

IEEE 802.3x
- Flow Control

IEEE 802.3z
- Gigabit Ethernet (1000BASE-X)

ANSI/TIA-568A-1
- LLDP-MED

MTU
- 9,000 bytes

RFC and I-D Compliance

General Internet Protocols

IPv4
- IP
- ARP
- RARP
- ICMP
- DHCP
- BOOTP
- DNS
- NTP
- NIS
- TFTP
- Telnet
- SNMP
- NVT-Telnet

IPv6
- IPv6
- ICMPv6
- Mobile IPv6
- ERSMP
- Optimized Mobile IPv6

Network Management
- Ping-MTU
- IPv6-Addressing
- IP6-Addressing
- IPv6-Authorization
- Addressing
- Authentication
- Authorization
- Access Control

Multicast
- IGMP
- MLD
- MLDv2
- MLDv3

Draft-ietf-ippm-sm-brs-05
- DiffServ
- DiffServ

Draft-ietf-ippm-igmp-proxy-05
- IGMP Proxy

Network Admission

Dell Networking 8100 Series

Dell Networking 8100 high-performance 10/40 GbE Enterprise Switches

Dell Networking SFP+ 5 m TwinAx
- Connects to PowerConnect 8124F

Dell Networking SFP+ 3 m TwinAx
- Connects to PowerConnect 8124F

Dell Networking SFP+ .5 m TwinAx
- Connects to PowerConnect 8124F

40GbE QSFP+ to 4xLC (SFP+) 3m Optical Cable:
- Requires QSFP+ Optics

40GbE QSFP+ to 4xLC (SFP+) 1m Optical Cable:
- Requires QSFP+ Optics

40GbE QSFP+ to 4xLC (SFP+) 0.5m Optical Cable:
- Requires QSFP+ Optics

40GbE MTP (QSFP+) to 4xLC (SFP+) 1m Optical Cable:
- Requires QSFP+ Optics

40GbE MTP (QSFP+) to 4xLC (SFP+) 3m Optical Cable:
- Requires QSFP+ Optics

40GbE MTP (QSFP+) to 4xLC (SFP+) 5m Optical Cable:
- Requires QSFP+ Optics

40GbE MTP (QSFP+) to 4xLC (SFP+) 7m Optical Cable:
- Requires QSFP+ Optics

Dell Networking 8100 Series

8164F:
- 48 line-rate 10Gb SFP+ ports
- 2x 40GbE base ports
- 64 ports max

8132:
- 24 line-rate 10GbE SFP+ ports
- up to 32 ports max via optional 40GbE Module

8132F:
- 48 line-rate 10Gb SFP+ ports
- 2x 40GbE base ports
- 64 ports max

8124F:
- 24 line-rate 10Gb SFP+ ports
- up to 32 ports max via optional 40GbE Module

Specifications:

CPU memory: 2GB
Packet buffer memory: 9MB
Layer 2 VLANs: 4000
Link aggregation: 8 links per group, 72 groups per stack
Forwarding capacity up to 960 Mpps
640 Gbps (half-duplex)
Switch fabric capacity: up to 1.28 Tbps (full-duplex)
IPv4 routes: 8K
Static routes: 512 (IPv4) / 256 (IPv6)
Performance
- Hot swappable modules
- Redundancy
- 1 RJ45 out of band OOB port
- All models incorporate:
  - 8164F: 48 line-rate 10Gb SFP+ ports, 2x 40GbE base ports, 64 ports max
  - 8132: 24 line-rate 10GBase-T Ethernet ports, 1 module port
  - 8164F: 24 line-rate 10Gb SFP+ ports, 2x 40GbE base ports, 64 ports max

Chassis
- Dell Networking S8100 Series

Environmental
- Power supply: 100–240 VAC 50/60 Hz
- Power Efficiency: 80% or better in all operating modes
- Max. thermal output:
  - 8124: 823.44 BTU/hr
  - 8124F: 1353.33 BTU/hr
  - 8132: 754.82 BTU/hr
- Max current draw per system:
  - 8124: 2.18A at 100/120 VAC; 1.07A at 200/240 VAC
  - 8132: 1.6A at 100/120 VAC; 0.79A at 200/240 VAC

Certifications
- Available with US Trade Agreements Act (TAA) compliance
- Available with US Common Assessments (CAA) compliance
- Available with US Trade Agreements Act (TAA) compliance