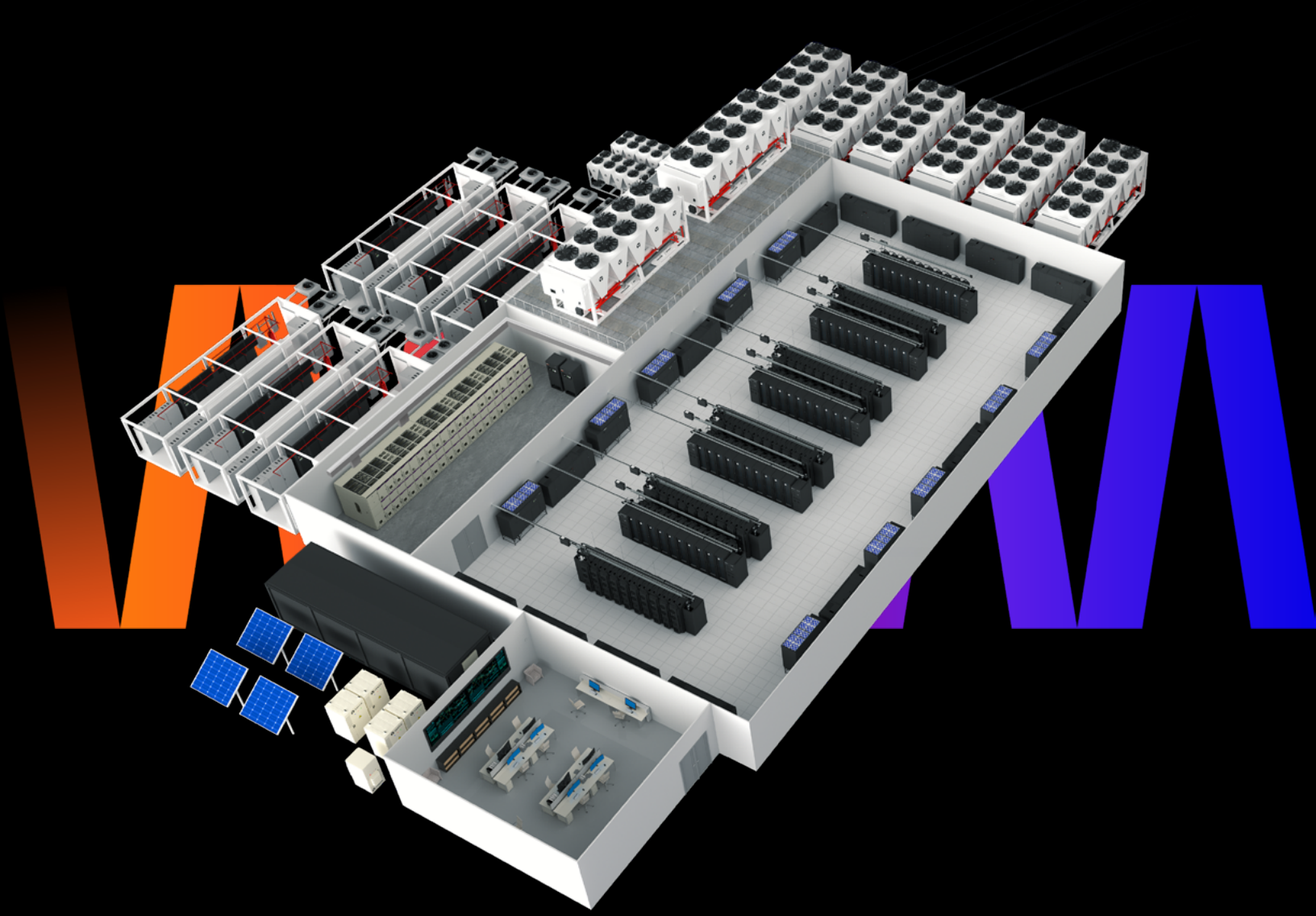
VERTIV.

Vertiv™ 360AI

Accelerate your AI Deployment

Brochure



Vertiv.com

What is Vertiv™ 360?

Vertiv 360 is a portfolio of infrastructure, services, and software expertly combined to solve complex customer challenges. Using validated designs coupled with end-to-end services and global scale, you can streamline deployments, leverage Vertiv expertise, and reduce business risk.

Our comprehensive portfolio spanning the complete Power Train and Thermal Chain means you get validated designs created to solve complex problems.

Drive simplicity and accelerate deployment speed, with flexible deployment options like rack, row, module, skid, etc.

End-to-end traditional and digital-enabled services with global coverage and domain expertise are unmatched in the industry.

Vertiv offers the tools needed to remotely control, optimize, and provide visibility for power and cooling infrastructure.

Vertiv™ 360AI

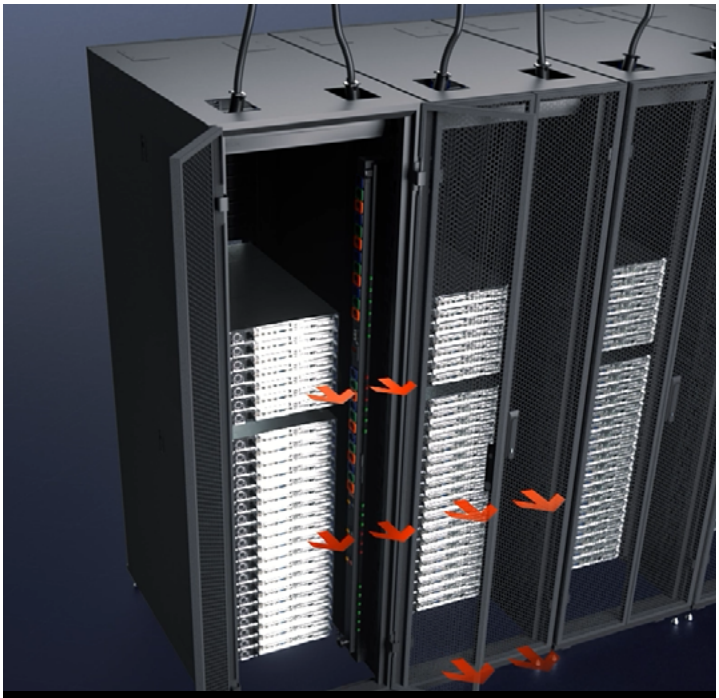
Only Vertiv can meet the power and cooling demands of AI workloads.

Vertiv™ 360AI is the simple way to power and cool AI. It includes a complete portfolio of power, cooling, and service solutions that solve the complex challenges arising from the AI revolution.

- Power
- Cooling
- Enclosures & Structures
- Digitized Management
- Lifecycle Services

The AI heat wave has arrived

Existing power and cooling infrastructure will require significant upscaling to support the unprecedented demand of accelerated computing. AI inferencing and model training can drive power and cooling loads to unprecedented rack densities.

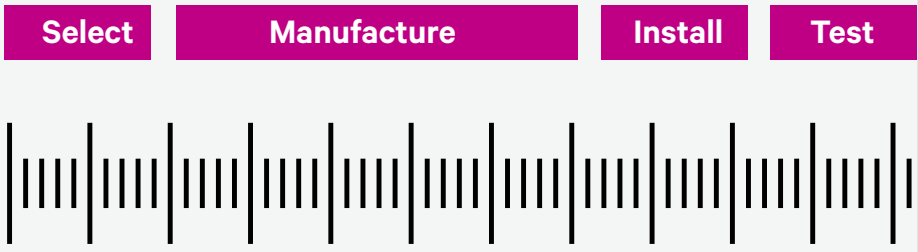


Standard CPU
Hot air from server fans

AI GPU Server (Liquid Cooled)
Rack Manifolds | Row Coolant Distribution Unit

Vertiv™ pre-engineered AI solutions

Up to 2x faster

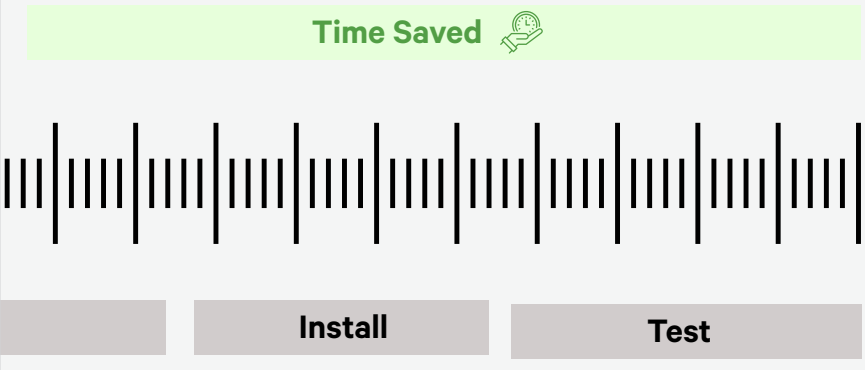


Traditional design & build

Considerations for AI Infrastructure Deployments

Designing and deploying power and cooling infrastructure for AI often becomes a slow and complicated iterative process, with several design cycles along the way. There are many things to consider.

- **Is there an option to retrofit or is it a new build?**
- **How quickly do you need to deploy?**
- **Can the grid and facility provide enough power capacity?**
- **What is the right cooling strategy for the environment?**
- **Will GPUs fail if their cooling system(s) lose power?**
- **Will I have enough capacity for now, and a path for future?**
- **What is your controls strategy for power and cooling?**
- **Do you have the right partners for these technologies?**
- **Do you have expertise to maintain the infrastructure?**



Accelerate your AI deployments

Don't let infrastructure slow down your return on AI investments, streamline design, deployment, operations, and lifecycle management.

Complete range of solutions for the entire AI journey

Vertiv™ 360AI provides complete solutions of any scale, from test pilots and Vertiv™ Edge inferencing to an entire prefabricated modular data center for AI model training.

Rack

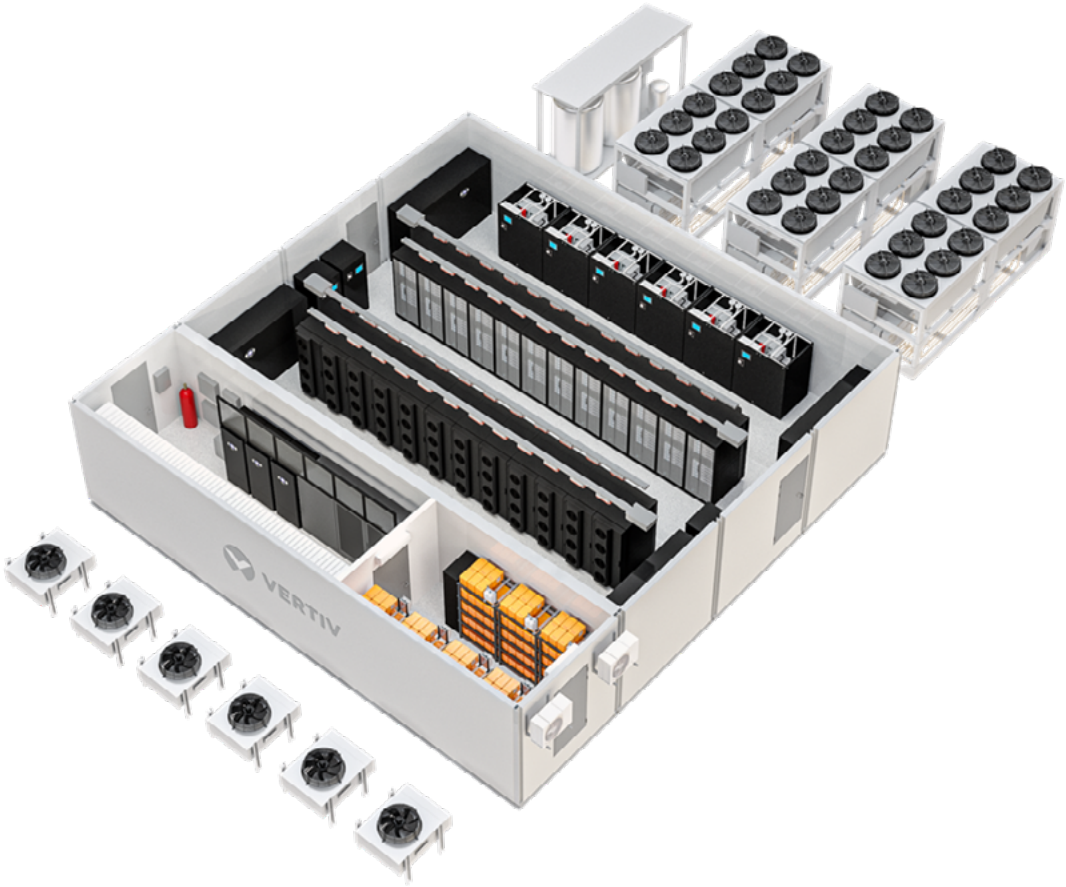
Inferencing and Edge AI

- AI Test Pilots
- Model Training Pilots
- Edge Inferencing

Row & Room

Enterprise and Data Center AI

- AI Labs
- Inferencing and Model Training
- Data Center White Space



Facility & Data Center

Prefabricated Modular Data Centers

- AI Model Training
- AI Data Centers

Vertiv™ custom AI solutions

Vertiv offers deep expertise around the globe to provide a solution tailored to your high-density application with exceptional scale, velocity, and quality for every project regardless of size or complexity.

Rapidly deploy. Standardize. Repeat	Reduce risks	Energy efficient design	Zero floor space
Speed data center builds with pre-integration, prefabrication, and flexible designs when you can't wait	Control budget, improve safety, and mitigate risk for stakeholders without compromising quality	Lower site PUE and reduce environmental impact while controlling costs	Recover precious white space and scale as you grow

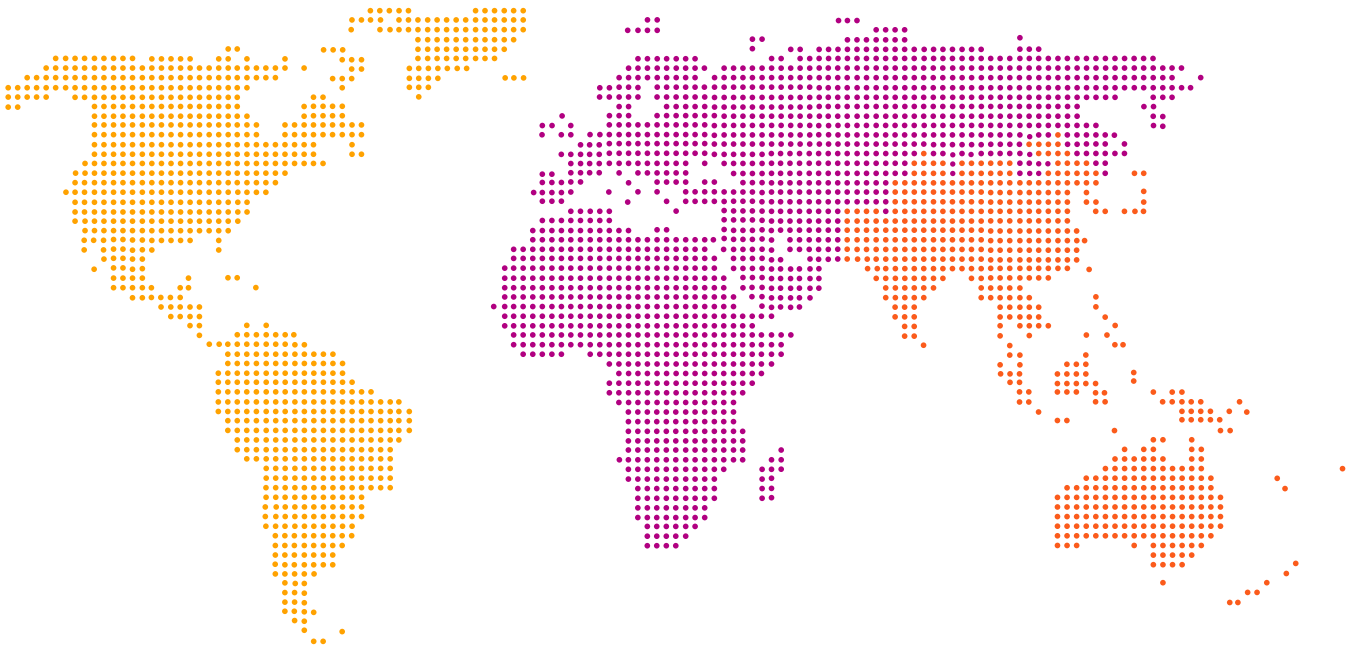
We're anywhere you need to be

Over 1,500 modules shipped

Over 800 sites worldwide

Over 150MW Capacity Deployed

Multiple integrated modular sites with Uptime Institute® Tier III certificate
23,304m2, 813 sites, 5.184 racks



Vertiv™ pre-engineered AI solutions

Within the Vertiv™ 360AI solutions portfolio, Vertiv's pre-engineered AI solutions offer an easier and faster option for our customers to deploy AI infrastructure.

Reduce deployment time up to 50%

Pre-engineered solutions can eliminate design work reducing deployment time up to 50%.

Broad Range and Flexible Deployment Methods

Solutions available from Edge Inferencing to AI Data centers with options ranging from a high-density rack solution, to large prefabricated modular data centers.

Unmatched Expertise & Support

Support throughout the process from assessment and design, to deployment and lifecycle management.

Interoperability and Seamless Operation

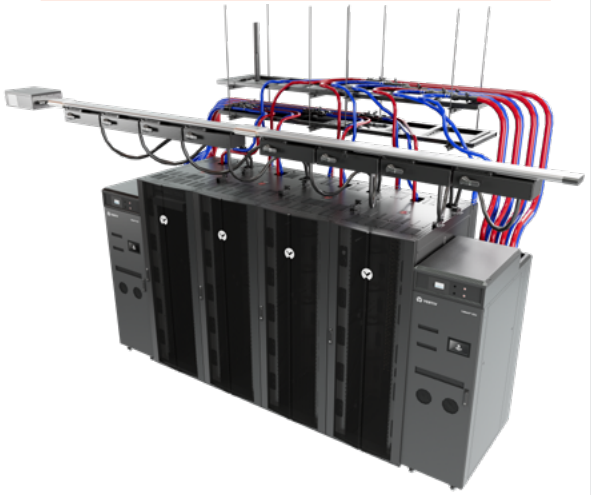
Only Vertiv can meet both the power and cooling demand of AI, and each solution is built from the most complete portfolio of power and cooling solutions in the industry.

Kickstart AI deployments with pre-engineered solutions, optimized for retrofits

Pre-Engineered solutions can scale from Vertiv™ Edge Inferencing to training and AI at scale.

AI test environments, training pilots, or edge inferencing

AI labs, transitions to AI data centers



Technology summary	Solution model number	Racks	Density per rack
AI test environments, training pilots or edge inferencing			
Small HPC/AI for minimal retrofit	*1L88RE*	1	88 kW
Small HPC/AI for CW cooling systems	*1L100RE*	1	100 kW
Modular Building Block for HPC/AI	*1XL115E*	1	115 kW
AI labs, transition to AI data center			
Mid-sized HPC/AI (room neutral)	*4XL400E*	4	100 kW
Mid-sized HPC/AI	*5L500E*	5	100 kW
Prototype AI factory			
Large-scale HPC/AI (room neutral)	*12XL1200E*	12	100 kW
Large-scale HPC/AI	*14L1400E*	14	100 kW

Note: *Full cooling capacity may require supplemental cooling capacity from air or other system, as direct-to-chip liquid cooling technology uses cold plates that do no*

Availability varies by region, contact Vertiv for details. The images shown are for representation and may not be an exact representation of the product.

Learn More

Prototype AI factory and training

Greenfield / Brownfield	Heat removal		Chiller included
	From server	From room	
Brownfield		Air	–
Brownfield		Water / glycol	–
Brownfield / Greenfield	+	Water / glycol	-
Brownfield / Greenfield	+	Water / glycol	–
Brownfield		Water / glycol	–
Brownfield / Greenfield	+	Water / glycol	–
Brownfield / Greenfield		Water / glycol	–

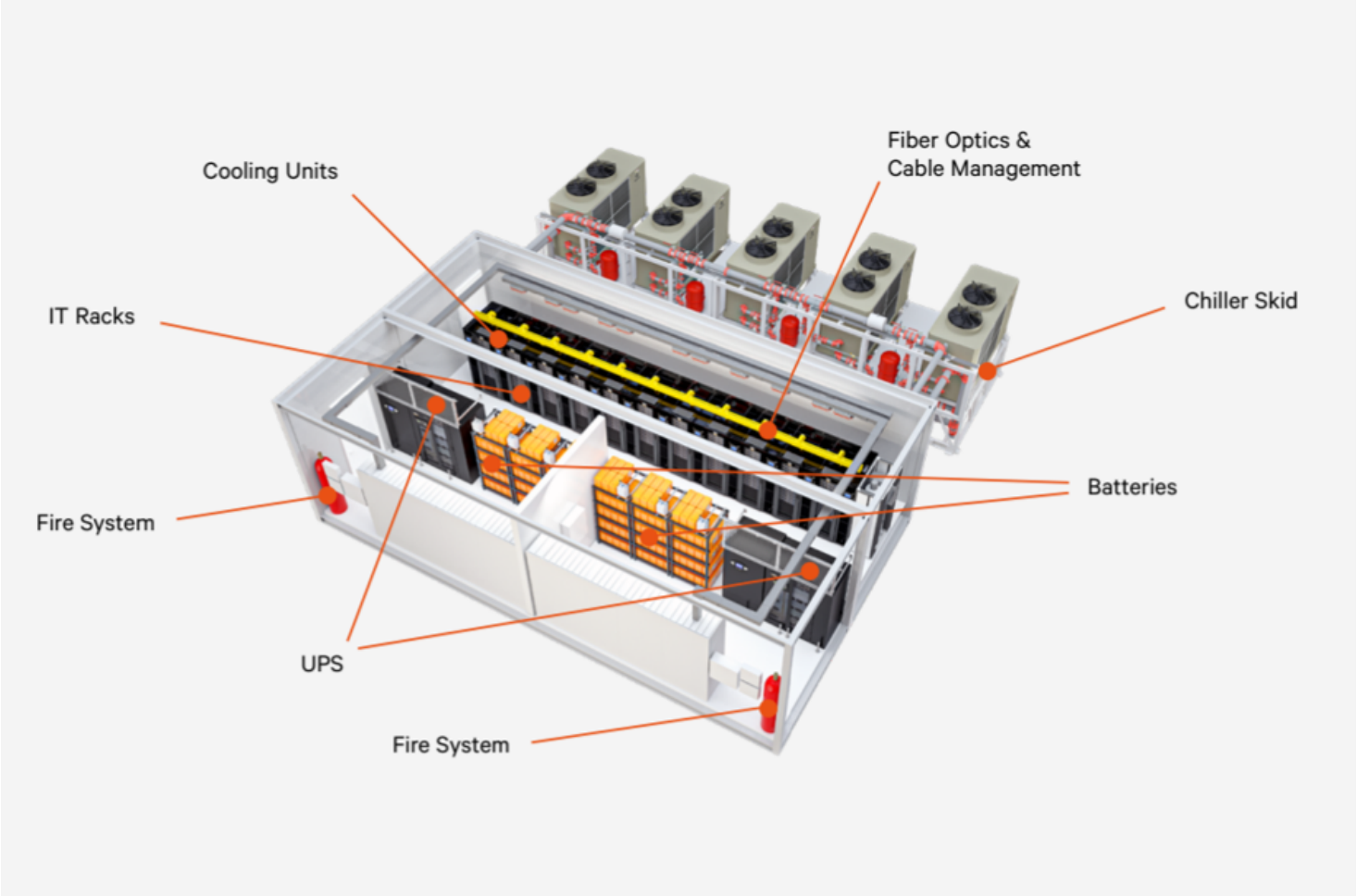
t remove 100% of heat from servers.

Deploy a full AI data center with the Vertiv™ SmartMod™ HDX

The SmartMod™ HDX provides everything you need to get started with a fully equipped modular data center for AI, and can be deployed without disturbing existing IT workloads.

It features a simple, scalable data center design that uses pre-engineered Vertiv building blocks to create a full solution, consisting of the Power Module, IT Hall, and Chiller Skid for heat rejection.

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.



Vertiv™ 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
- **Vertiv™ Liebert® DCL Modular Rack Cooling,** Closed Loop Cooling Architecture (up to 35 kW/rack) **or**
- **Vertiv™ Liebert® DCD rear-door heat exchangers** (passive or active, up to 50 kW/rack) Next Generation High Power Density Data Center
- **Vertiv™ Liebert® HPC-S chillers** with free-cooling option
- **Vertiv™ IT Racks**
- **Vertiv™ Geist™ High-Density rack PDUs**
- **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 Vertiv™ SmartMod™ HDX DCL

Why customers choose prefabricated modular solutions for AI

Maximize Space Utilization

- Maintain existing footprint and workloads.
- Compaction design-practice unlocks up to 25% space over traditional builds.
- Custom and hybrid solutions.

Improved Build Quality, Reduced Field Work

- Productizing non-repeatable field work in the factory, improving build-quality and customer's total cost of ownership.

Accelerated Deployment Cycles

- Repeatable factory-integration reduces deployment up to 50%.
- Global supply-chain and service delivery footprint.

Learn More

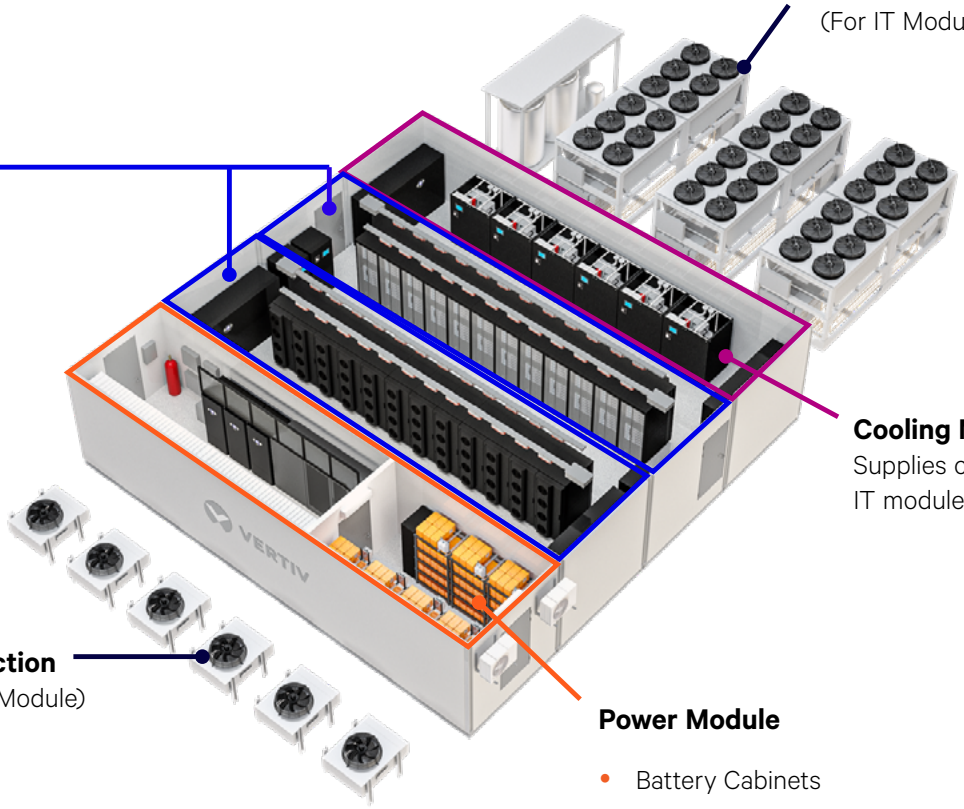
Rapidly design and deploy a full AI data center

Vertiv offers 20+ years of expertise in integrating and optimizing infrastructure, with design, integration, and deployment capabilities under one roof.

Heat Rejection
(For IT Module)

IT Modules

- PDU
- Busway
- IT rack enclosures
- Rear-door heat exchangers



Cooling Module
Supplies cooling to the IT modules

Heat Rejection
(For Power Module)

Power Module

- Battery Cabinets
- UPS
- Switchboard
- Dedicated perimeter cooling units
- Heat rejection

Vertiv™ SmartMod™

Above solution is a 1MW data center operating at 50kW per rack, when all modules are bayed together

The tools you need to manage all of your high-density power and cooling infrastructure

Vertiv™ 360AI solutions support network communications and software to provide centralized and remote visibility across the entire solution, with unmatched controls capabilities across power and cooling technologies.

Monitoring

Vertiv™ Environet™ Alert

Critical facility monitoring platform delivering superior monitoring, alerting, trending and data organization capabilities

Vendor-neutral SNMP device management – integration of third-party devices available upon request.

Affordable solution - Pricing is based on the number of devices to offer the solution is budget-friendly for SMBs and Enterprises to deploy.

Fast and easy configuration – Manage your own system configuration and changes.

Full suite of Services – Optional service packages are available to support for installation, startup and firmware upgrade.

Customized Data Visualization – Set your own views and dashboard layouts to focus on the data you need most.

Thermal Controls

Vertiv™ Liebert® iCOM™ CWM

Advanced chilled water cooling manager allows for full coordination of chillers and chilled water cooling units to optimize the entire system

Chiller teamwork optimization – control the entire system using ΔT or ΔP, and enable chillers to work as a team to maximize efficiency.

Cooling Economization – new energy optimization algorithm continuously coordinates the indoor cooling unit with the chiller to extend freecooling operation to reduce energy use.

Easy Installation – Plug and play installation and ready to connect.

BMS Integration - Use Modbus or BACnet over IP and integrate with external BMS.

Backwards Compatibility – upgrade existing Vertiv thermal management units.

Energy & Power Management Systems

EPMS

Combined energy and power management solution to provide visibility and control over facility power operations

Flexible deployment – can be deployed as a cloud software or on-premise.

Data lake integration – centralize your data from equipment processes and enable digital services.

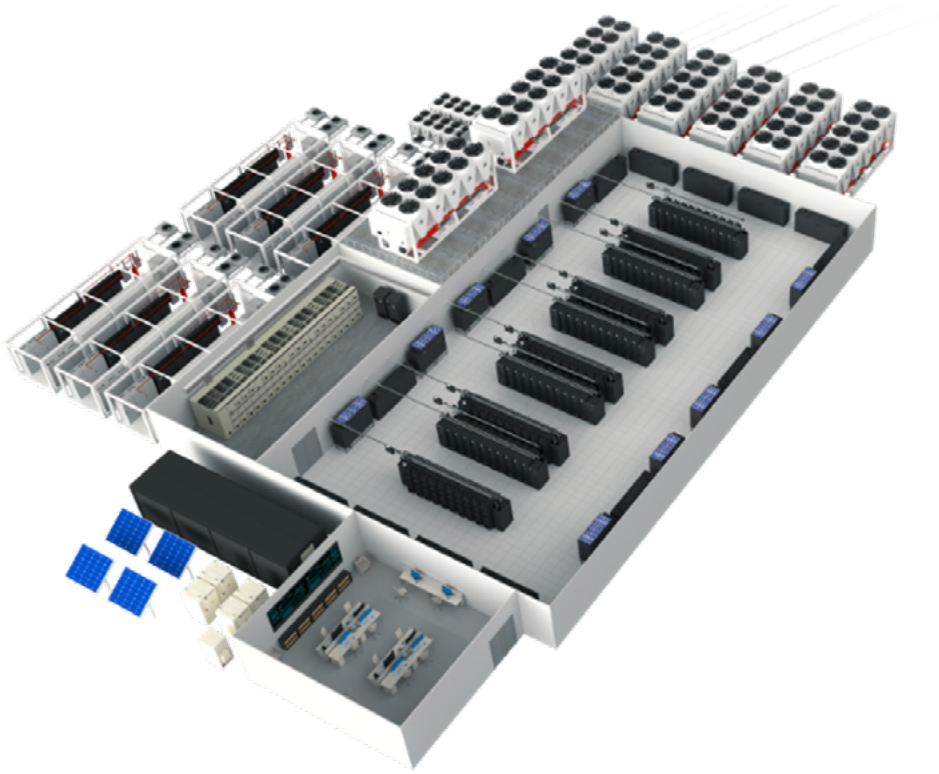
Embedded analytics – enable both proactive and predictive maintenance, ensuring continuous power flow and extending equipment lifespans.

Digital services – ranging from anomaly detection and notification, to event and fault recording and troubleshooting, commissioning support, remote monitoring, condition-based monitoring, and more.

Data analysis and communication on thermal conditions across multiple locations and regions.

Meeting the unprecedented power demands of AI

Rather than disturb existing workloads to scale power capacity, Vertiv™ 360AI solutions include modular solutions that can be deployed without using existing footprint.

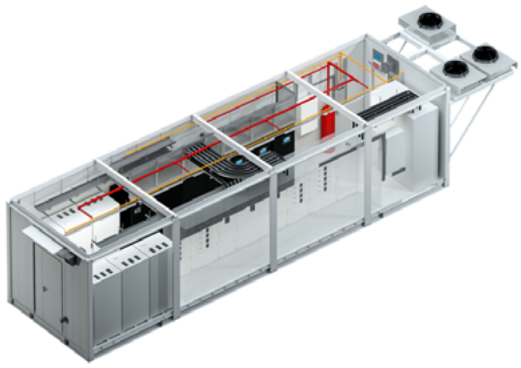


Vertiv™ DynaFlex Battery Energy Storage System

Prevent the grid from constraining AI performance

- Enable renewable and hybrid energy strategies
- Provide “always-on” power
- Supports diesel genset replacement

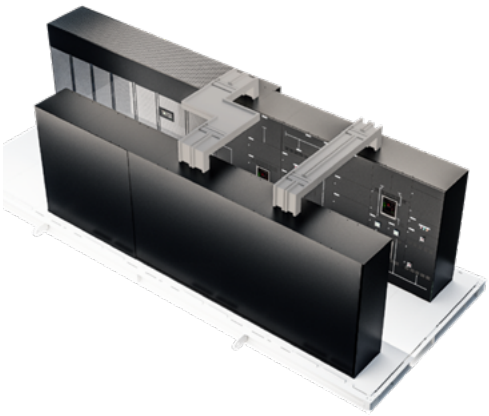
Vertiv™ Power Modules



Rapidly scale capacity for AI without floorspace

- Scalable and modular building block
- Deploy without impacting existing workloads
- Factory integrated solution to reduce installation time and reduce risk

Vertiv™ PowerNexus



Keep pace and maximize your floorspace for AI deployments

- Close-coupled UPS, Switchgear, and busbar to power AI data centers.
- Reduce installation time and reduce risk with factory pre-integration options.
- Flexible deployment options including in an enclosure, on a skid, or field installation.

High-amperage, overhead power distribution

Get more power to every rack for AI workloads

- Hot-swap without any special tools with built-in safety and plug-and-play features allowing.
- Reduces CAPEX - no need for raised floors | to distribute power.
- Smart metering to monitor efficiency and capacity.

High-density rack PDUs

With standard capacities up to 80A for high-density AI applications, and higher capacities available when required through our Engineered-to-Order rack PDU program

- Compact design - fit up to 4 in a single rack.
- Outlet monitoring and switching to track and control workloads remotely with software suite.
- Connect up to 16 environmental sensors to monitor temperature, humidity, dew point, and water leaks.

Flexible cooling strategies for retrofits and new builds

AI workloads will require new cooling strategies and may even require combining air and liquid in the same IT rack. Vertiv™ 360AI includes a wide range of cooling and heat rejection combinations to create the best cooling strategy for your application

Direct-to-Chip Coolant Distribution Units (CDUs) and Manifolds

- **Optimize floorspace** with in-rack and in-row form factors available.
- **Precise Temperature Control** to eliminate thermal shock for server CPU and GPUs.
- **Redundant Pumps and Dual Power Feeds** for optimizing reliable operation.
- **Teaming Capabilities** allow for fleet control to optimize efficiency and reliability.
- **Innovative Stainless-Steel Design and Hygienic Couplings** help ensure Secondary Fluid Network integrity.
- **Row Manifolds** overhead manifolds included, no raised floor required. (Underfloor available upon request).
- **Rack Manifolds** compatible with quick disconnects.

Rear-Door Heat Exchangers

- **High energy efficiency** and low power consumption reduces operational costs.
- **Scalable Capacity** – each model can operate anywhere from 0-100% load to accommodate variation in cooling system demand.
- **Uses Zero Floor Space** – mounts directly to the rear of the rack, replacing the door and saving valuable floor space.
- **No residual heat** – cools hot air before it exits the rear of the rack to eliminate the potential for hot spots.
- **Ability to retrofit** – install in existing applications allowing for scalability and future expansion.
- **Smart controls and monitoring** capabilities gives users peace of mind through remote access to room conditions.

Heat Rejection and Supplemental Air Cooling

Direct-to-chip liquid cooling uses cold plates inside liquid-cooled servers. These cold plates do not remove 100% of the heat generated by the server and require supplemental cooling to remove the residual heat.

Packaged Outdoor Systems

Indoor Chillers Systems

In-Row Cooling

Outdoor Chillers

Room Cooling

Server Racks

- High-Capacity for high-density applications.
- Designed to enable full integration & shipping of IT systems.

Environmental Monitoring & Leak Detection

- Environmental Sensors - monitor rack enclosures for temperature, humidity, and dewpoint.
- Leak Detection - Up to 100 feet of moisture sensing cable to detect any moisture.

The images shown are for representation and may not be an exact representation of the product.

End-to-end services for seamless AI deployments

End-to-end lifecycle services are included with Vertiv™ 360AI solutions to streamline deployment and maintain high-density infrastructure, including liquid cooling systems.

Deployment

- Site assessment.
- Design.
- Project management.

Commissioning

- Installation.
- Startup.
- Testing.
- Complete packages available with commissioning levels L1 to L5 overseen by specialized Vertiv project managers guiding to every step of the way.

Maintenance

- Preventative maintenance.
- Fluid management.
- Troubleshooting.
- Liquid-Cooling Ready fluid management capabilities include coolant sampling, quality testing, adjusting, and ecological disposal.

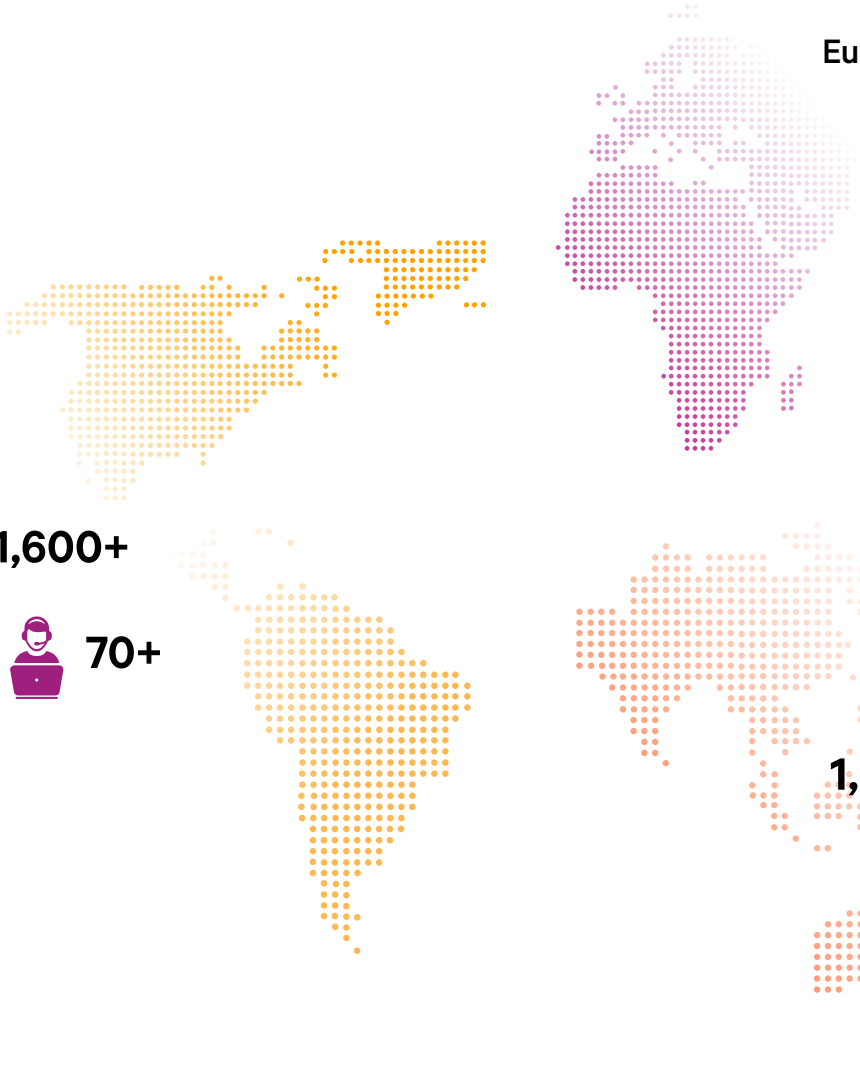
Services for the entire lifecycle anytime, anywhere

50+ years building and servicing the world's most critical infrastructure, with end-to-end capabilities for high-density environments.

240+
Service Centers

3,500+
Field Engineers

190+
Tech Response



Americas

100+
Service Centers

1,600+
Field Engineers

70+
Tech Response

Europe, Middle East, and Africa

60+
Service Centers

600+
Field Engineers

100+
Tech Response

Asia Pacific

80+
Service Centers

1,300+
Field Engineers

20+
Tech Response

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