Mellanox provides the world's smartest switch, enabling in-network computing through the Co-Design Scalable Hierarchical Aggregation and Reduction Protocol (SHARP™) technology. CS8500 has the highest performing fabric solution in a 29U form factor by delivering 320Tb/s of full bi-directional bandwidth with ultra-low port latency.

**Scaling-Out Data Centers with HDR 200G InfiniBand**

Faster servers based on PCIe 3.0 and above, combined with high-performance storage and applications that use increasingly complex computations, are causing data bandwidth requirements to spiral upward. As servers are deployed with next generation processors, High-Performance Computing (HPC) environments and Enterprise Data Centers (EDC) will need every last bit of bandwidth delivered with Mellanox’s next generation of HDR InfiniBand high-speed smart switches.

**World’s Smartest Switch**

Built with Mellanox Quantum InfiniBand switch devices, the CS8500 provides up to 800 200Gb/s full bi-directional bandwidth per port. The CS8500 modular chassis switch provides an excellent price performance ratio for medium to extremely large size clusters, along with the reliability and manageability expected from a modular-class switch.

CS8500 is the world's smartest network switch designed to enable in-network computing through Mellanox Scalable Hierarchical Aggregation and Reduction Protocol (SHARP™) technology. This architecture enables the usage of all active data center devices to accelerate the communications frameworks, resulting in an order of magnitude improvement in applications performance.

CS8500 enables efficient computing with features such as static routing, adaptive routing, congestion control and enhanced VL mapping to enable modern topologies (SlimFly, Dragonfly+, 6DT). These features ensure the maximum effective fabric bandwidth by eliminating congestion hot spots.

**World-Class Design**

CS8500 is an elegant modular switch designed for performance, serviceability, energy savings and high availability. The leaf blades, spine blades and management modules, as well as the power supplies and fan units, are all hot-swappable to help eliminate down time. CS8500 is an eco-friendly solution cooled solely by a liquid closed loop to enable a low noise level and reduce IT OPEX. CS8500 arrives with liquid coolant (CDU) or air heat exchanger (AHX) data units to best fit all data centers.
Collective Communication Acceleration

Collective communication describes communication patterns in which all members of a group of communication endpoints participate. Collective communications are commonly used in HPC protocols such as MPI and SHMEM.

The Mellanox Quantum switch improves the performance of selected collective operations by processing the data as it traverses the network, eliminating the need to send data multiple times between endpoints. It also supports the aggregation of large data vectors at wire speed to enable MPI large vector reduction operations, which are crucial for machine learning applications.

CS8500 together with the Mellanox ConnectX®-6 adapter card support HDR100. By utilizing two pairs of two lanes per port, the CS8500 can support up to 1600 ports of 100G to create the densest modular switch available in the market. This is a perfect solution for medium-large deployments that require lower power, latency and space.

**Mellanox CS8500**
- 29U modular chassis (w/o CDU/AHX)
- 40 QSFP56 HDR 200Gb/s InfiniBand ports per leaf blade

**Switch Specifications**
- Compliant with IBTA 1.21 and 1.3
- 9 virtual lanes:
  - 8 data + 1 management
- 256 to 4Kbyte MTU
- Adaptive routing
- Congestion control

**Management control**
- Unified Fabric Manager™ (UFM™) Agent

**Connectors and Cabling**
- QSFP56 connectors
- Passive copper or active fiber cables
- Optical modules

**Fabric Management**
- On-board Subnet Manager supporting fabrics of up to 2k nodes

**Features**
- 100/1000Mb/s RJ45 Ethernet port
- RS232 console port
- USB port
- DHCP
- System LED: System, fans, power supplies
- Unit ID LED

**Preferred Characteristics**
- Dimensions: H x D x W (1289mm x 770mm x 428mm)
- Weight: TBD

**Power Supply**
- Hot swappable with N+N redundancy

**Cooling**
- Ordering options:
  - Liquid to Air AHX
  - Liquid to Liquid CDU

**Power Consumption**
- Contact Mellanox Sales

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**Safety**
- CB
- cTUVus
- CE
- CU

**EMC (Emissions)**
- CE
- FCC

**Operating Conditions**
- Water temp 5°C to 40°C, non-condensing
- Air temp 0°C to 35°C
- Non-Operating -40°C to 70°C
- Humidity: Operating 10% to 85%, non-condensing
- Altitude: Operating -60 to 3200m
- ISO 7779
- ETS 300 779
- AC3 300 753

**Compliance**
- CE
- CB
- RoHS compliant
- 1-year hardware warranty and 5-year service fee (mandatory)

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**Table 1 - CS8500 Series Part Numbers and Descriptions**

<table>
<thead>
<tr>
<th>OPN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCS8500</td>
<td>320Tb/s, 800-port HDR InfiniBand chassis, includes 9 power supply units (N+1) with support for up to 16 power supply units (N+N)</td>
</tr>
<tr>
<td>MCS8500-WL</td>
<td>320 Tb/s, 800-port HDR InfiniBand chassis with (N+N) power support, includes 9 power supplies (N+1), includes hose to AHX, RoHS-compliant</td>
</tr>
<tr>
<td>MQM8510-H</td>
<td>Mellanox Quantum™ HDR InfiniBand leaf blade, 40 QSFP56 ports</td>
</tr>
<tr>
<td>MQM8520-H</td>
<td>Mellanox Quantum™ HDR InfiniBand spine blade, 40 QSFP56 ports</td>
</tr>
<tr>
<td>MMB8500</td>
<td>MCS85xx modular systems X86 dual-core chassis management module</td>
</tr>
<tr>
<td>MTDF-PS-B</td>
<td>MCS85xx modular systems 3KW AC power supply w/P2C airflow</td>
</tr>
<tr>
<td>MTDF-LIQ-A</td>
<td>MCS85xx director chassis water cooling set</td>
</tr>
<tr>
<td>MTDF-KIT-C</td>
<td>MCS85xx systems rail kit</td>
</tr>
<tr>
<td>MTDF-CH-D</td>
<td>MCS85xx 800p cable holder</td>
</tr>
<tr>
<td>900-00796</td>
<td>MCS85xx modular systems liquid-to-liquid Cooling Distribution Unit (CDU)</td>
</tr>
<tr>
<td>AHX-22KW-350MM</td>
<td>MCS85xx modular systems liquid-to-Air Heat Exchanger (AHX)</td>
</tr>
<tr>
<td>GPS-CS8500-OST</td>
<td>Mellanox CS8500 HDR chassis installation including onsite rack and water cooling system</td>
</tr>
</tbody>
</table>