

## Next Generation High Power Density Data Center

Latest developments in AI, IoT, cryptocurrencies, AR/VR reality and the exponential growth in data, means that today businesses need access to computers capable of performing complex workloads. This in turn has resulted in a need for data centers where a single IT rack can support densities of 20 kW and higher.

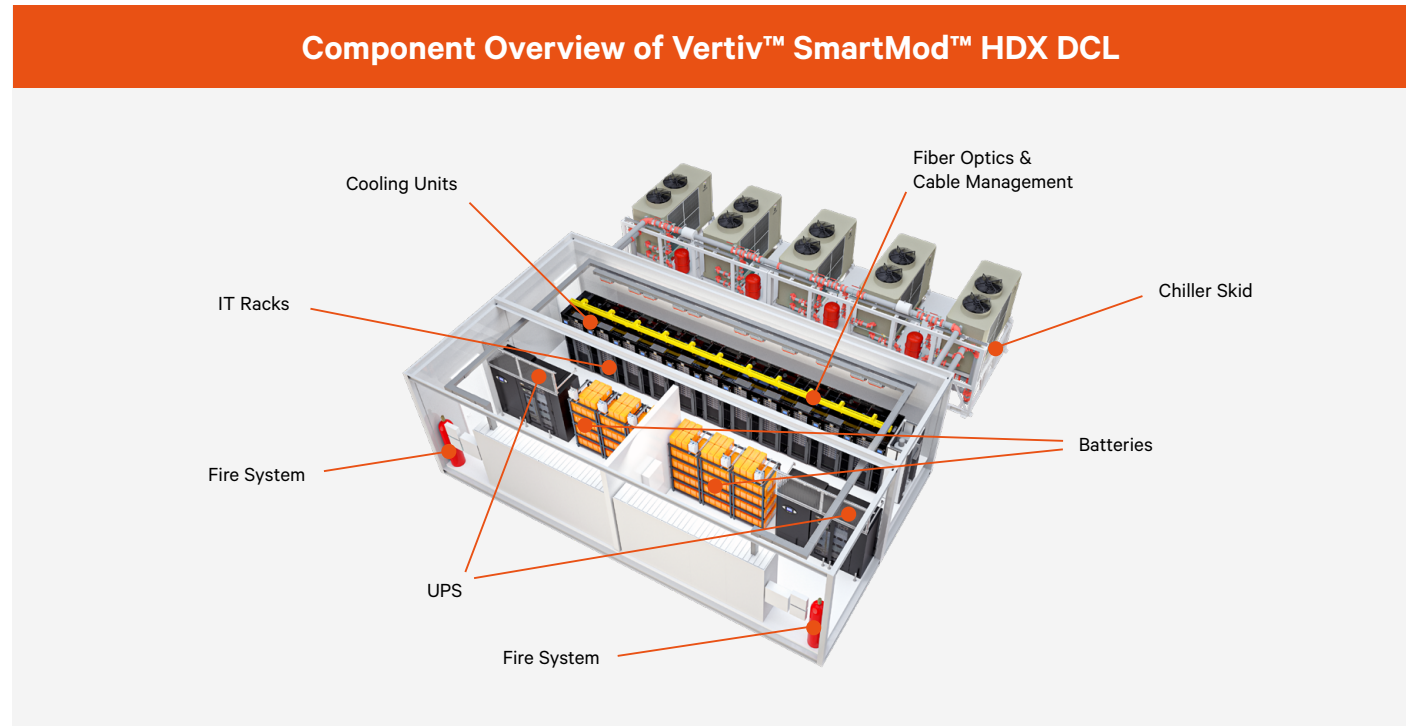
The Vertiv™ SmartMod™ HDX is addressing this need with a simple, scalable data center design that uses pre-engineered Vertiv™ building blocks to create a full solution – the Power Module, IT Hall and Chiller Skid.

This next generation High Power Density data center utilizes the Vertiv™ Liebert® DCL or active Vertiv™ Liebert® DCD cooling solutions to support rack density **up to 50 kW/rack**.

SmartMod™ HDX provides everything you need to get started with a fully equipped modular data center. In addition, Vertiv also can provide end-to-end services for a worry-free startup and ongoing operations, including deployment, commissioning, ongoing maintenance, spare parts, and ongoing training.

### SmartMod™ HDX data center solution includes:

- **UPS power** – Monolithic Vertiv™ Liebert® EXL S1 UPS, with Dynamic Grid Support for enhanced grid interactive capabilities
- **Batteries** - Reliable battery backup with Valve-regulated lead acid (VRLA), or lithium-ion batteries
- **Liebert® DCL Modular Rack Cooling**, Closed Loop Cooling Architecture (up to 35 kW/rack)
- **or**
- **Liebert® DCD rear-door heat exchangers** (passive or active, up to 50 kW/rack)



*Cut off view of the SmartMod™ HDX DCL*

- **Vertiv™ Liebert HPC-S chillers** with free-cooling option
- **Vertiv™ racks**
- **Vertiv™ rack power distribution units (rPDUs)**
- **Automatic Transfer switching functionality** – Automatic switching between primary and secondary power sources.
- **Overhead infrastructure** - Including chilled water piping, fiber ducts and mesh cable trays
- **Clean agent fire suppression and aspiration smoke detection** (as optional item)
- **Ancillary systems** – CCTV, Access Control and Intrusion Detection (as optional items)
- **SCADA-based Building Monitoring System (BMS) with a SQL database** (as optional item)



*Exterior view of the SmartMod™ HDX DCL*

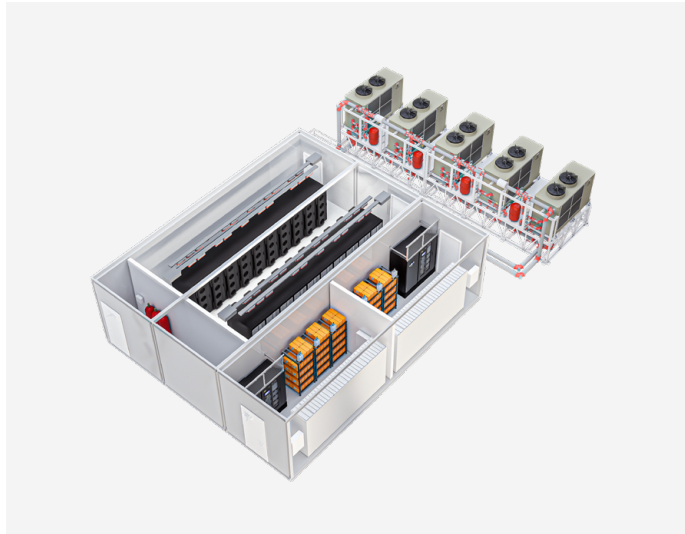
To showcase the capabilities of this high power density datacenter platform, take a closer look at our two Vertiv™ SmartMod™ HDX Reference Designs

- **Vertiv™ SmartMod™ HDX DCL**  
– DCL cooling-based solution
- **Vertiv™ SmartMod™ HDX DCD**  
– DCD cooling-based solution

The SmartMod™ HDX solution can further adapt to your specific rack quantity and rack density.

With integrated, pre-engineered, and pre-fabricated infrastructure, you can rapidly achieve your objectives, simplifying and drastically shortening on site time required to install and startup, and reducing the potential for risk, quality, or schedule delays.

All subsystems are factory installed into a secure, weatherproof and transportable enclosure.



Cut off view of the SmartMod™ HDX DCD

## Design Specifications

	SmartMod™ HDX DCD	SmartMod™ HDX DCL
<b>General</b>		
Region	EMEA	
Voltage/Frequency	400VAC, 50Hz	
Ambient Operating Range(1)	-25°C to +45°C (1)	-25 °C to +43°C (1)
<b>IT Hall</b>		
<b>IT Racks</b>		
No. Of Racks: Width - 600 mm	-	11
No. Of Racks: Width - 800 mm	26	-
Rack Height	42U	
Rack Depth	1200 mm	
Rack Load	12 kN	
<b>Electrical</b>		
Max IT Load	600 kW	385 kW
Rack Density	up to 50 kW	up to 35 kW
Busbar System	A+B side	
PDU	Two per rack	
PDU Capacity (max)	3x63A @ 230/400V - 3phase	
PDU Type	Basic, Monitored (unit level) or Switched (unit level)	
<b>Mechanical (HVAC)</b>		
Cooling Technology	Air-water heat exchanger mounted on rack cabinets rear-door	Air-water cooling unit for lateral attachment to server cabinets
Cooling Redundancy	N+1	
Cooling Units	Vertiv™ Liebert® DCD Active + Liebert HPC-S Freecooling Chiller	Vertiv™ Liebert® DCL Hybrid + Vertiv™ Liebert® HPC-S Freecooling Chiller
<b>Power Module</b>		
<b>Electrical</b>		
Power module topology	N or 2N	
Main Distribution Board section	400V, 50Hz, Form 4 Type 2, IP31, 36kA @ 1sec	
Automatic Transfer Switch	Breaker Based	
UPS Model	Monolithic or Modular	
UPS Rating	up to 800 kVA	up to 500 kVA
Battery Backup Time	up to 10 min	
Battery Type	VRLA / Li-ion (optional)	
<b>Mechanical (HVAC)</b>		
Cooling Technology	Chilled Water Floor-Mounted Cooling Unit	
Cooling Redundancy	N	
Cooling Units	PCW	

(1) Maximum altitude 500 m and maximum glycol content 45%. Operating Temperature Range can be extended to reach down to -30 or up to +52 °C