

# Voltaire® Vantage™ 8500

## 10 Gigabit Ethernet Switching For Scale-Out Data Centers and Cloud Computing Fabrics



### Scaling-Out Data Centers Using 10 Gigabit Ethernet based on Converged Enhanced Ethernet (CEE)

Scalable, lossless 10 Gigabit Ethernet fabrics are fundamental to enterprise data centers, and to the rapidly-evolving enterprise clouds that consolidate multiple applications and networks onto a unified, wide-scale and shared infrastructure.

The Voltaire Vantage 8500 switch is a completely modular, high-performance, high density Layer-2 core switch, optimized for enterprise data center and cloud computing environments. It features the industry's most power-efficient and lowest latency capabilities on Ethernet, enabling new levels of efficiency, scalability and real-time application performance, while at the same time consolidating multiple/redundant network tiers and significantly reducing infrastructure expenses.

The Voltaire Vantage 8500 is the industry's largest non-blocking 10 Gigabit Ethernet switch. With up to 288 ports of 10GbE connectivity, the Voltaire Vantage 8500 switch features an impressive 11.52 Tb/s non-blocking backplane, allowing applications to perform at maximum bandwidth and efficiency. As a focused, L2 core switch, it seamlessly integrates with existing switch infrastructures, and enables application performance at the lowest bandwidth to power ratio—with only 600-1200 nanoseconds of port-to-port latency and power consumption as low as 10 watts per port.

The Voltaire Vantage 8500 uses Converged Enhanced Ethernet (CEE) technology to provide InfiniBand-like capabilities such as a lossless switching fabric, and supports Fibre Channel over Ethernet (FCoE) traffic, Ethernet multi-pathing, I/O virtualization, and fabric-wide congestion management and QoS. The switch is interoperable with standards-based switches, 1GbE and 10GbE network adapter cards, and third-party management and virtualization solutions enabling a best-of-breed, cost effective data center network.

### Enabling Linear Scalability & Data Center Virtualization

The Voltaire Vantage 8500 delivers scalability, efficiency, and fabric virtualization capabilities to meet the growing needs of next-generation data centers.

Using Voltaire's technology, up to 12 Voltaire Vantage 8500 switches can be clustered together to form a 3400 port non-blocking switching fabric - an important capability for virtualized data centers.

With the proliferation of servers and virtualization in data centers, requirements for highly-available I/O fabric capacity have increased dramatically. Accordingly, the Voltaire Vantage

8500 delivers optimal fabric utilization and performance by enabling scale-out and Layer-2 multi-pathing while remaining transparent to external servers and switching gear. As a result the cost of expanding the size of the data center is significantly reduced, while providing constant and high bandwidth per node.

Additionally, data centers are now transitioning towards consolidating traffic types and protocols onto a single wire. The Voltaire Vantage 8500 supports this convergence by implementing the IEEE data center bridging lossless mode of traffic optimized for Fibre Channel over Ethernet (FCoE) and RDMA traffic types, which require a reliable and lossless transport layer.

The Vantage 8500 also allows users to manage roaming Virtual Machine ports, assign them unique policies, monitor them as if they were physical ports, and form multiple virtual fabrics with unique behavior and resource assignments. Its powerful operating system, VT-OS, allows multiple simultaneous sessions and granular access control to virtual or physical switch elements.

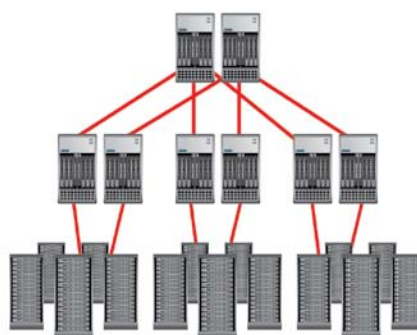
### Scale-out Manageability

To enable clustering based on commodity elements, a systems administrator must overcome the complexity of managing large-scale clusters. VT-OS comprises Layer-2 protocol stack and advanced chassis management capabilities to automate regular administrative tasks while offering a user-friendly CLI, GUI, and SNMP interface.

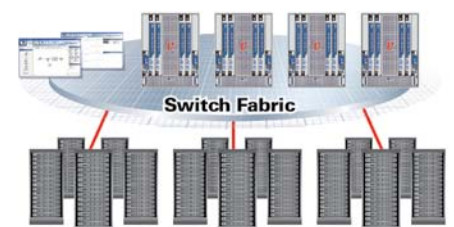
Complementing VT-OS is Voltaire's Unified Fabric Manager™ (UFM™) software management platform, which enables fabric-wide, application-centric cluster management of the Voltaire Vantage 8500 cluster. UFM software also provides management for third-party switches in conjunction with other data center management applications.



- Provides linearly scalable, non-blocking 10GbE data center connectivity for up to 3400 servers
- High density, low power 10GbE data center switch
- Delivers ultra-low latency of 600-1200 nanoseconds (port-to-port)
- Supports virtual machines with isolation and offers fabric-wide QoS per virtual machine
- Complies with IEEE Data Center Bridging (DCB) standards and FCoE
- Lossless with dynamic congestion management and monitoring
- Seamlessly integrates with third-party top-of-rack switches and 1GbE and 10GbE adapters



**Traditional Ethernet Configuration**



**Scale-Out Ethernet Configuration**

## TECHNICAL SPECIFICATIONS

### Voltaire Vantage 8500

- 12-slot, 19" rack mountable chassis, 15U high
- Redundant power supplies (sPSUs) and fan units (sFUs)
- Bisectonal bandwidth: 11.52 Tb/s
- Port-to-port latency: 600-1200 nanoseconds
- Up to 12 10GbE line boards supported per chassis, with a total of 288 ports
- Each slot may accommodate one 24-port 10GbE Line Board
- Line board indicators: Link up/down and Traffic activity LEDs per port, power and info LEDs
- Up to 4 fabric boards supported per chassis
- Fabric board indicators: Link up/down and traffic activity LEDs per line board link port, power, info and hot-swappable LEDs

### Management

- Supported management:
  - Web based management
  - CLI
  - SNMP v2, v3
  - Telnet
  - SSH v2
  - SSL
  - RADIUS
  - AAA
  - Syslog
  - RMON, XRMON
  - File download via HTTP, HTTPS, SCP, FTP, SFTP
  - NTP
  - Ethernet like MIB
  - SNMP MIB II
  - RBAC
- Indicators: Power, chassis manager active, info and hot-swap LEDs
- Additional rear control panel
- Connectors: EIA/TIA-232 Console DB-9, 10/100 Ethernet RJ-45
- Indicators: chassis management activity (2 LEDs), Fabric Boards (4 LEDs) and temperature LED
- Management/device reset button

### Layer 2

- 4K VLANs
- Jumbo frames (9K)
- IGMP snooping
- Port mirroring
- QoS (e.g. shaping, policing, and marking)
- Up to 16K Unicast MAC addresses

### Policy and Layer 3

- L2/3/4 ACLs
- Actions: forward/drop, QoS assignment, counting/metering/policing and mirroring

### IEEE Compliance

- 802.1
- 802.1Q VLAN
- 802.1P CoS
- 802.1d STP
- 802.1w Rapid STP
- 802.1s MSTP
- 802.1ab LLDP
- 802.3
- 802.3ae
- 802.3ad Link aggregation/LACP (16 ports/channel)
- 802.3x Flow Control

### DCB (Datacenter Bridging) Compliance

- 802.1Qbb PFC
- 802.1Qau QCN
- 802.1Qaz ETS
- VEB (Virtual Ethernet Bridge)

### Scale-out Layer 2 Advanced Features

- Virtual I/O Port Object
- Layer 2 Multi-pathing

### Cooling

- Airflow: front-to-back
- Heat dissipation: 14336 BTU/hour max. for full configuration

### Physical/ Electrical

- 288 10GbE ports SFP+ cages:
  - 10GBASE-SR (30m to 300m)
  - 10GBASE-LR (10Kkm)
  - 10GBASE-LRM (220m with FDDI grade)
- SFP+ Twinax cable (copper)
- Power supply redundancy

- Max. power consumption: 4.3 KW
- Max. power consumption measured: 3.3 KW
- Typical power consumption: 10Watt/Port

### Physical Characteristics

- 19-inch rack-mountable
- Dimensions (H x W x D): 25.6 in. (660 mm) x 17.5 in. (444 mm) x 22.75 in. (578 mm)
- Optional front or rear rack mounting
- Weight: 128 to 163 lb (58 to 74 Kg), depending on configuration and packaging

### Environmental

- Operating
  - Ambient temperature: 32° to 113° F (0° to 45° C)
  - Humidity: 15 to 80%, non-condensing
  - Altitude: 0 to 9843 ft (3000m)
- Storage
  - Temperature: -13° to 158° F (-25° to 70° C)
  - Humidity: 5 to 90 non-condensing
  - Altitude: 0 to 15,000 ft (4570m)

### Certifications

- Safety (Voltaire Typical)
  - UL60950
  - CB IEC60950
  - CSA-C22.2 No.60950-00
- EMC (Voltaire Typical)
  - 47CFR FCC part 15
  - EN55022:98/EN55024:98/EN61000-3-2:00/EN61000-3-3:95
  - VCCI

## Ordering Options

Part Number	Product Description
Vantage 8500 Components	
VLT-30023	8500 SWITCH BASIC BUNDLE (CHASSIS+ FANS+ X2 PS + X1 SMB)
VLT-30022	8500 SMB MANAGEMENT MODULE
VLT-30012	8500 SFB FABRIC MODULE
VLT-30024	8500 SLB 24 PORTS LINE MODULE
SFP+ copper - DAC	
CBL-00239	ETH CABLE SFP+ (10GE) 1M 30AWG
CBL-00240	ETH CABLE SFP+ (10GE) 3M 28AWG
CBL-00242	ETH CABLE SFP+ (10GE) 5M 26AWG
CBL-00244	ETH CABLE SFP+ (10GE) 7M 24AWG
CBL-00245	ETH CABLE SFP+ (10GE) 10M 24AWG

Part Number	Product Description
SFP+ Optic Transceivers	
OPT-00006	ETH SFP+ SR Transceiver (up to 300m)
OPT-00005	ETH SFP+ LR Transceiver (up to 10km)
OPT-00010	ETH SFP+ LRM Transceiver (up to 220m)



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