Dell PowerConnect 8100 Series

The Dell™ PowerConnect™ 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 PowerConnect 8100 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 PowerConnect 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 PowerConnect 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 PowerConnect 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
- 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.
- Manage via a standard command line interface (CLI), embedded Web server, third party SNMP-based management console applications (including Dell OpenManage Network Manager), Telnet, or serial connections.
- 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 PowerConnect switches are backed a Lifetime Limited Warranty with Basic Hardware (repair or replacement) for life. Details at Dell.com/LifetimeWarranty

Scalable high density, Layer 3 10/40Gb Ethernet switches for aggregation and core switching in a compact 1U form factor.

Technical specification	Dell™ PowerConnect™ 8132	Dell™ PowerConnect™ 8132F	Dell™ PowerConnect™ 8164	Dell™ PowerConnect™ 8164F
Port types	24x 10GBASE-T auto-sensing GbE switching ports; upgradable QSFP+/4x10GbE/ stacking ports	24x SFP+ 10Gb/1Gb ports; upgradable QSFP+/4x10GbE/ stacking ports	48x 10GBASE-T auto-sensing GbE switching ports; 2 fixed QSFP+ ports; upgradeable QSFP+/4x10GbE/stacking ports	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 Compellent 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; BootP/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; 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: PowerConnect 8100 high-performance 10/40 GbE Enterprise Switches

Dell SKU description

PowerConnect 8100 Series
PowerConnect 8132, 24x 10GBase-T ports, up to 32 ports max via optional 40GbE Module
PowerConnect 8132F, 24x 10GbE SFP+ base ports, up to 32 ports max via optional 40GbE Module
PowerConnect 8164, 48x 10GBase-T + 2x 40GbE base ports, up to 64 ports max via optional 40GbE Module
PowerConnect 8164F, 48x 10Gb SFP+ ports + 2x 40GbE base ports, 64 ports max via optional 40GbE Module

Modules
10GBase-T Module, 4-port, Hot Swappable, 4x 10GBase-T ports (RJ45 for Cat6 cables)
QSFP+ 40GbE Module, 2-Port, Hot Swap, Max 8x 10GbE ports w/ breakout cables (cables not included)
SFP+ 10GbE Module, 4 port, Hot Swappable, 4x SFP+ ports (optics or direct attach cables required)

Redundant power supplies
AC Power Supply, Hot swappable

Fans
Fan 2x per module, IO Panel to PSU Airflow (ports to back)

Optics
Transceiver, 40GE QSFP+ Short Reach Optic, 850nm Wavelength, 100-150m Reach on OM3/OM4
Transceiver, SFP+, 10GbE, SR, Multi-Mode, 300m Reach
Transceiver, SFP+, 10GbE, LR, Single-Mode, 10km Reach
Transceiver, SFP, 1000BASE-SX, 850nm Wavelength, 550m Reach
Transceiver, SFP, 1000BASE-LX, 1310nm Wavelength, 10km Reach

Cables
40GbE QSFP+ to 4x 10GbE SFP+ TwinAx Breakout Cable, 0.5m
40GbE QSFP+ to 4x 10GbE SFP+ TwinAx Breakout Cable, 1m
40GbE MTP (QSFP+) to 4xLC (SFP+) 1m Optical Cable (optics not included)
40GbE QSFP+ to 4x 10GbE SFP+ TwinAx Breakout Cable, 3m
40GbE MTP (QSFP+) to 4xLC (SFP+) 3m Optical Cable (optics not included)
40GbE MTP (QSFP+) to 4xLC (SFP+) 5m Optical Cable (optics not included)
40GbE MTP (QSFP+) to 4xLC (SFP+) 7m Optical Cable (optics not included)
QSFP+ to QSFP+, 40GbE TwinAx Passive Cable, 0.5 Meters
QSFP+ to QSFP+, 40GbE TwinAx Passive Cable, 1 Meter
1m QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics
QSFP+ to QSFP+, 40GbE TwinAx Passive Cable, 3 Meters
3m QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics
QSFP+ to QSFP+, 40GbE TwinAx Cable, 5 Meters
5m QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics
QSFP+ to QSFP+, 40GbE TwinAx Cable, 7 Meters
7m QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics
PowerConnect SFP+ .5 m TwinAx, connects to PowerConnect
PowerConnect SFP+ 1 m TwinAx, connects to PowerConnect
PowerConnect SFP+ 3 m TwinAx, connects to PowerConnect
PowerConnect SFP+ 5 m TwinAx, connects to PowerConnect

Physical
8132: 24 line-rate 100/1000/10GBase-T Ethernet ports, 1 module port
8132F: 24 line-rate 10Gb SFP+ Ethernet ports, 1 module port
8164: 48 line-rate 100/1000/10GBase-T ports, 2x 40GbE QSFP+ ports, 1 module port
8164F: 48 line-rate 10Gb SFP+ ports, 2x 40GbE QSFP+ ports, 1 module port
All models incorporate:
1 RJ45 console/management port
1 RJ45 out of band OOB port
1 USB (Type A) port for configuration

Redundancy
Hot swappable redundant power
Hot swappable modules
Redundant fan modules

Performance
MAC addresses:	128K
IPv4 routes:	8K
IPv6 routes:	4K (shared CAM space with IPv4)
Switch fabric capacity:	up to 1.28 Tbps (full-duplex) or 640 Gbps (half-duplex)
Forwarding capacity	up to 960 Mpps
Link aggregation:	8 links per group, 72 groups per stack
Queues per port:	4 queues
Layer 2 VLANs:	4000
Line-rate Layer 2 switching:	all protocols, including IPv4 and IPv6
Line-rate Layer 3 routing:	IPv4 and IPv6
IPv4 Multicast table size	512
LAG load balancing:	based on Layer 2, IPv4 or IPv6 headers
Packet buffer memory:	9MB
CPU memory:	2GB

IEEE Compliance
802.1AB	LLDP
802.1D	Bridging, Spanning Tree
802.1p	Ethernet Priority (User Provisioning and Mapping)
802.1Q	VLAN Tagging, Double VLAN Tagging, GVRP
802.1s	Multiple Spanning Tree (MSTP)
802.1v	Protocol-based VLANs
802.1w	Rapid Spanning Tree (RSTP)
802.1X	Network Access Control
802.3ab	Gigabit Ethernet (1000BASE-T)
802.3ac	Frame Extensions for VLAN Tagging
802.3ad	Link Aggregation with LACP
802.3ae	10 Gigabit Ethernet (10GBASE-X)
802.3ba	40 Gigabit Ethernet (40GBase-SR4, 40GBase-CR4) on optical ports
802.3u	Fast Ethernet (100BASE-TX) on mgmt ports
802.3x	Flow Control
802.3z	Gigabit Ethernet (1000BASE-X)
ANSI/TIA-1057	LLDP-MED
MTU	9,000 bytes

RFC and I-D Compliance

General Internet Protocols
768	UDP	1321	MDA
783	TFTP	2246	TLS, V1.0
791	IP	2346	AES Ciphersuites
792	ICMP	2474	Differentiated Services
793	TCP	2475	Architecture for DS
854	Telnet	3164	Syslog
855	Telnet option		

General IPv4 Protocols
791	IPv4	2082	RIP-2 MD5 Authent
792	ICMP	2131	DHCP (relay)
826	ARP	2132	DHCP/BootP Ext.
894	Transmit IP datagrams	2328	OSPFv4
896	Congestion Control	2338	VRRP
951	BootP	2597	Assured Fwd PHB
1027	Proxy ARP	3046	DHCP BootP Relay
1042	Ethernet Transmission	3069	Private VLAN
1256	ICMP Router Discovery	3246	Expedited Fwd PHB
1519	CIDR	3260	DiffServ updates
1534	Interoperation btwn BootP and DHCP		
1542	BootP (relay)	3768	VRRP
1583	OSPF		
1765	OSPF Database overflow Protection		
1812	Routers		

General IPv6 Protocols
1981	Path MTU	3493	Basic Socket interface
2373	IPv6 Addressing	3513	Addressing Arch.
2460	IPv6	3542	Advanced sockets API
2461	Neighbor Discovery	3587	Global Unicast Address
2462	Stateless Address Autoconfiguration (partial)		
2464	IPv6 over Ethernet	3736	Stateless DHCPv6
2711	IPv6 Router alert	4213	Basic Transition Mech.
2740	OSPFv3	4291	Addressing Arch
3315	DHCPv6	4443	ICMPv6
3484	Default Address Select		

RIP
1058	RIPv1	2082	MD5
2453	RIPv2		

OSPF
2328	OSPFv2	3101	NSSA
2740	OSPFv3	3623	Graceful Restart
5187	OSPFv3 Graceful Restart		

Multicast
1112	IGMPv1	3810	MLDv2
2236	IGMPv2	3973	PIM-DM
2710	MLDv1	4541	IGMPv1/v2 Snooping
3376	IGMPv3	4601	PIM-SM
Draft-ietf-pim-sm-bsr-05			
Draft-ietf-idmr-dvmrp-v3-10		DVMRP	
Draft-ietf-magma-igmp-proxy-06.txt		IGMP/MLD Proxying	
Draft-ietf-magma-igmpv3-and-routing-05.txt			

Network Management
1155	SMIv1
1157	SNMPv1
1212	Concise MIB Definitions
1213	MIB-II
1215	SNMP Traps
1286	Bridge MIB
1442	SMIv2
1451	Manager-to-Manager MIB
1492	TACACS+
1493	Managed objects for Bridges MIB
1573	Evolution of Interfaces
1643	Etherlike MIB
1867	HTML/2.0 Forms
1901	Community-based SNMPv2
1907	SNMPv2 MIB
1908	Coexistence btwn SNMPv1/v2
2011	IP MIB
2012	TCP MIB
2013	UDP MIB
2030	SNTP
2233	Interfaces Group using SMIv2
2271	SNMP Framework MIB
2295	Transparent Content Negotiation
2296	Remote Variant Selection
2576	Coexistence between SNMPv1/v2/v3
2578	SMIv2
2579	Textual Conventions for SMIv2
2580	Conformance Statements for SMIv2
2618	RADIUS Authentication MIB
2665	Ethernet-like Interfaces MIB
2666	Identification of Ethernet chipsets
2674	Extended Bridge MIB
2737	ENTITY MIB
2818	HTTP over TLS
2819	RMON MIB (groups 1, 2, 3, 9)
2863	Interfaces MIB
2865	RADIUS
2866	RADIUS Accounting
2868	RADIUS Attributes for Tunnel Prot.
2869	RADIUS Extensions
3413	SNMP Applications
3416	SNMPv2
3418	SNMP MIB
3580	802.1X with RADIUS
FASTPATH Enterprise MIB supporting Routing features	

Chassis
Size: 1 RU, 1.71 h x 17.08 w x 18.11" d (4.35 h x 43.4 w x 46 cm d)
Approximate weight: 9.83 kg/21.67 lb (8132); 9.59 kg/21.14 lb (8132F); 10.92 kg/24.07 lb (8164); 10.56 kg/23.28 kg (8164F)
ReadyRails™ rack mounting system, no tools required

Environmental
Power supply: 100–240 VAC 50/60 Hz
Power Supply Efficiency 80% or better in all operating modes
Max. thermal output:
  8132: 823.44 BTU/hr
  8132F: 603.86 BTU/hr
  8164: 1353.53 BTU/hr
  8164F: 754.82 BTU/hr
Max. current draw per system:
  8132: 2.18A at 100/120 VAC; 1.07A at 200/240 VAC
  8132F: 1.6A at 100/120 VAC; 0.79A at 200/240 VAC
  8164: 3.58A at 100/120 VAC; 1.77A at 200/240 VAC
  8164F: 2.0A at 100/120 VAC; 0.98A at 200/240 VAC
Power Consumption Max (Watts): 240W (8132); 176W (8132F); 395W (8164); 220W (8164F)
Max. Operating specifications:
  Operating temperature: 32° to 122°F (0° to 50°C)
  Operating humidity: 10 to 90% (RH), non-condensing
Max. non-operating specifications:
  Storage temperature: –4° to 158°F (–20° to 70°C)
  Storage humidity: 10 to 95% (RH), non-condensing
ISO 7779 A-weighted sound pressure level: 63.7 dBA at 73.4°F (23°C)

Regulatory and environment Compliance
Safety and Emissions
Australia/New Zealand: ACMA or C-Tick Class A
Canada: ICES Class A; SCC
China: CNCA or CCC Class A; NAL
Europe: CE Class A
Japan: VCCI Class A
USA: FCC Class A; NRTL
Product meets EMC and safety standards in many countries inclusive of; USA, Canada, EU, Japan, China. For more country-specific regulatory information, and approvals, please see your Dell representative.

RoHS
Product meets RoHS compliance standards in many countries inclusive of USA, and EU. For more country-specific RoHS compliance information, please see your Dell representative.

Learn more at Dell.com/Networking