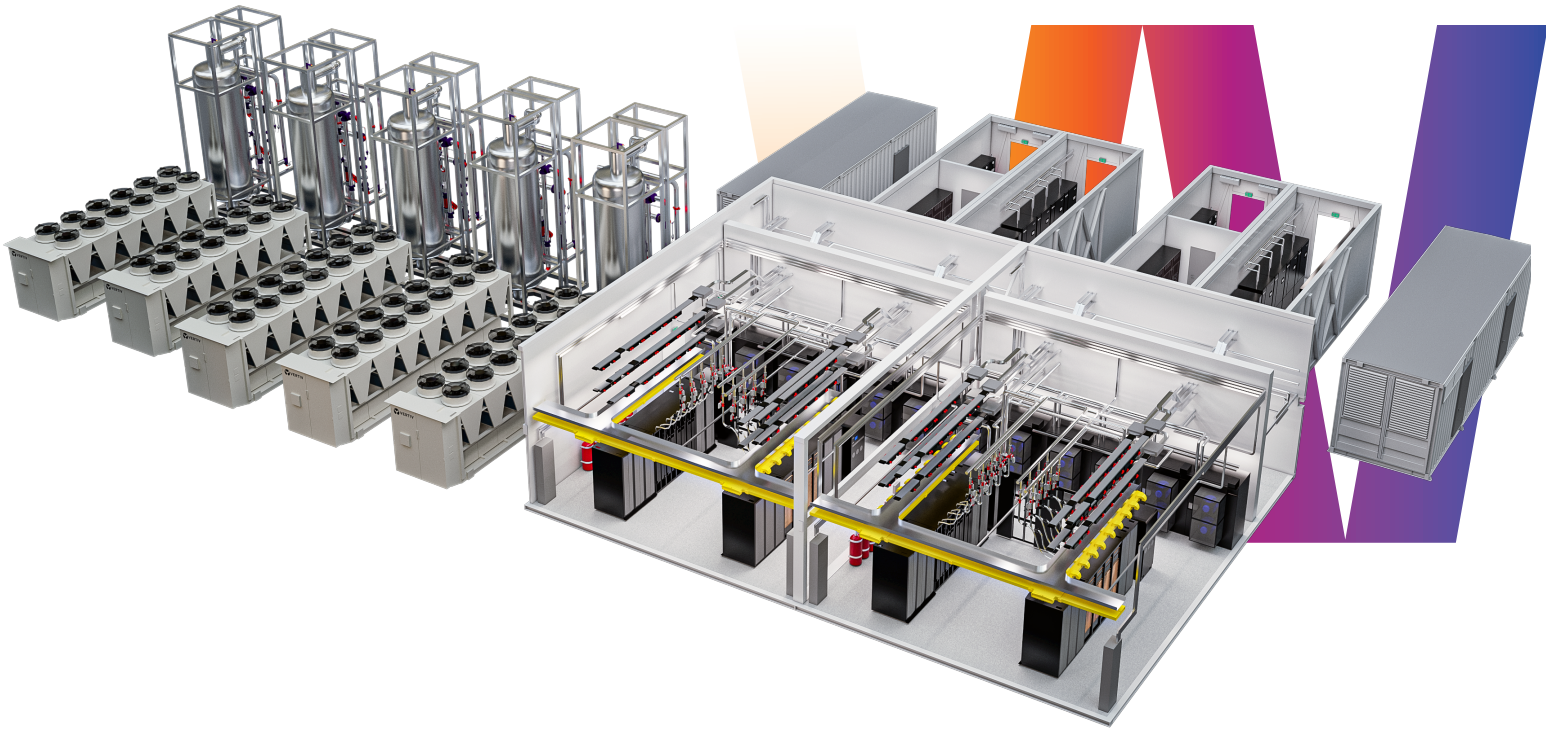
VERTIV™

Product brochure

# Vertiv™ MegaMod™ HDX



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# About Vertiv

**Vertiv (NYSE: VRT)** brings together hardware, software, analytics and ongoing services to enable its customers' vital applications to run continuously, perform optimally and grow with their business needs. Vertiv solves the most important challenges facing today's data centers, communication networks and commercial and industrial facilities with a portfolio of power, cooling and IT infrastructure solutions and services that extends from the cloud to the edge of the network.

Headquartered in Columbus, Ohio, USA, Vertiv does business in more than 130 countries. For more information, and for the latest news and content from Vertiv, visit Vertiv.com.

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# Vertiv™ Infrastructure Solutions-at-a-glance

Vertiv™ Infrastructure Solutions offers you comprehensive support for designing data centers, utilizing the entire Vertiv™ product lineup to deliver seamlessly integrated solutions. By combining our extensive portfolio and expertise, we create prefabricated and modular solutions tailored both for AI and traditional data centers. With a platform-based approach, we tackle the challenges of selecting individual products and managing on-site integration, enabling you to build an efficient, resilient, and future-ready data center infrastructure.

**Gobal presence** with localized volume manufacturing facilities

**Simplified and Scalable assembly** for straightforward on-site installation

**Full owners** of the process from design to onsite installation

**High quality Factory Integration** with schedule and cost certainty

**Energy Efficient Design** allows for lower site PUE and reduced environmental impact while controlling costs

**Vertiv Infrastructure Solutions** bring over two decades of experience in deploying prefabricated and modular solutions across the world to different industries and customer profiles.

| | |
|---|---|
| **Accelerating Deployment Cycles** | • Repeatable factory-integration to reduce deployment **up to 50% and 50% less on-site work (including commissioning)**<br>• Global supply-chain and service delivery footprint |
| **Maximizing Building Blocks & Space Optimization** | • Modular and hybrid solutions in multi-MW sizes<br>• Module design-practice **unlocks up to 30% space** |
| **Reduce Field Work and Improve Build Quality** | • Productizing non-repeatable field work in the factory, improving build-quality and **customer's total cost of ownership up to 25%** |

Scan QR code and visit **Vertiv Infrastructure Solution** page.

# Vertiv™ MegaMod™ HDX

**Vertiv™ MegaMod™ HDX** delivers a fully integrated, prefabricated infrastructure solution purpose-built for high-density computing environments — including AI, and HPC deployments

In today's rapidly evolving digital landscape, the growth of generative Artificial Intelligence, Machine Learning, and High-Performance Computing is driving unprecedented demands on data center infrastructure. The Vertiv™ MegaMod™ HDX is a next-generation infrastructure solution engineered to meet these challenges head-on - delivering scalable, prefabricated, and fully integrated cooling and power systems tailored for pod-style AI deployments and similar high-density configurations. Deploying AI applications pushes the limits on speed and modular replication.

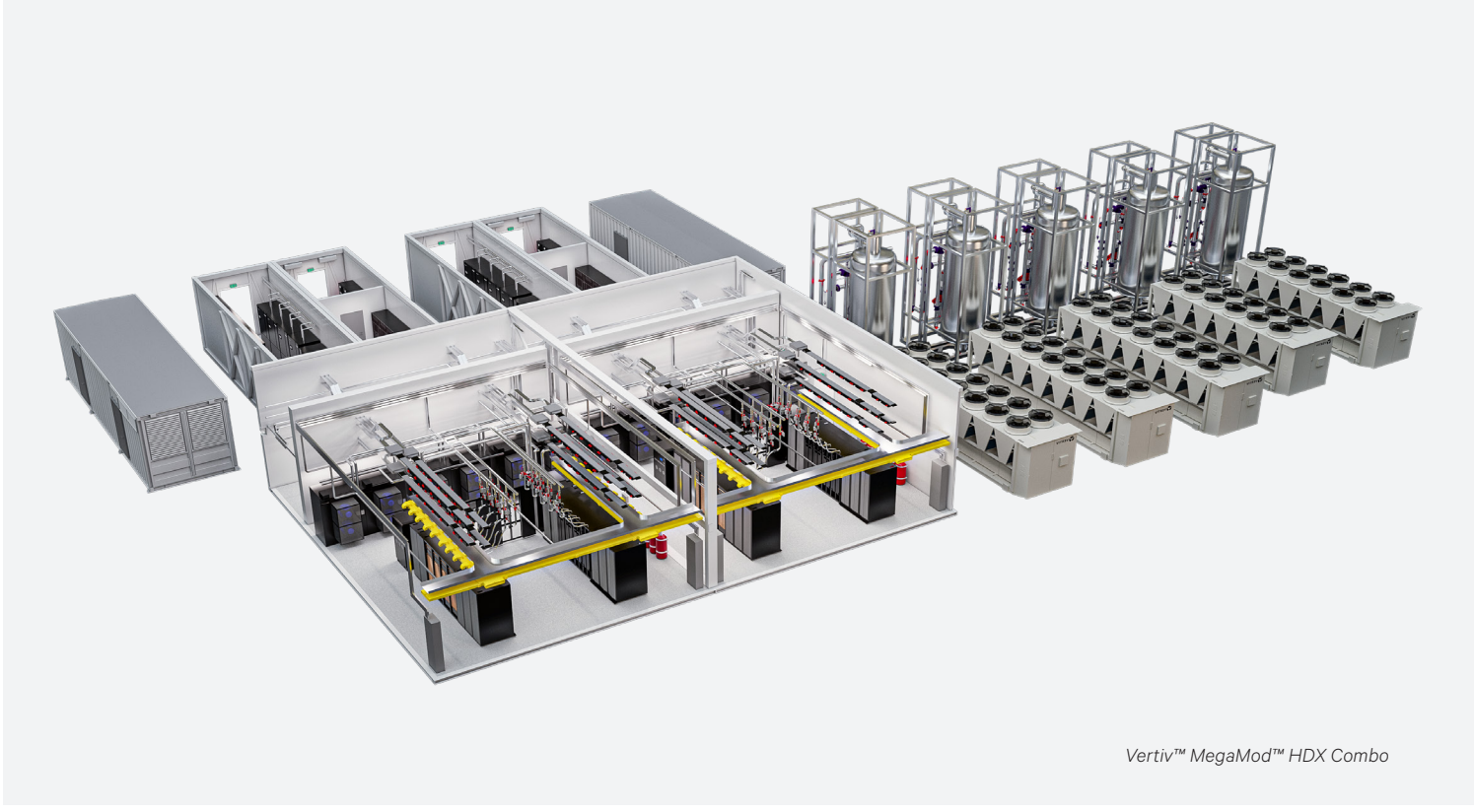
Engineered for small pod-style AI environments and advanced GPU clusters, the Vertiv™ MegaMod™ HDX supports the most demanding compute environments, combining direct-to-chip liquid cooling with flexible air-cooled architectures effectively manage the intense heat loads generated by AI and HPC applications and strive optimal performance and reliability.

MegaMod™ HDX is a versatile thermal solution designed to support a wide range of AI technologies powered by next-generation GPU processors such as GB200, GB300, and Vera Rubin.

It's not limited to traditional AC-powered GPU racks - MegaMod™ HDX seamlessly integrates with advanced 800VDC-fed rack architectures, offering unmatched flexibility and performance.

## Flexible Deployment for AI Workloads

MegaMod™ HDX supports a wide range of AI data center topologies and cooling technologies, giving you the freedom to design infrastructure that fits your specific application.



*Vertiv™ MegaMod™ HDX Combo*

## What sets Vertiv™ MegaMod™ HDX apart

- Purpose-built for AI and HPC: Optimized for pod-style AI deployments and similar high-density configurations
- Hybrid Cooling Approach: Integrates direct-to-chip liquid cooling with air cooling for maximum efficiency
- Expedited Rollout: pre-engineered, prefabricated, and fully tested design enables significantly faster time-to-market, minimizing setup time and accelerating operational readiness.
- Scalable Solution: Flexible architecture supporting growth up to 10 MW and beyond.
- Single Point of Contact: Vertiv manages all aspects from design to deployment
- Proven Quality: Factory-integrated components with rigorous testing
- Global Support: Backed by Vertiv's worldwide service network

## Integrated Cooling for AI Workloads

**MegaMod™ HDX leverages Vertiv™ HDX technology to deliver efficient, high-capacity cooling directly to the chip. This approach enables:**

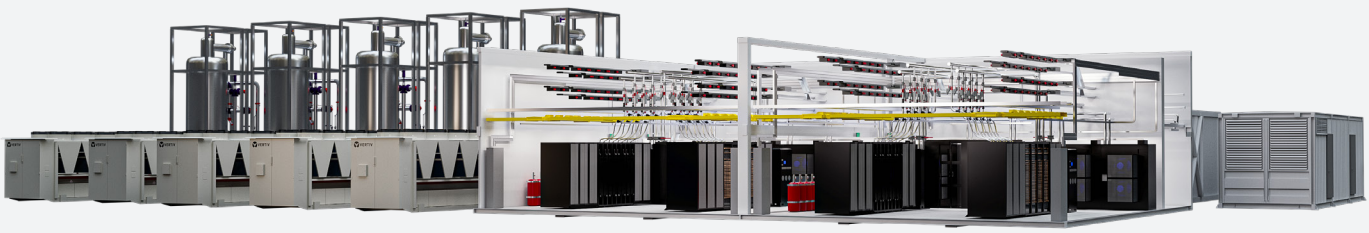
- Up to 100% liquid cooling efficiency
- Designed to accommodate high-power GPU racks with loads surpassing 100 kW.
- Seamless integration with air-cooled systems for hybrid cooling strategies

**Two architectural variants allow customization based on site and application needs:**

- Perimeter Cooling Configuration: Traditional approach with flexible deployment options
- Rear-door Heat Exchanger Configuration: Room-neutral and space-efficient design for maximum density

With Vertiv™ MegaMod™ HDX, organizations can confidently deploy the infrastructure needed for today's most demanding AI and HPC applications while ensuring reliability, efficiency, and future scalability. Each system configuration is carefully engineered for maximum space efficiency, enhanced airflow, and simplified serviceability.

Whether you're housing dedicated AI servers, networking gear, or storage systems, Vertiv's integrated ecosystem—including Vertiv racks, PowerIT rPDUs, HDX in-rack manifolds, and rear door heat exchangers - aim to optimal performance and reliability.



*Vertiv™ MegaMod™ HDX Combo*

## Your AI Data Center, Your Way

Vertiv™ MegaMod™ HDX empowers you to build an AI-ready data center that grows with your business. Whether you're launching, a new site or expanding an existing one, our modular approach delivers speed, flexibility, and efficiency - without compromise.

*Vertiv™ MegaMod™ HDX Compact*

## Prefabricated, Modular, and Rapidly Deployable

Inspired by the Vertiv™ OneCore philosophy, MegaMod™ HDX is delivered as a **prefabricated, modular solution** - minimizing on-site labor, reducing deployment time, and ensuring consistent quality. The system includes:

- Liquid-cooled IT racks
- Coolant Distribution Units (CDUs)
- Secondary Fluid Network (SFN)
- Integrated busway and cable distribution
- Optional auxiliary systems and monitoring

This modular approach enables rapid deployment, repeatable quality, and simplified scaling — ideal for phased rollouts or fast-track AI infrastructure projects. To provide a clear distinction between technical infrastructure and data access zones, the IT hall area is segregated from the power train.

## Optimized for Pod-style AI and Similar Architectures

Deployed as a standalone modular data hall, MegaMod HDX delivers the performance, flexibility, and reliability needed for next-generation workloads.

Vertiv™ MegaMod™ HDX is purpose-built for pod-style AI configurations, supporting:

- Various AI technologies and generations
- High-density compute clusters

Up to:

  - 13 racks in single row solution
  - 18 racks in two row solution per IT Block
- Concurrently maintainable power and cooling redundancy
- Electrical and thermal back-up
- Seamless integration with Vertiv™ racks, rPDUs, manifolds, and monitoring systems

# Vertiv™ MegaMod™ HDX content

## MegaMod™ HDX includes:

- **UPS power protection** – Rely on a next-generation modular and transformerless UPS design, Vertiv™ Liebert® APM2, a feature-rich high-density UPS that brings exceptional and innovative features for mission-critical applications. It is selected to support demanding AI compute equipment and its seamless operation.
- **Batteries** – Gain reliable battery backup with lithium-ion batteries, to gain battery backup for mission critical equipment, better performance in rugged conditions, and a lower total cost of ownership.
- **Automatic Transfer switching functionality** – Easily navigate outages with automatic switching to secondary power sources.
- **Vertiv™ PowerBar iMPB** - adaptive busway design maximizes availability with continuous power delivery to critical loads even during upgrades and changes. Tap-off boxes can be placed anywhere along the busway for easy integration into any data center layout and speedy scalability.
- **Floor-mounted Vertiv™ Air Conditioning** – Benefit from cooling that provides the industry's highest efficiency, protection, and capacity per footprint for smaller space. Other cooling type options on request, like Vertiv™ CoolLoop Rear Door Heat exchangers.
- **Coolant Distribution Unit** – provides effective separation of the facility circuit and secondary circuit and provide that the cooling fluid in an AI data center environment can be kept to a minimum volume, is closely controlled for flow, pressure & temperature and can be accurately maintained for fluid quality.
- **Thermal containment** – Isolate hot containment, and cold containment, and maintain aisle airflows for optimum thermal performance.
- **Overhead infrastructure** – Contains suspended piping, electrical distribution, and fiber ducts, away from electronics.
- **Vertiv™ Unify** - a software solution that brings visibility and control to the complete power train and thermal chain, enabling value at every level of your enterprise. Vertiv™ Unify Onboard integrates Vertiv™ Unify directly into individual pieces of equipment, enabling them to operate independently while seamlessly connecting to the system-level Vertiv™ Unify platform.

## MegaMod™ HDX Optional items:

If your technology provider supplies only IT equipment, Vertiv is pleased to offer complementary IT rack infrastructure designed to seamlessly accommodate and support your IT systems.

- Classic and OCP Vertiv™ racks – Store all equipment securely and efficiently, while easily accessing equipment for servicing.
- Vertiv™ CoolLoop RDHx - the rear-door heat exchanger engineered to deliver a highly efficient, room-neutral cooling solution for high-density IT applications
- Vertiv™ HDX CDU - in-rack coolant distribution unit designed to support single-rack direct-to-chip applications. It reduces secondary fluid circuit volume and infrastructure complexity.
- Vertiv™ rack power distribution units (rPDUs) – Maintain reliable power distribution, with monitored and switched rPDUs.
- Vertiv™ PowerDirect Rack - OCP-compliant high-density, scalable IT rack DC power shelf delivers 50V DC power for IT racks, supporting both AC and HVDC input for enhanced operational flexibility.
- Vertiv™ HDX Fluid Network, Rack Manifolds - a reliable, clean, and effective route between servers and the coolant distribution unit. These stainless steel in-rack manifolds mount in the zero-U space of any industry-standard racks, enabling easy installation.
- Clean agent fire suppression and aspiration smoke detection – Protect your assets in the event of a fire with fast acting detection and suppression systems.

# MegaMod™ HDX core components

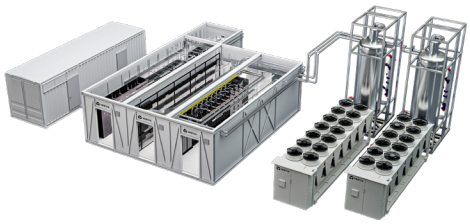
IThe Vertiv™ MegaMod™ HDX represents the next generation of modular data center solutions, designed specifically for high-performance computing and AI applications. Our innovative system combines power, cooling, and IT infrastructure in a seamlessly integrated package.

## Vertiv™ IT block

*Choose Your Perfect Configuration! We offer two distinct IT block configurations to meet your needs.*

### Compact Configuration

Our streamlined Compact design offers efficiency without compromise. This configuration features: two modules of standard height for optimal space utilization, wall-mounted busway system for clean, efficient power distribution and strategically designed upper space accommodating: Secondary fluid network, overhead networking infrastructure with both optical and copper cable trays and cable routing from Tap-offs to racks below ceiling.

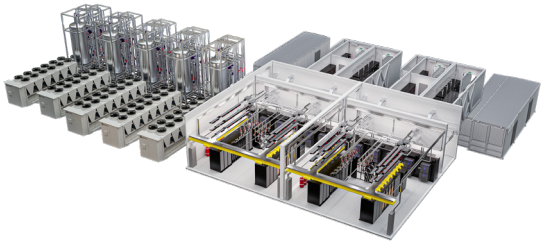


*Vertiv™ MegaMod™ HDX Compact Configuration*

### Combo Configuration

When your needs demand more capacity, our Combo configuration delivers enhanced vertical space with increased whitespace height. It accommodates single AI pod in a footprint of three modules providing innovative three-over-three module arrangement.

Comprehensive overhead infrastructure includes secondary fluid network, advanced busway system, and networking trays supporting both optical and copper connections.



*Vertiv™ MegaMod™ HDX Combo Configuration*

### The modular design of our IT blocks ensures:

- Rapid deployment capabilities
- Simplified maintenance access
- Future expansion possibilities
- Optimal space utilization
- Maximum cooling efficiency
- Reliable power distribution

Whether you choose the Compact or Combo configuration, each IT block is engineered to deliver the perfect balance of power, cooling, and accessibility for your specific needs.

## Vertiv™ Power Module

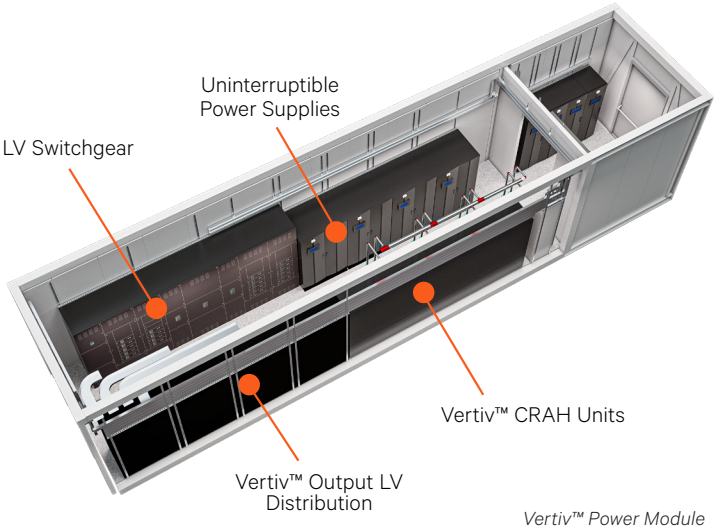
At the core of our MegaMod™ HDX solution lies the Power Module, engineered to deliver unwavering power reliability through a sophisticated distributed redundant topology. The system employs a “4 to make 3” redundancy design, ensuring continuous operation even during maintenance or unexpected events. Each power module comes equipped with state-of-the-art Low Voltage Switchgear and an integrated battery system.

### Standard Features

- Vertiv™ Low Voltage (LV) Switchgear
- Vertiv™ Uninterruptible Power Supply (UPS)
- 4 UPSs to provide redundancy 4 to make 3
- Vertiv™ Batteries
- Vertiv™ LV Distribution
- Vertiv™ CRAH units

### Key Benefits

- Rapid deployment
- Parallel manufacturing and site preparation
- Reduced deployment costs




*Vertiv™ Power Module*

### Vertiv™ Liebert® APM2 600 UPS

The heart of our power protection strategy features the advanced Liebert® APM2 600 UPS system. This transformerless, online double-conversion UPS delivers up to 600kW of reliable power protection per unit. It has industry-leading efficiency ratings up to 97% in double-conversion mode. Hot-swappable power modules for enhanced serviceability provides additional simplicity for maintenance and operation of datacenter.

*Vertiv™ Liebert® APM2 600 UPS*

### Vertiv™ EnergyCore Li5 Battery System

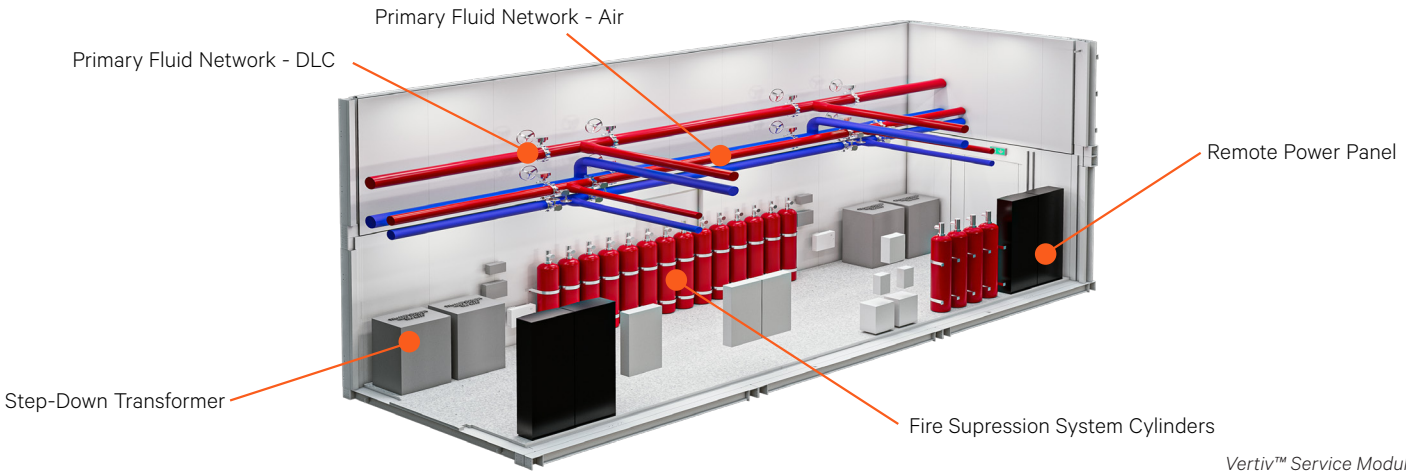
Complementing the UPS system, our lithium-ion battery solution provides high-density energy storage in a compact cabinet design with significantly longer lifecycle compared to traditional VRLA batteries and faster recharge capabilities for enhanced system availability.

The Power Module’s distributed redundant topology creates four diverse power paths, each feeding a dedicated busway system. This architecture ensures that your AI pods and critical infrastructure maintain continuous operation even during maintenance or system anomalies. Every component is manufactured and thoroughly tested at Vertiv facilities, ensuring the highest standards of quality and reliability.

Unique approach to design of Power module minimizes the number of required diesel gensets as redundant source of power.

*Vertiv™ EnergyCore Li5 Battery System*

## Vertiv™ Service Module




*Vertiv™ Service Module*

As a part of our Vertiv™ MegaMod™ HDX data center solution lies the Vertiv™ Service Module, a sophisticated infrastructure hub that seamlessly integrates critical power, cooling, and safety systems. This comprehensive module serves as the backbone of your facility, housing essential components that keep your operations running smoothly and efficiently.

Power distribution takes center stage with strategically placed Remote Power Panels (RPP) and optional step-down transformers. In North American installations, these transformers efficiently convert 480VAC to 415VAC, ensuring optimal power delivery towards networking equipment. The cable tray system supports distributed redundant power feeds, providing the reliability your critical systems demand.

Cooling infrastructure within the Service Module demonstrates our commitment to versatility and efficiency. The Primary Fluid Network incorporates both Direct Liquid Cooling (DLC) and air-cooling systems. Split cooling units are installed to maintain precise temperature control..

Safety remains paramount in our design philosophy. The Service Module features a sophisticated fire suppression system. This system combines rapid detection with effective suppression capabilities, providing comprehensive protection for your valuable infrastructure.

## Heat rejection

Our comprehensive heat rejection solution combines two powerful solutions designed to meet the demanding cooling requirements of modern AI and high-performancew computing environments.


*Vertiv™ Heat Rejection*

## Vertiv™ CoolLoop Trim Cooler

Precision at Scale the CoolLoop Trim Cooler represents a breakthrough in high-temperature cooling technology. Purpose-built for secondary fluid network (SFN) cooling, this innovative system can handle supply water temperatures up to 40°C while delivering an impressive cooling capacity of up to 3MW. The system operates reliably across an extensive ambient temperature range from -20°C to +55°C, making it suitable for diverse climatic conditions.

*Vertiv™ CoolLoop Trim Cooler*

## Vertiv™ Liebert® FIZ Chiller

Reliability Meets Efficiency The Liebert® FIZ (Free-cooling Integrated Zerol-impact) chiller delivers up to 1.6MW of cooling capacity with exceptional efficiency. Operating across a broad temperature range from -25°C to +56°C, this system excels in both extreme heat and cold conditions.

Common Features and Benefits Both systems share key advantages that define Vertiv's approach to thermal management:

- Inverter-driven technology that precisely matches cooling output to demand
- Sophisticated free cooling capabilities that significantly reduce energy consumption
- Environmental responsibility through low-GWP refrigerant options

*Vertiv™ Liebert® FIZ Chiller*

## Thermal Backup Protection

- Critical to both systems is the integration of buffer tanks that provide:
- 2 - 5 minutes of thermal backup protection for AI servers
- Temperature stability during load transitions
- Enhanced system reliability during maintenance
- Protection against sudden cooling interruptions

The combination of these heat rejection solutions creates a robust, efficient, and reliable cooling infrastructure capable of handling the most demanding computational loads while maintaining optimal operating conditions. Whether your facility requires high-temperature cooling for direct liquid cooling applications or traditional precision cooling for air-cooled systems, Vertiv's heat rejection solutions deliver the performance and reliability your operations demand.

# Vertiv™ Unify

Vertiv™ MegaMod™ HDX solutions offers Vertiv™ Unify Onboard intelligence solution that delivers advanced monitoring, control, and automation. Vertiv™ Unify is an integrated platform that simplifies data center operations by consolidating power, thermal, and building management systems into a single, unified interface.

Designed to reduce complexity and risk, Vertiv™ Unify enhances visibility and control across the entire critical infrastructure chain. It offers plug-and-play deployment, seamless integration with third-party systems through open industrial protocols, and real-time data insights to optimize uptime and performance. Whether on-site, hybrid, or cloud-based, Vertiv™ Unify scales effortlessly to support hyperscale and colocation data centers, delivering smarter, more reliable operations with confidence and control at every level.

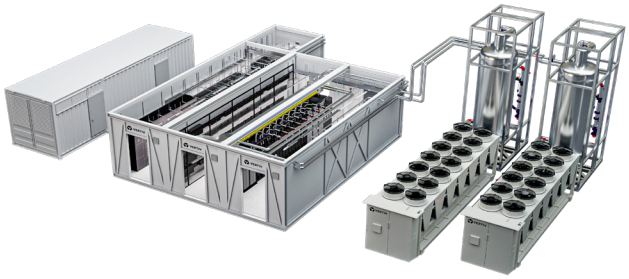
The platform is customizable with three scalable options to suit various operational needs:

| | Monitoring | Control | Redundancy |
|---|---|---|---|
| Essential | ✓ | | |
| Advanced | ✓ | ✓ | |
| Premium | ✓ | ✓ | ✓ |

# Vertiv™ MegaMod™ HDX reference designs

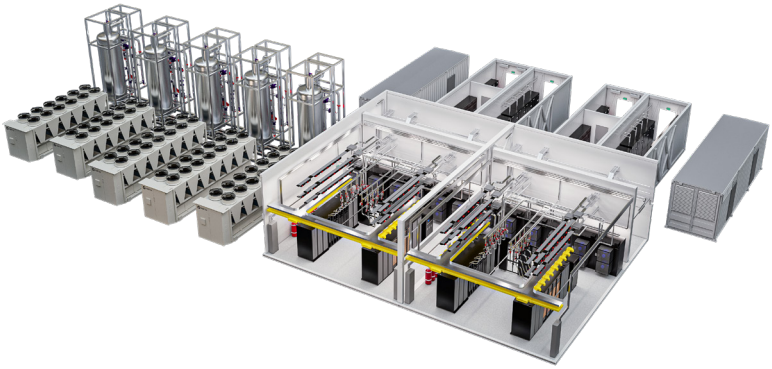
**Vertiv™ MegaMod™ HDX Compact Referent Design 1**

- 1.3MW AI data center
- 13 racks – 8 of them are compute racks
- Single Data Hall of 74.4 m2 / 801 sq ft
- Separate Primary Fluid Network (PFN) for Direct Liquid Cooling (DLC)
- Air cooling / Liquid cooling ratio: 13% / 87%
- Electrical redundancy: distributed redundancy
- Thermal redundancy: SFN – N+1, PFN – N+1



**Vertiv™ MegaMod™ HDX Combo Referent Design 2**

- 5.2 MW AI data center
- 72 racks - 32 of them are compute racks
- Data Hall combined of four IT Blocks, 478 m2 / 5,145 sq ft
- Separate Primary Fluid Network (PFN) for Direct Liquid Cooling (DLC)
- Air cooling / Liquid cooling ratio: 13% / 87%
- Electrical redundancy: distributed redundancy
- Thermal redundancy: SFN – N+1, PFN – N+1



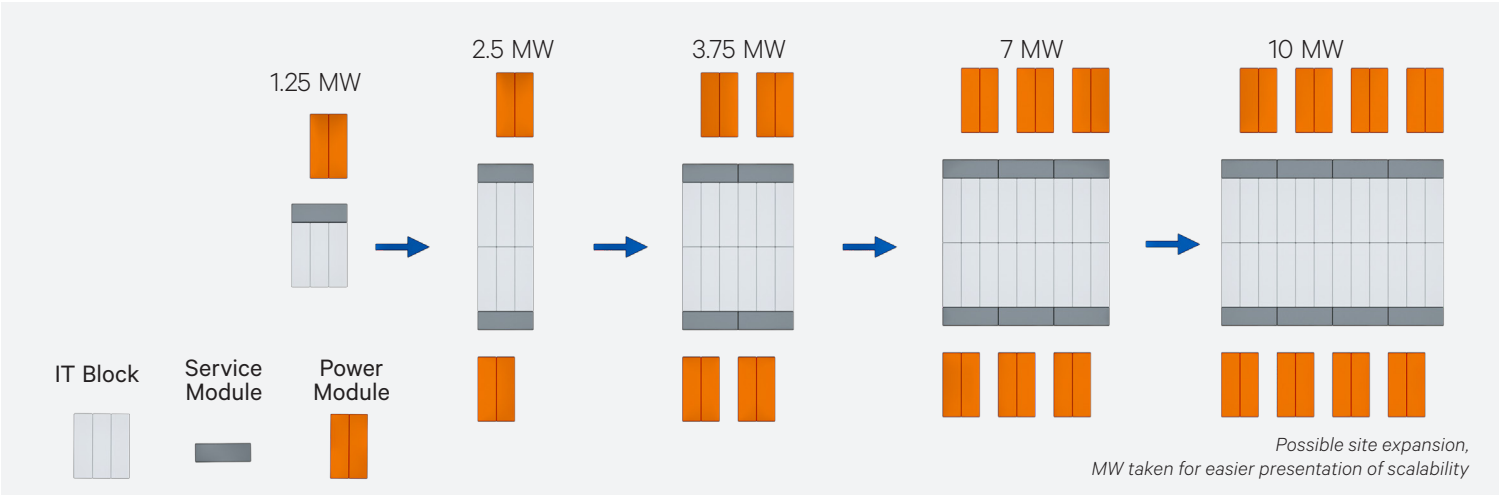
*Vertiv™ MegaMod™ HDX Combo*

# Vertiv™ MegaMod™ HDX design specifications

| Design Specifications | Unit | Vertiv™ MegaMod™ HDX | Reference Design 1<br>Vertiv™ MegaMod™ HDX Compact | Reference Design 2<br>Vertiv™ MegaMod™ HDX Combo |
|---|---|---|---|---|
| **General** | | | | |
| Nominal IT load | MW | up to 10 MW | 1.3 | 5.2 |
| Power Supply | V<br>Hz | 400, 415, 480/ 3ph<br>50, 60 | 400, 415, 480/ 3ph<br>50, 60 | 400, 415, 480/ 3ph<br>50, 60 |
| Number of racks [1] | | 2 - 144 | 13 | 72 |
| Cooling technology | | Chilled Water - CW | Chilled Water - CW | Chilled Water - CW |
| Separate circuits for Liquid cooling | | Optional | Yes | Yes |
| Heat rejection | | FIZ chiller for Air portion and TRIM cooler for Liquid portion | FIZ chiller for Air portion and TRIM cooler for Liquid portion | FIZ chiller for Air portion and TRIM cooler for Liquid portion |
| White space cooling type | | Perimeter CW,<br>Rear Door HeatExchanger | Perimeter CW | Perimeter CW |
| Coolant Distribution Unit (CDU) | | CDU600, CDU1350, CDU2300 | CDU1350 | CDU1350 |
| Secondary fluid network | | Stainless steel, Copper, Plastic | Stainless steel | Stainless steel |
| Secondary fluid network coolant | | PG 25 | PG 25 | PG 25 |
| Module height | | Standard, Extended | Standard | Extended |
| **Redundancy** | | | | |
| **Electrical redundancy** | | Distributed redundancy,<br>Concurrently maintainable | Distributed redundancy | Distributed redundancy |
| Number of UPSs | | 4 per Power Module | 4 | 16 (4 per Power Module) |
| Compute rack feed | | 4 to make 3, 2N | 4 to make 3 | 4 to make 3 |
| Networking and storage rack feed | | 2N | 2N | 2N |
| **Thermal redundancy** | | | | |
| Primary Fluid Network (PFN) | | N+1, 2N,<br>Concurrently maintainable | N+1 | N+1 |
| Secondary Fluid Network (SFN) | | N+1 | N+1 | N+1 |
| **Back up** | | | | |
| Thermal | min | 2 - 5 | 3 | 3 |
| Electrical | min | 1 - 10 | 5 | 5 |
| **Site** | | | | |
| Estimated site area[2] | $m^2$<br>sq ft | | 900<br>9,690 | 4,200<br>45,210 |
| IT Hall footprint | $m^2$<br>sq ft | up to 1,157<br>up to 12,450 | 74.4<br>801 | 478<br>5,145 |
| Scalability | | Yes | No | Up to 8 IT blocks (10MW) |

(1) 600 mm wide rack
(2) Site area does not include space occupied by RMU and MV transformer

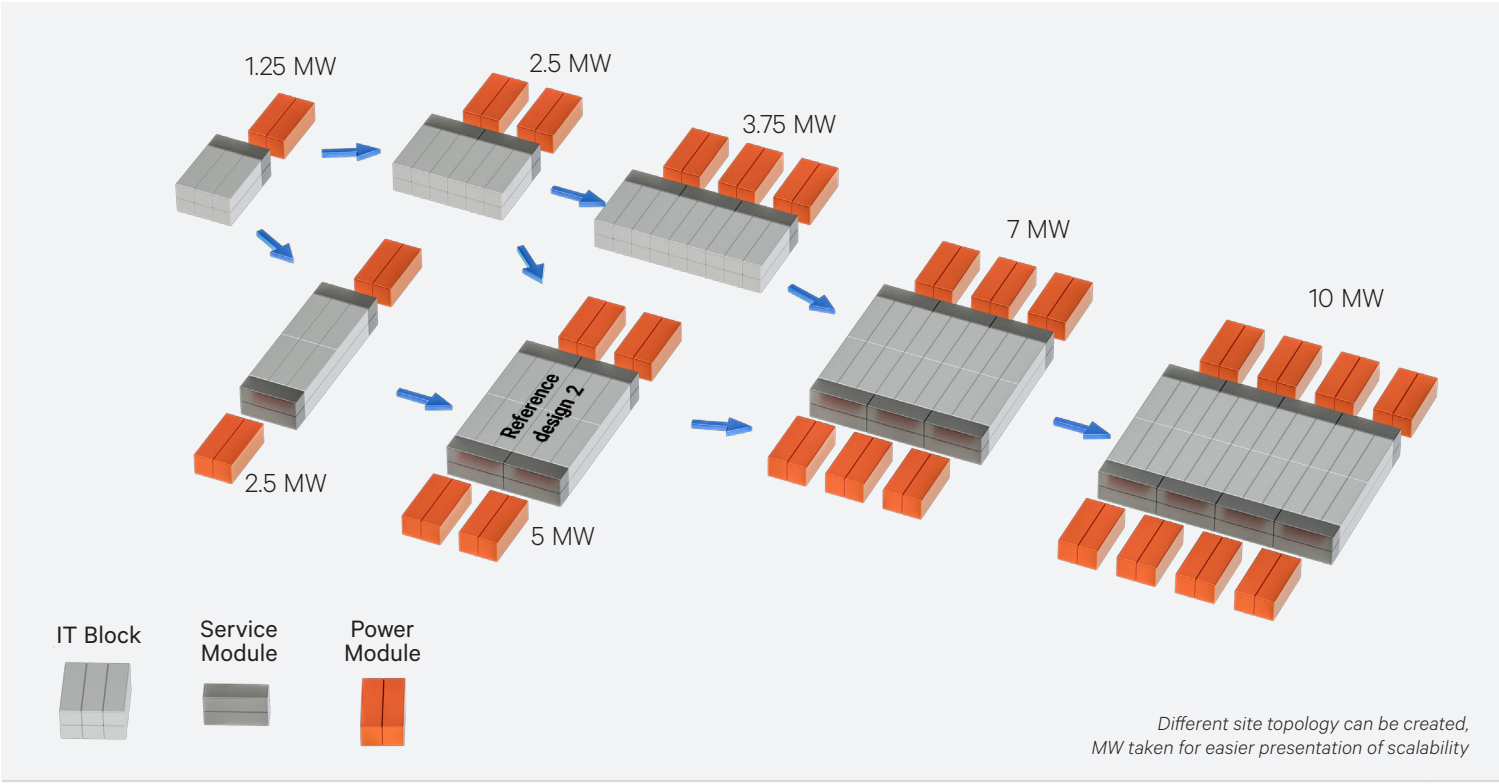
## Vertiv™ MegaMod™ HDX™ scalability




*Possible site expansion, MW taken for easier presentation of scalability*

If your technology provider supplies only IT equipment, Vertiv is pleased to offer complementary IT rack infrastructure designed to seamlessly accommodate and support your IT systems. Liquid-cooled IT racks

Vertiv™ MegaMod™ HDX is built around a modular IT Block architecture, each block comprising two CDUs and 18 racks, with eight racks dedicated to liquid-cooled compute workloads in a footprint of three modules. The site can be planned and scaled according to your requirements and anticipated growth. You may start with a single IT Block, with or without the option for future capacity expansion. This initial decision defines how supporting modules and equipment are positioned on-site, enabling seamless scalability - or a fixed configuration. Alternatively, the site can be configured from the outset with four IT Blocks, as illustrated in Reference Design 2. In the future, this complete solution can be replicated as needed, creating additional IT halls for virtually unlimited expansion.




*Different site topology can be created, MW taken for easier presentation of scalability*

# Rely on Vertiv™ Services for superior critical infrastructure performance

## Global presence & local resources

With the broadest, most comprehensive service presence in the industry and more than 3,500 engineers dedicated to servicing the entire world, Vertiv products enable that your business is always protected, and that service is available whenever needed 24 hours a day.

### Project services

From project planning and design, through to equipment procurement, installation, and commissioning, our project team offers comprehensive capabilities, enabling speed of deployment and execution according to pre-defined and repeatable procedures.

### Expertise & training

All service engineers are regularly certified according to country-specific regulations as well as wider international regulations and standards.

Vertiv service engineers are trained, experienced professionals who undergo an average of one week of intensive training each quarter, totaling one month of full-time training per year.

Training includes both technology and safety, to enable competent and safe field operations, reinforced by established procedures to follow and central technical support in case of need.

### Premium response

With Vertiv you can count on an extensive supply of critical parts plus crash-kits ready for deployment, and on service engineers that can respond to requests in record time.

To do so, they rely on a solid knowledge-base, and established escalation procedures valid across the regions. In addition, they also benefit from advanced incident management, and widespread presence of Service Centers all enabling them to deliver premium restoration capabilities.

### Supporting your business around the globe

Regular service of critical equipment supports maximum uptime and reduces total cost of ownership. A service program enables timely and proactive maintenance for avoiding unexpected, costly equipment downtime and enables optimal equipment operation. Vertiv service programs cover all technologies and can be tailored to suit individual business needs.

Vertiv deep infrastructure expertise is amplified by field data and analytics, enabling data-based services such as Advanced Incident Management and Condition Based Maintenance.

These services complement our portfolio providing additional insight into operating trends allowing informed decision and minimizing operational.

**Vertiv.com** | **Vertiv Headquarters,** 505 N Cleveland Ave, Westerville, OH 43082, USA



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