

# Dell ECS EX-Series

Dell ECS is an enterprise-grade, cloud-scale, object storage platform. With ECS, any organization can deliver scalable public cloud services with the reliability and control of a private-cloud infrastructure. ECS provides comprehensive protocol support for unstructured—object and file—workloads on a single modern storage platform. Using ECS, organizations can easily manage globally distributed storage infrastructure under a single global namespace with anywhere access to content. ECS features a flexible software-defined architecture that is layered to promote limitless scalability. Each layer is completely abstracted and independently scalable with high availability and no single points of failure. ECS also comes in a fully-integrated turnkey appliance that bundles software and Dell PowerEdge servers into an easily deployed object system.

ECS is currently in its third generation of hardware appliances, the EX-Series, building on the legacy of the EMC Centera and Atmos object storage platforms that predated ECS. The ECS EX-Series is comprised of three unique hardware products: EX500, EX5000 and the all-flash EXF900.

ECS EX500	ECS EX5000	ECS EXF900
		
<p>The perfect blend of economy and density, the EX500 is a versatile option for midsized enterprises looking to support either modern application or deep archive use cases.</p> <p>It's the ideal sandbox for in-house, cloud-native, mobile and web application storage. Rack capacity ranges from 120TB to 7.68PB.</p>	<p>A high density, hot disk-swappable, object storage system, the EX5000 packs up to 14.0PB per rack and can grow into exabyte-scale with ease.</p> <p>It's an ideal platform for long-term retention, storage consolidation and multi-purpose object storage requirements that span S3, HDFS and archive workloads.</p>	<p>Built with NVMe-based SSDs on Dell PowerEdge servers, the EXF900 appliance delivers extreme performance at scale for modern workloads such as AI, machine learning, IoT and real-time analytics applications.</p> <p>Capacity begins at 230TB and scales up to 5.898PB per rack.</p>

Features	EX500	EX5000	EXF900
<b>Node architecture</b>	<ul style="list-style-type: none"> <li>Intel x86 servers</li> <li>Integrated storage</li> <li>12 or 24 disk drives per node</li> </ul>	<ul style="list-style-type: none"> <li>Intel x86 servers</li> <li>Integrated storage</li> <li>Up to 100 disk drives per node</li> </ul>	<ul style="list-style-type: none"> <li>Intel x86 servers</li> <li>Integrated storage</li> <li>12 or 24 disk drives per node</li> </ul>
<b>Network connectivity</b>	<ul style="list-style-type: none"> <li>25GbE FrontEnd</li> <li>25GbE BackEnd</li> </ul>	<ul style="list-style-type: none"> <li>25GbE FrontEnd</li> <li>25GbE BackEnd</li> </ul>	<ul style="list-style-type: none"> <li>25GbE FrontEnd</li> <li>25GbE BackEnd</li> </ul>
<b>Rack configurations</b>	<ul style="list-style-type: none"> <li>1, through 16 node configurations (5 node minimum initial rack)</li> <li>HA power</li> </ul>	<ul style="list-style-type: none"> <li>EX5000S: 1, through 7 node configurations (5 node minimum initial rack)</li> <li>EX5000D: 2, through 14 node configurations (8 node minimum initial rack)</li> <li>HA power</li> </ul>	<ul style="list-style-type: none"> <li>1, through 16 node configurations (5 node minimum initial rack)</li> <li>HA power</li> </ul>
<b>Storage configurations</b>	<ul style="list-style-type: none"> <li>Unstructured storage up to 7680TB per rack</li> </ul>	<ul style="list-style-type: none"> <li>Unstructured storage up to 14,000TB per rack</li> </ul>	<ul style="list-style-type: none"> <li>Unstructured storage up to 5898TB per rack</li> </ul>

## ECS EX-Series appliance details

Features	EX500	EX5000	EXF900
<b>Architecture</b>	<ul style="list-style-type: none"> <li>Standard 40U cabinet</li> <li>2U node containing server and disks</li> <li>Fully accessible – field serviceable</li> <li>Conventional front to back cooling</li> <li>HA power cabling and cooling</li> </ul>	<ul style="list-style-type: none"> <li>Titan S standard 42U cabinet</li> <li>EX5000S: 5U chassis containing server and disks</li> <li>EX5000D: 5U chassis containing server and disks</li> <li>Fully accessible – field serviceable components</li> <li>Conventional front to back cooling</li> <li>HA power cabling and cooling</li> </ul>	<ul style="list-style-type: none"> <li>Standard 40U cabinet</li> <li>2U node containing server and disks</li> <li>Fully accessible – field serviceable</li> <li>Conventional front to back cooling</li> <li>HA power cabling and cooling</li> </ul>
<b>Min / max cluster size</b>	<ul style="list-style-type: none"> <li>5 node minimum</li> <li>No maximum</li> </ul>	<ul style="list-style-type: none"> <li>Single: 5 node minimum</li> <li>No maximum</li> </ul>	<ul style="list-style-type: none"> <li>5 node minimum</li> <li>Maximum:112 nodes</li> </ul>
<b>Min / max rack configuration</b>	<ul style="list-style-type: none"> <li>Min: 1 node = 1 server with included disks</li> <li>Max: 16 nodes = 16 servers with included disks</li> </ul>	<p>Single:</p> <ul style="list-style-type: none"> <li>Min: 1 chassis = 1 server with included disks</li> <li>Max: 7 chassis = 7 servers with included disks</li> </ul> <p>Dual:</p> <ul style="list-style-type: none"> <li>Min: 1 chassis = 1 server with included disks</li> <li>Max: 7 chassis = 7 servers with included disks (14 nodes per 42U rack)</li> </ul>	<ul style="list-style-type: none"> <li>Min: 1 node = 1 server with included disks</li> <li>Max: 16 nodes = 16 servers with included disks</li> </ul>
<b>Node:disk ratios</b>	<ul style="list-style-type: none"> <li>1:12, 1:24</li> </ul>	<ul style="list-style-type: none"> <li>EX5000S: 1:25, 1:50, 1:75, 1:100</li> <li>EX5000D: 1:25, 1:50</li> </ul>	<ul style="list-style-type: none"> <li>1:12, 1:24</li> </ul>
<b>Disk type (7200rpm, SATA)</b>	<ul style="list-style-type: none"> <li>2TB, 4TB, 8TB, 12TB, 16TB, 20TB</li> </ul>	<ul style="list-style-type: none"> <li>16TB, 20TB</li> </ul>	<ul style="list-style-type: none"> <li>3.84TB, 7.68TB, 15.36TB (RI NVMe U.2 SSD)</li> </ul>
<b>Optional cache SSD</b>	<ul style="list-style-type: none"> <li>Optional SSD (960GB) drive for improved metadata read/write cache performance</li> </ul>		<ul style="list-style-type: none"> <li>N/A</li> </ul>
<b>Raw capacity (per node)</b>	<ul style="list-style-type: none"> <li>24TB, 48TB, 96TB, 144TB, 192TB, 288TB, 384TB, 480TB</li> </ul>	<ul style="list-style-type: none"> <li>2000TB</li> </ul>	<ul style="list-style-type: none"> <li>46TB / 92TB / 184TB / 368TB</li> </ul>
<b>Max raw capacity (per rack)</b>	<ul style="list-style-type: none"> <li>Up to 7680TB</li> </ul>	<ul style="list-style-type: none"> <li>Up to 14,000TB</li> </ul>	<ul style="list-style-type: none"> <li>Up to 5898TB</li> </ul>
<b>Node dimensions</b>	<ul style="list-style-type: none"> <li>2U x D (810 mm)</li> <li>Weight: 43.2KG (with 24 drives)</li> </ul>	<ul style="list-style-type: none"> <li>5U x D (970.4 mm) with CMA</li> <li>Weight(maximum): 276lbs</li> </ul>	<ul style="list-style-type: none"> <li>2U x D (715.5 mm)</li> <li>Weight: 48lbs (with 12 drives)</li> <li>52.5lbs (with 24 drives)</li> </ul>
<b>Rack dimensions</b>	<ul style="list-style-type: none"> <li>H(75") x W(24") x D(47") + 4" for front door H(1905mm) x W(610mm) x D(1194mm)</li> </ul>	<ul style="list-style-type: none"> <li>H(78.4") x W(23.6") x D(47.2") – including the front door</li> <li>Weight: 1179kg/2600lb with 4 switches, 7 5U nodes</li> </ul>	<ul style="list-style-type: none"> <li>H(75") x W(24") x D(47") + 4" for front door H(1905mm) x W(610mm) x D(1194mm)</li> </ul>

	<ul style="list-style-type: none"> <li>Weight: 887kg/1955lb with 4 switches, 16 2U nodes</li> </ul>		<ul style="list-style-type: none"> <li>Weight: 887kg/1955lb with 4 switches, 16 2U nodes</li> </ul>
<b>Max power</b>	<ul style="list-style-type: none"> <li>.72 kVA per 2U node</li> </ul>	<ul style="list-style-type: none"> <li>2.4 kVA per 5U chassis</li> </ul>	<ul style="list-style-type: none"> <li>1.086 kVA per 2U node</li> </ul>
<b>Max heatload</b>	<ul style="list-style-type: none"> <li>2400 BTU/Hr for every 2U node</li> </ul>	<ul style="list-style-type: none"> <li>8344 BTU/Hr for every 5U chassis</li> </ul>	<ul style="list-style-type: none"> <li>3706 BTU/Hr for every 2U node</li> </ul>
<b>Power specifications (server)</b>	<ul style="list-style-type: none"> <li>2X1100W power supplies per node (HA)</li> </ul>	<ul style="list-style-type: none"> <li>2x2400W power supplies per node (HA)</li> </ul>	<ul style="list-style-type: none"> <li>2X1100W power supplies per node (HA)</li> <li>2X1600W power supplies per node</li> </ul>
<b>Power specifications (rack)</b>	<ul style="list-style-type: none"> <li>Connection: 4 single phase L6-30 (redundant power) <ul style="list-style-type: none"> <li>30A circuit breaker (A) max. per AC power source</li> </ul> </li> <li>2 three-phase WYE S52.30 (redundant power) <ul style="list-style-type: none"> <li>32A circuit breaker (A) max. per AC power source</li> </ul> </li> <li>2 three-phase delta CS-8365C (redundant power) <ul style="list-style-type: none"> <li>50A circuit breaker (A) max. per AC power source</li> </ul> </li> <li>Input voltage (VAC): 200-240</li> <li>Frequency (Hz): 50 - 60</li> </ul>	<ul style="list-style-type: none"> <li>Connection: 8 single phase L6-30 (redundant power) <ul style="list-style-type: none"> <li>30A circuit breaker (A) max. per AC power source</li> </ul> </li> <li>2 three-phase WYE S52.30 (redundant power) <ul style="list-style-type: none"> <li>32A circuit breaker (A) max. per AC power source</li> </ul> </li> <li>2 three-phase delta CS-8365C (redundant power) <ul style="list-style-type: none"> <li>50A circuit breaker (A) max. per AC power source</li> </ul> </li> <li>Input voltage (VAC): 200-240</li> <li>Frequency (Hz): 50 - 60</li> </ul>	<ul style="list-style-type: none"> <li>Connection: 8 single phase L6-30 (redundant power) <ul style="list-style-type: none"> <li>30A circuit breaker (A) max. per AC power source</li> </ul> </li> <li>2 three-phase WYE S52.30 (redundant power) <ul style="list-style-type: none"> <li>32A circuit breaker (A) max. per AC power source</li> </ul> </li> <li>2 three-phase delta CS-8365C (redundant power) <ul style="list-style-type: none"> <li>50A circuit breaker (A) max. per AC power source</li> </ul> </li> <li>Input voltage (VAC): 200-240</li> <li>Frequency (Hz): 50 - 60</li> </ul>
<b>Connectivity</b>	<ul style="list-style-type: none"> <li>Uplink connectivity: up to 16x10 GbE, 16x25 GbE, 8x40GbE or 8x100GbE uplinks to customer network (800 Gb/s maximum bandwidth), including high availability configuration</li> <li>Network: dual 25 GbE front end switches and dual 25 GbE back end switches (internal traffic) per rack</li> </ul>		
<b>Backend aggregation switches</b>	<ul style="list-style-type: none"> <li>N/A</li> </ul>		<ul style="list-style-type: none"> <li>Yes</li> </ul>
<b>Environmental specifications</b>	<ul style="list-style-type: none"> <li>Operating temperature (°F/°C): 41 - 90/ 5 - 32</li> <li>Max. altitude: 7,500 ft/ 2,286 m @ 90°F/32°C</li> <li>Relative humidity: 20 - 80% non-condensing</li> <li>Raised floor: not required</li> </ul>		
<b>Upgrade options</b>	<ul style="list-style-type: none"> <li>Scale out by additional nodes</li> <li>12 drive capacity upgrade kit</li> </ul>	<ul style="list-style-type: none"> <li>Scale out by additional nodes</li> <li>25 drive capacity upgrade kit</li> </ul>	<ul style="list-style-type: none"> <li>Scale out by additional nodes</li> <li>12 drive capacity upgrade kit</li> </ul>



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