

An introduction to Vertiv

Architects of Continuity™

Data Centers

Communications Networks

Commercial and Industrial Facilities



Nearly all aspects of our lives involve the use of technology.

Technology drives the world's demand for data.



Data is essential to human progress and is built into the very fabric of our society. Imagine, without the transfer of data, the world just might be silent.

The transfer of data is reliant on the continuity of the vital applications inside data centers, communication networks and other critical facilities.

Vertiv helps make it all happen.

We do this by:

Bringing together hardware, software, analytics and services.

Ensuring uninterrupted operations, optimal performance and scalability.

Doing it differently through visionary expertise, immersive collaboration, relentless agility, intelligent ecosystems and scalability.

We are Architects of Continuity.



Architects of

Continuity™

ar•chi•tect *noun*

1. Visionary builder of future-ready digital infrastructures

con•ti•nu•i•ty *noun*

1. Reliable, safe, uninterrupted operations
2. Bringing customers' current reality to future aspiration

Building future-ready digital infrastructures that deliver continuity.

Our focus on *Data Centers*

Enabling reliability, efficiency and scalability from the core to the edge.

- Expertise from design through construction and commissioning derived from decades of experience.
- Innovative solutions that reduce costs, improve management and speed deployment.
- World-class services that drive uptime and deliver insights into performance.
- Product, system and integrated solutions for: Enterprise, Colocation, Hyperscale and Edge.



Our focus on *Communication Networks*

Provide smart, fast, flexible solutions for advanced networks and network management.

- Innovation enabling flexible architectures.
- Fast deployment, turnkey solutions, seamless service.
- Intelligent systems for smart, holistic network management.
- Future-forward solutions supporting 5G and a variety of sites including: Small Cell, Macro Site, Central Office and Data Center




Our focus on *Commercial and Industrial*

Delivering reliability and simplifying complexity in industrial and rugged environments.

- Robust protection in even the most extreme conditions.
- Solutions customized to meet specific needs and budgets.
- Expert technical teams who get there fast.
- Products, solutions, services and expertise for: Healthcare, Rail/Mass Transit, Power Generation and Oil and Gas



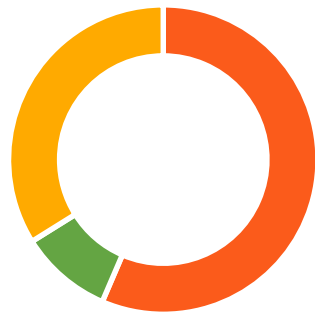
Our numbers

 **Sales**
4.3 B

 **Employees**
~19,700

 **Customers Include**
Alibaba, Alstom, America Movil, AT&T,
China Mobile, Equinix, Ericsson,
Reliance, Siemens, Telefonica,
Tencent, Verizon, Vodafone

Manufacturing Sites: 19
Customer Centers/Labs: 17
Operations: 51 Countries



- Critical Infrastructure and Solutions
- IT and Edge Infrastructure
- Services and Software Solutions

Offering

Broad range of power, thermal, and IT and edge infrastructure, solutions and services portfolio



- Americas
- EMEA
- AP

Geography

Global, well-established footprint, and supply-chain network



- Data Centers
- Communications
- Commercial & Industrial

End Market

Customers who operate in some of the world's most critical industries

Our presence

Meeting our customers demand for data – wherever they are.

US and Canada

Manuf. And Assembly Locations	7
Service Centers	120+
Service Field Engineers	850+
Technical Support/Response	120+
Customer Experience Center/Labs	4

Latin America

Manuf. And Assembly Locations	1
Service Centers	20+
Service Field Engineers	300+
Technical Support/Response	25+
Customer Experience Center/Labs	2

Europe, Middle East, and Africa

Manuf. And Assembly Locations	5
Service Centers	70+
Service Field Engineers	600+
Technical Support/Response	95+
Customer Experience Center/Labs	6

Worldwide

Manuf. And Assembly Locations	19
Service Centers	270+
Service Field Engineers	2700+
Technical Support/Response	330+
Customer Experience Center/Labs	17

Asia Pacific

Manuf. And Assembly Locations	6
Service Centers	60+
Service Field Engineers	950+
Technical Support/Response	90+
Customer Experience Center/Labs	5

Our portfolio

POWER MANAGEMENT

Description

- Small, medium and large uninterruptible power systems (UPS)
- Industrial-grade UPS
- AC power distribution systems
- 12V to 400V DC power systems
- Custom DC UPS systems along with DC battery chargers and distribution

THERMAL MANAGEMENT

- Small thermal systems including room and row/ rack cooling
- Air handling and chiller: large systems located outside the data room that provide climate control

IT AND EDGE INFRASTRUCTURE AND SOLUTIONS

- IT and infrastructure management solutions
- Rack PDUs
- Integrated solutions

SERVICES

- Diverse array of services to handle ongoing customer equipment and product needs
- Maintenance, project and training services
- Tailored customer offerings

Select offerings



Liebert EXM



Liebert EXL S1



Liebert FPC



NetSure 5000



NetSure 7000



NetSure 8000



Liebert iCOM



Liebert CRV



Liebert DS



Liebert DSE Package System



KVM & Serial Console



Software & Monitoring



Racks



Integrated Solutions



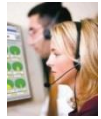
Preventive Maintenance



Performance Optimization



Project Services



Remote Services

Brands

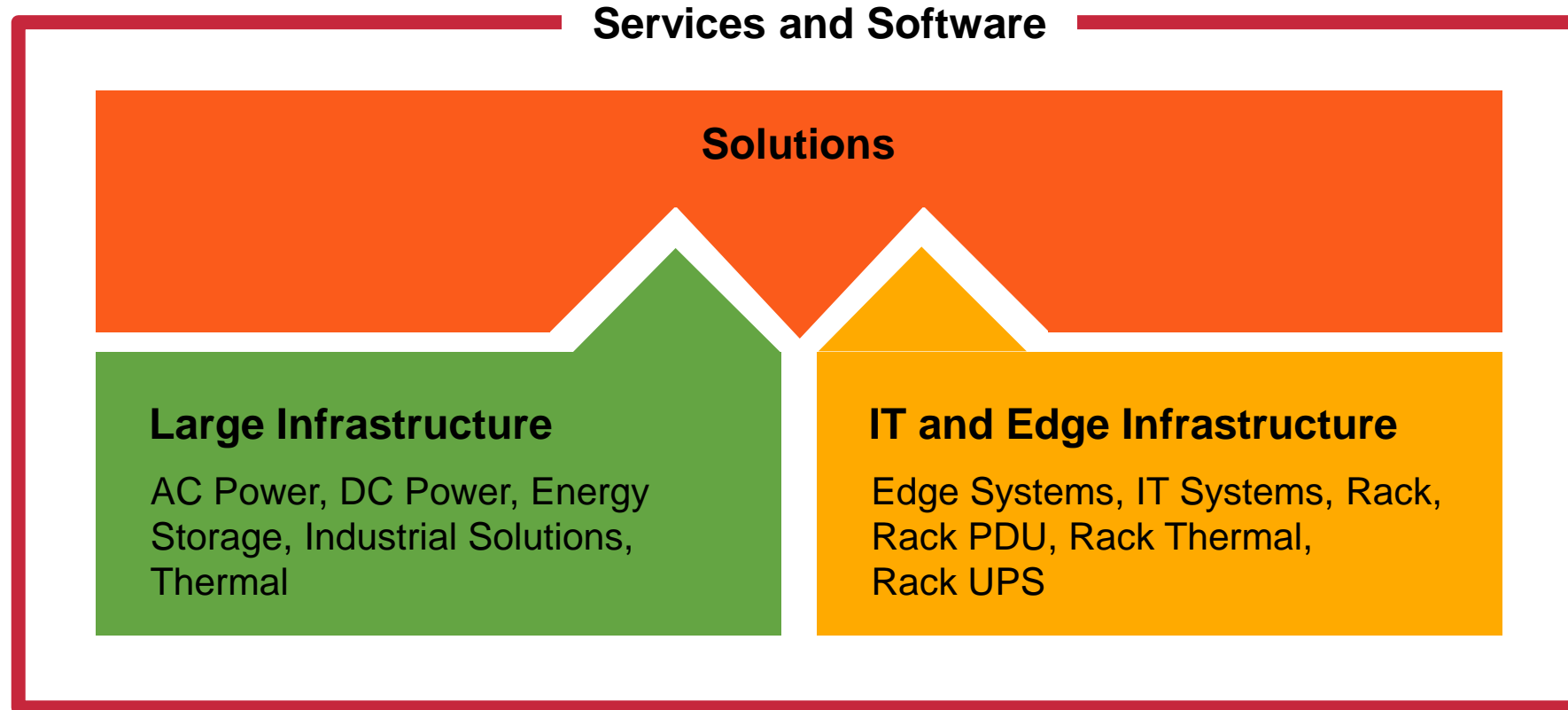
Liebert®

NetSure™

Liebert®



Vertiv brings together hardware, software, and ongoing services to ensure our customers' vital applications run continuously and perform optimally.



A leading provider of innovative power, thermal and IT infrastructure solutions and services for digital infrastructure.

- ✓ **Recognized leadership across served markets, offerings and geographies.**
- ✓ **Strong project management capabilities differentiates Vertiv from other market participants.**
- ✓ **Rewarded by customers for the ability to collaboratively work to provide solutions for critical needs.**
- ✓ **At the forefront of energy efficiency applications.**
- ✓ **10 awards won as independent company.**



Discover Vertiv



We collaborate with our customers to build future-ready digital infrastructures.

Let us show you how we can turn your aspirations into reality.

Our capabilities. Our difference.

[Thermal](#)

[Power](#)

[IT and Edge Infrastructure](#)

[IT Systems](#)

[Solutions](#)

[Services](#)

[Software](#)



Vertiv Thermal Management



Vertiv Capabilities

Thermal Management

A complete line of energy-efficient and reliable technology

- Perimeter, in-row and high-density cooling.
- Freecooling chillers, heat rejection and economization.
- Evaporative freecooling.
- Custom air handling solutions.
- Small systems for edge applications, small computer rooms and network closets.
- Modular smart solutions to add capacity with IT growth.

Controls to optimize efficiency and uptime

- Unit and supervisory controls with machine to machine communication and real-time monitoring.
- Advanced algorithms for system auto-tuning, energy optimization, and capacity management.



Vertiv Capabilities

Thermal Management

PERIMETER COOLING



IN-ROW COOLING, SMARTAISLE™



FREECOOLING CHILLERS



EVAPORATIVE FREECOOLING



ICOM™ CONTROLS



Vertiv Difference

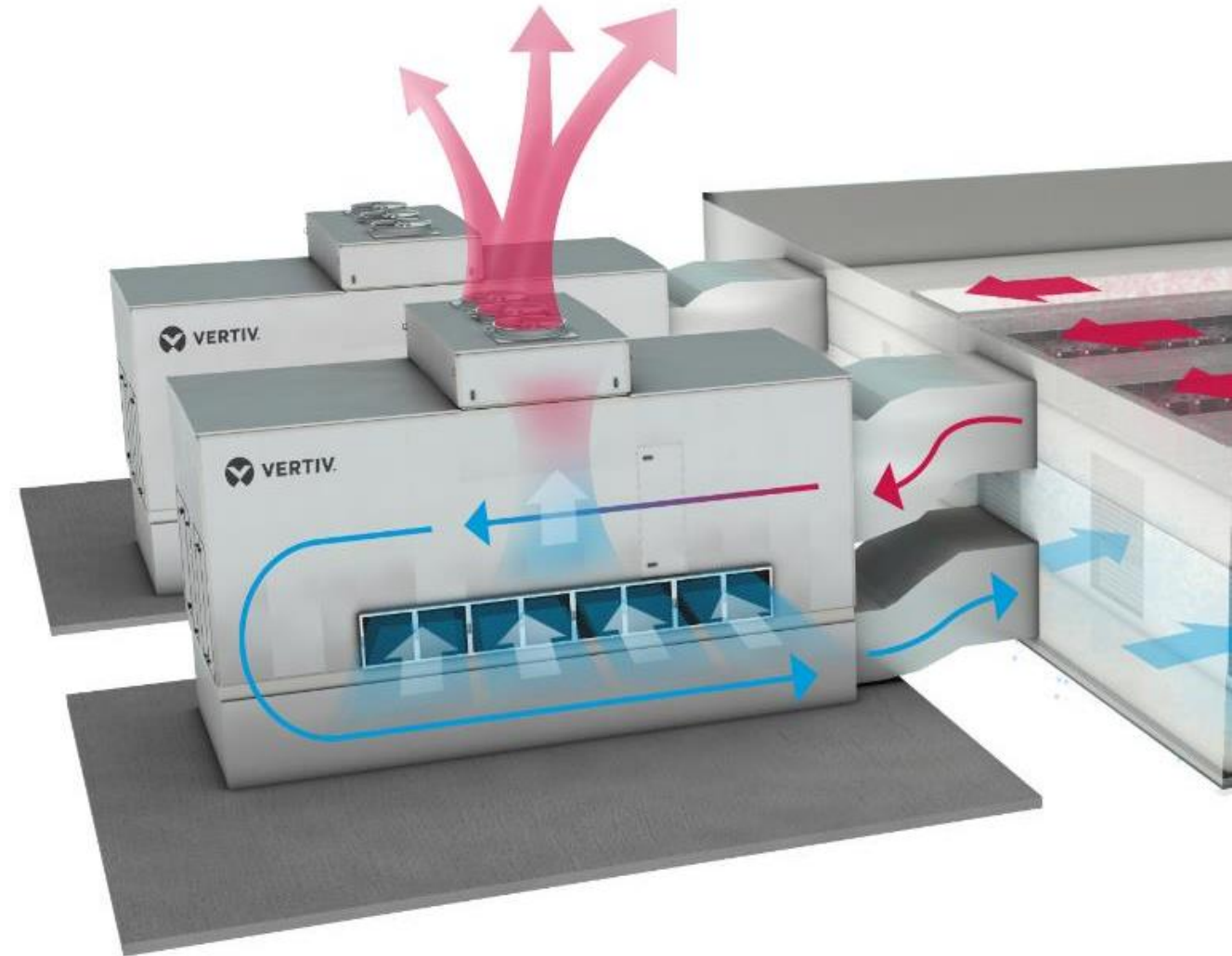
Thermal Management

Unmatched efficiency and reliability for mission-critical applications

- We deliver the highest level of protection and uptime.
- Industry-leading efficiency levels (Power Usage Effectiveness as low as 1.1).
- Up to 50 percent lower capital and operating costs.
- Industry-leading, award-winning technologies.

Deep design and application knowledge

- We partner with each customer to develop and deploy solutions that best meet their needs.
- Intelligent, self-optimizing solutions that enable customers to spend less time managing cooling and more time managing their facilities.



Customer Spotlight: Amdocs

Thermal Management

Customer Need

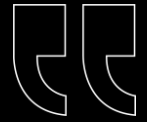
- A more economical mode of operation when external temperature is lower than the internal temperature of the facility.
- Up to 50 percent energy savings.
- Eco-friendly solution.
- Maximizing efficiency of the data center.

Solution

- Liebert® PDX with EconoPhase
- Liebert® Microchannel Condenser

Benefit

- Enhanced, flexible freecooling and low TCO.
- The most advanced refrigerant economizer.
- Supreme levels of efficiency and easy installation.



“Vertiv’s deep technical knowledge allowed us to make an informed risk-benefit analysis and identify the most efficient thermal management solution for our Chiswick Park data center.”

Ronnen Perry
Global Technical Manager at Amdocs



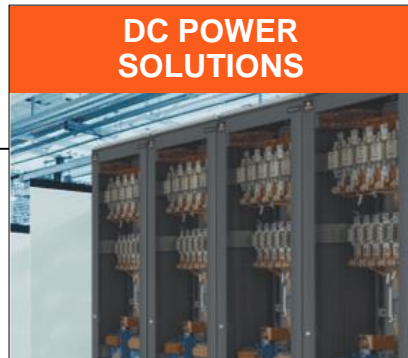
Vertiv Power Management



Vertiv Capabilities

Power Management

Project, maintenance and performance services for data centers, communication networks and industrial markets.



Vertiv Difference

Power Management

Continuous operation and optimal performance of your vital applications

- Comprehensive range of power solutions for data centers, communication networks, commercial and industrial networks.
- Industry leading safe and reliable power solutions for heavy-duty, data center and edge of network applications.
- Complemented by our full software suite and global service organization.



Customer Spotlight: Equinix

Power Management

Customer Need

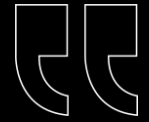
- Update and redesign the entire 4 x 800 kVA parallel UPS system based on a centralized, N+1 architecture for one of Equinix's data centers.

Solution

- Implemented a new distributed redundancy model with three chains, each composed of 1 MW Liebert® Trinergy™ UPS system in a (N+1) configuration.
- Vertiv LIFE Services for cutting-edge remote diagnostic and preventative monitoring service.

Benefit

- Three different power lines, powering each rack with a 2(N+1) UPS configuration for utmost reliability.
- AC power capacity expansion of up to roughly 500 kW, leading to an increase in rack density per square meter.
- 96 percent UPS efficiency.



“We will make good use of the three Liebert Trinergy UPS systems’ scalability by upgrading the power capacity whenever the critical load evolves. And Vertiv will enable us to do it without any service disruption for our data center customers.”

**- Director of Operations,
Equinix**



Vertiv IT and Edge Infrastructure



Vertiv Capabilities

IT and Edge Infrastructure

Support for Edge applications that require moving processing and storage closer to the customer.

Use Cases

Data Intensive



- Restricted Connectivity
- Smart Cities / Factories / Home and Building
- HD Content Distribution
- High-Performance Computing
- Virtual Reality

Human-Latency Sensitive



- Web Site Optimization
- Augmented Reality
- Smart Retail
- Natural Language Processing

Machine to Machine



- Smart Security
- Smart Grid
- Low-Latency Content Dist.
- Arbitrage Market
- Real-time Analytics
- Defense Force Simulation

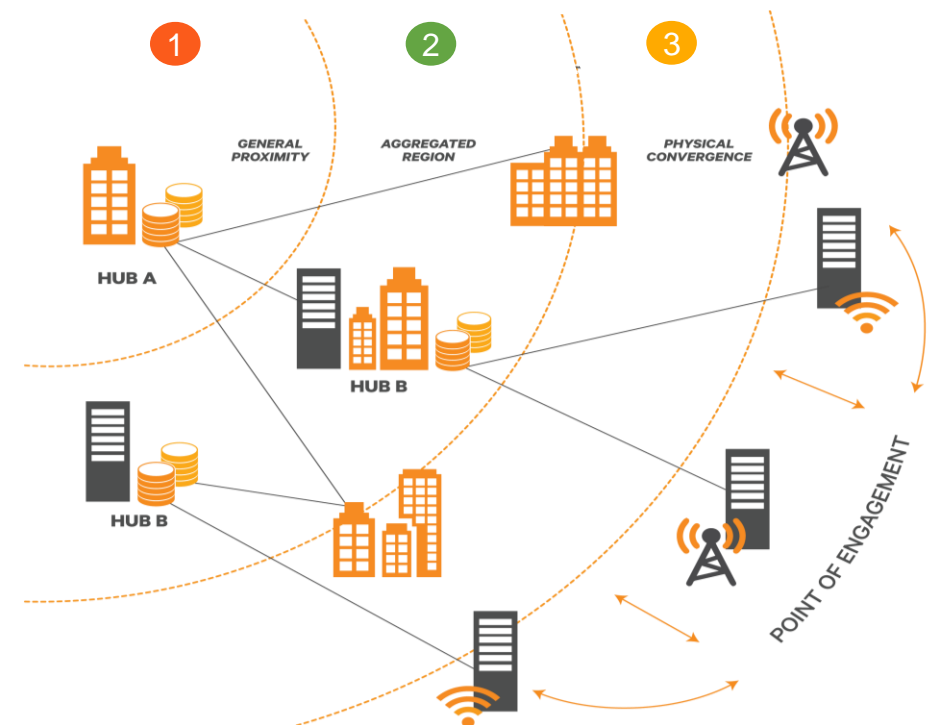
Life Critical



- Digital Health
- Connected/Autonomous Cars
- Drones
- Smart Transportation
- Autonomous Robots

Architecture







- 1 Traditional**
 - Cloud / Data center
- 2 Local**
 - Aggregation sites
 - Metro data centers
- 3 Edge**
 - Rooms / Building



Vertiv Capabilities

IT and Edge Infrastructure

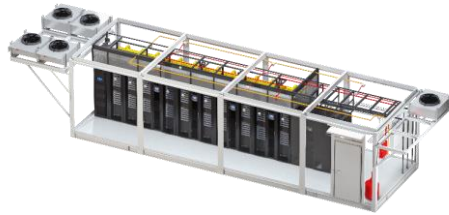
Flexible portfolio of point products for IT and Edge infrastructure.

<i>Categories</i>	<i>Commonly purchased products</i>	
RACKS	VR rack systems	
RACK PDUs	Geist basic, metered, managed, and switched	
UPS SYSTEMS (1P & 3P)	Online, line-interactive systems	
EDGE THERMAL	Liebert® CRV, DCD, VRC	
IT SYSTEMS	Avocent®	
SOFTWARE	Power Assurance Package, LIFE™ Services monitoring	

Vertiv Capabilities

IT and Edge Infrastructure

Integrated solutions for IT and Edge infrastructure.



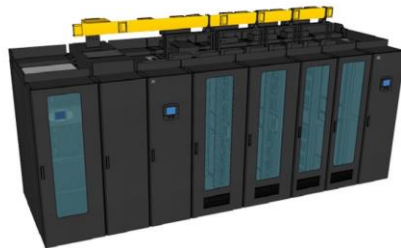
Vertiv SmartMod™

Vertiv SmartMod™ is a flexible platform, optimized for simplified deployment of your critical IT assets.



SmartRow™ DCR

The SmartRow DCR is a self-contained, modular data center designed to simplify IT deployments in indoor spaces.



SmartRow™ DCX

SmartRow DCX provides a complete data center in weeks, utilizing an enclosed room-neutral system that meets today's needs while being prepared for tomorrow.

Vertiv Difference

IT and Edge Infrastructure

A leader in Edge infrastructure

- Easy integration of components.
- Fully customizable for your IT needs.
- Rapid deployment for quick installation.
- Remote monitoring and management.
- End-to-end service.

Edge infrastructure portfolio benefits

- From racks and enclosures, to power protection and distribution, to cooling and thermal management solutions, our compact and reliable small-space infrastructure delivers the reliability you need to grow your edge network.
- Pre-built, factory integrated systems can give you the flexibility of a custom solution with the convenience of an off-the-shelf product.



Customer Spotlight: Property and Casualty Insurance Provider

Edge – Data Center

Customer Need

- Improve the visibility and control of the company's distributed digital assets to effectively manage its network from the core to the edge.

Solution

- Vertiv Environet data center monitoring system.

Benefit

- Improved uptime.
- Increased cooling efficiency.
- Enhanced safety.
- Better asset management.
- More educated workforce.



“I was able to show that where the vendor was saying he would save us \$1,000 a month, in reality, it was only savings of about \$230 a month. That kind of information is very helpful for us...when we go to purchase new hardware.”

Technology Lead



VERTIV™

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Vertiv IT Systems



Vertiv Capabilities

IT Systems

Data center IT infrastructure and operations

- Centralized, secure access to IT devices from any vendor over IP – in traditional enterprise data centers, co-location and remote or edge applications.

Control room solutions

- Real-time access to high-resolution content across multiple workstations – in broadcast and post production applications.

Desktop productivity and security

- User access to multiple desktop computers with a single keyboard and mouse – in the office environment, test labs and locations with access to both secure and un-secure machines.



Vertiv Capabilities

IT Systems

**SERIAL
CONSOLE**



**CONSOLIDATED
MANAGEMENT
APPLIANCE**



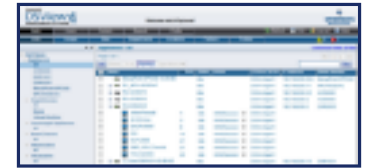
**HIGH
PERFORMANCE
KVM**



**DESKTOP SECURE
KVM AND KM**



**MANAGEMENT
SOFTWARE**



Vertiv Difference

IT Systems

The leader in IT management

- A portfolio unmatched for remote data center IT access and control for IT infrastructure and operations professionals. Our portfolio spans devices and software and is supported by cutting edge services.
- Our IT management products and services make us not only an outstanding performer in the traditional data center but our portfolio is also uniquely positioned to deliver outstanding performance in edge applications.

Vertiv IT management customer benefits

- Improved IT operations with an ecosystem of IT Management products.
- Streamlined workflows in environments using multiple workstations.
- Secured access between security levels in sensitive environments.
- Sourcing from a single supplier.



Customer Spotlight: DigitalGlue

IT Systems

Customer Need

- DigitalGlue (a Vertiv reseller and systems integrator), on behalf of a Hollywood production studio, sought equipment that supported today's video resolution quality while establishing a path for eventual migration to 4K broadcasting. To reduce disruption and save time and money, the studio specifically required a solution that would be compatible with the facility's existing CAT 6/7 ethernet cables and network switches.

Solution

- Avocent® HMX 5000 Series IP-based KVM Switch

Benefit

- Zero-configuration networking simplified implementation by automatically obtaining the media access control (MAC) address of devices as they are attached to the network.
- Switch times were reduced to less than a second greatly improving workflow.
- Customizable hotkeys led to an enhanced user experience.
- Productivity improved with the ability to access two different computing resources from one dual-monitor edit station.
- USB extenders enabled the integration needed to perform color correction sessions.
- The quality of the digital video at the workstation was improved.
- System scalability supported growth by enabling hundreds of users to securely connect in real time with multiple servers and workstations.



"The Avocent HMX 5000/6000 KVM is highly scalable and configurable, which makes it so easy to connect multiple users to multiple servers and workstations. It's really an ideal solution for a large Hollywood studio."

Sean Busby
DigitalGlue President



Vertiv Solutions



Vertiv Capabilities

Solutions

Our mass-customized, standard solutions offer you the ideal combination of best value and rapid delivery. Our factory-integrated solutions offer you a low risk, high value global solution that can be rapidly delivered and assembled on site.



**Rapid
Design**



**Facility
Integration**



**Simplistic
Assembly**



**Global
Service**

Vertiv Capabilities

Solutions

CABINET



Cabinets integrated with PDU and cooling units; could **include storage and IT gear in addition to all hardware**; could be a combination of off-the-shelf products

ROW



Integrated sets of **cabinets with PDU, cooling units, and monitoring systems** as needed; could be a combination of off-the-shelf products

AISLE



Integrated, often enclosed, sets of rows **with cooling and power infrastructure**

MODULAR



Integrated, comprehensive set of modular infrastructure in a **free-standing enclosure** for data centers and other related applications

Network Closet, Micro, Edge, Core and Critical Facilities, Cloud and Colo, Cable Landing Stations

Vertiv Difference

Solutions

Our Methodology

Complete Critical Infrastructure Solutions and Deep Domain Knowledge

Vertiv applies ultra-modern technology and mass-production principles to enable exceptional scale, velocity and quality for every project regardless of size or complexity.



Structural Engineering



Thermal Management



Power Management



Software Controls



Life Cycle Services

Our Partners

Vertiv uses modular integration techniques to help our customers, contractor, and consulting partners more effectively design and build data centers.



Customer Spotlight: T-Systems

Solutions

Customer Need

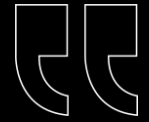
- Provide cloud services across Europe.
- Meet customer SLAs of availability, reliability, security, scalability, transparency, efficiency and sustainability.
- Quickly deploy a state-of-the-art, Tier III, twin-core data center.

Solution

- A modular, containerized structure to achieve rapid availability, high scalability, streamlined expansion and staggered investment.

Benefit

- Nine-month deployment time frame.
- 99.98 percent availability.
- Site Power Usage Effectiveness of 1.3.
- 30 percent reduction in power use over comparable facilities.



“(Vertiv) worked with us to deliver true expertise and industry knowledge, positioning us to provide a strong cloud platform that serves both domestic and regional customers in Europe.”

Program Manager
T-Systems



Vertiv Services

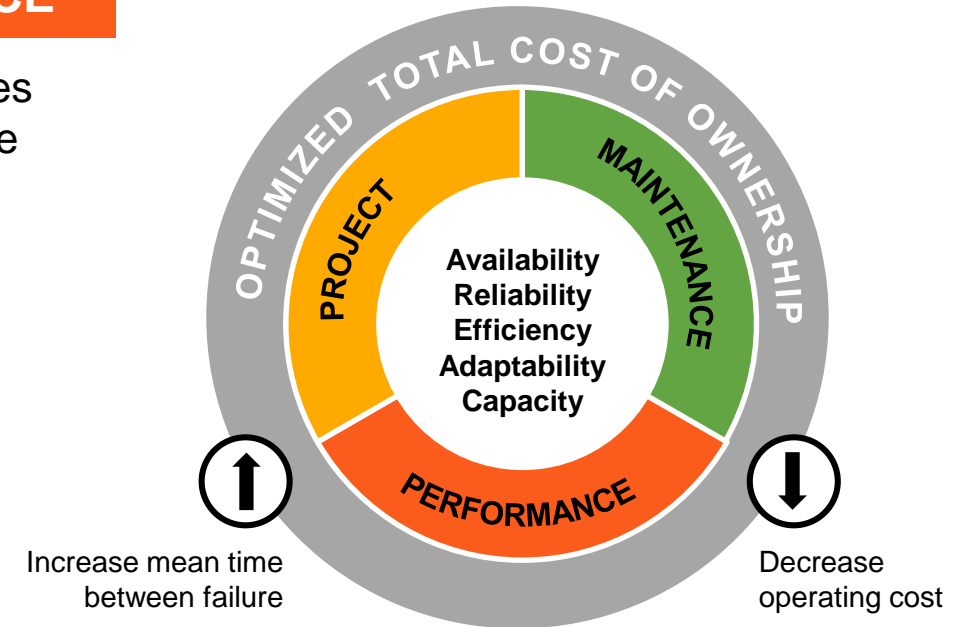


Service Capabilities

Services

A complete life-cycle approach to service, from project launch to ongoing maintenance and performance optimization.

PROJECT	MAINTENANCE	PERFORMANCE
<p>When launching new facilities or powering up new equipment, you want to do it right – right from the start</p> <ul style="list-style-type: none">• Plan• Design• Engineer• Integrate• Commission• Project Management	<p>Services to ensure that your business-critical infrastructure operates reliably, safely and efficiently</p> <ul style="list-style-type: none">• Preventive and corrective maintenance• Remote services and monitoring• Cap / Fan / Battery replacements• Repair• Spare parts	<p>Full range of services designed to optimize infrastructure performance and reduce process complexity</p> <ul style="list-style-type: none">• Assess• Audit• Model• Configure• Upgrade• Train



Vertiv Difference

Services

Services ensure that your vital applications stay up and running. We do this through our vast array of project, maintenance and performance capabilities, supporting you in making better decisions to operate more efficiently and reduce complexity.



Customer Spotlight: Pacific Seafood

Services

Customer Need

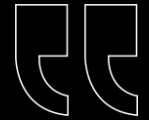
- Acquire a high-quality UPS to replace an aging unit while minimizing disruption. Provide clean, protected power to Pacific Seafood's IT operations while ensuring a path for future growth.

Solution

- Liebert® EXM™ 40kVa, 208V three phase UPS with scalable power, reliable battery runtime and a Maintenance Bypass Cabinet.
- Vertiv Quick Configure and Delivery Program.
- Vertiv Services.

Benefit

- Quickly ordered, delivered and installed failed UPS within four days, restoring IT operations.
- Vertiv coordinated the installation and completed the UPS start-up ahead of schedule within a demanding timeline.
- Delighted the customer who expressed their gratitude to the entire team for responding fast with an excellent, economical solution.



Thanks to the Liebert® EXM™, the Quick Configure and Delivery Program and tremendous amount of teamwork, Vertiv was able to exceed our expectations and ensure our business continuity.

Evan Wiercx
Infrastructure Services Manager
at Pacific Seafood



Vertiv Software



Vertiv Capabilities

Software

- Monitoring of the critical infrastructure that is vital to the delivery of service from IT installations and data centers.
- Management of power and energy usage across the entire power infrastructure used to power the IT and facilities equipment.
- Management and control of the use of expensive resources like space, power, cooling allowing the maximum use of these resources when deploying IT assets.
- Remote monitoring of equipment performance with automated or manual recommendations on how to gain improved efficiency or resilience.
- Enable capturing of stranded data to provide new insights into critical infrastructure operations and performance.

DATA CENTER MONITORING

ENERGY MANAGEMENT

POWER MANAGEMENT

CAPACITY MANAGEMENT

REMOTE MANAGEMENT

CHANGE MANAGEMENT

DATA ENABLEMENT



Vertiv Capabilities Continued

Software

Intelligence Software

END MARKETS

- Edge
- Enterprise
- Colocation
- Communications
- Commercial and industrial

MONITOR

VERTIV INTELLIGENCE

- Artificial Intelligence
- Machine Learning
- Analytics
- Data Scientists



CONTROL

USERS

- Service Technicians
- Facilities Departments
- IT Departments



OPTIMIZE

Vertiv Difference

Software

Expertise

Encapsulates our long experience in data center systems engineering and management.

- Comprehensive capability across data center inventory, power, thermal and space management.
- Deep, rich connectivity across all domains covering IT and facilities equipment from all vendors.
- Tightly integrated hardware and systems offerings for optimal performance and efficiency.

Scale

Global software and services capabilities for all data center operating models.

- Modular software architecture that allows customers to choose the right components as needs dictate.
- Installed base of over 5,000 global customers across numerous industries and geographies.
- Extensive, experienced channel and business partner ecosystem to serve customers globally.

Commitment

Extensive and ongoing investment in products and research to continue our leadership position in critical infrastructure management.

- Solid track record of partnering with customers to address their unique needs.

Customer Spotlight: Mobile Network Operator

Software

Customer Need

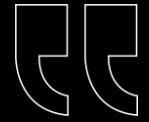
- World's largest mobile network operator in terms of active subscribers needed to move its nearly 100k sites, including core and access devices, to a more effective and efficient management.
- Needed a single business partner that could help them achieve its efficiency and reliability targets by continuously monitoring its sites distributed in many locations.

Solution

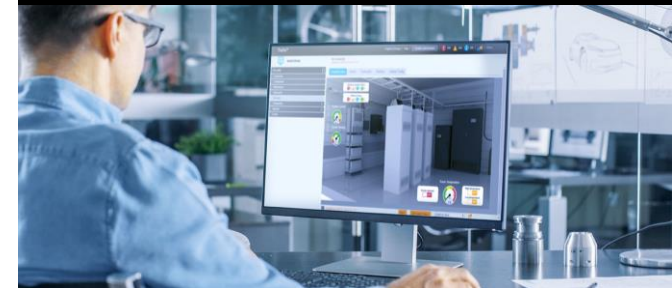
- Trellis Critical Insight was deployed to over 3000 customer sites to integrate environmental, energy, security and safety systems into one powerful management tool that reduced energy consumption, increased occupant comfort and achieved sustainable site operations.

Benefit

- Monitoring was possible both on premise, from the customer headquarter and remotely by Vertiv 24/7.
- Quickly began showing ROI.
- Experienced 70% reduction of inaccurate alarms that lead to reduction of unnecessary visits and optimized personnel workload.



Trellis™ Critical Insight is a powerful web-based building and site monitoring platform with software tools to manage energy conservation projects, identify key operational problems and analyze the results.



VERTIV™

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Learn more about Vertiv.



Vertiv Blog



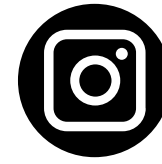
LinkedIn



Facebook



Twitter



Instagram



YouTube



YouKu



WeChat

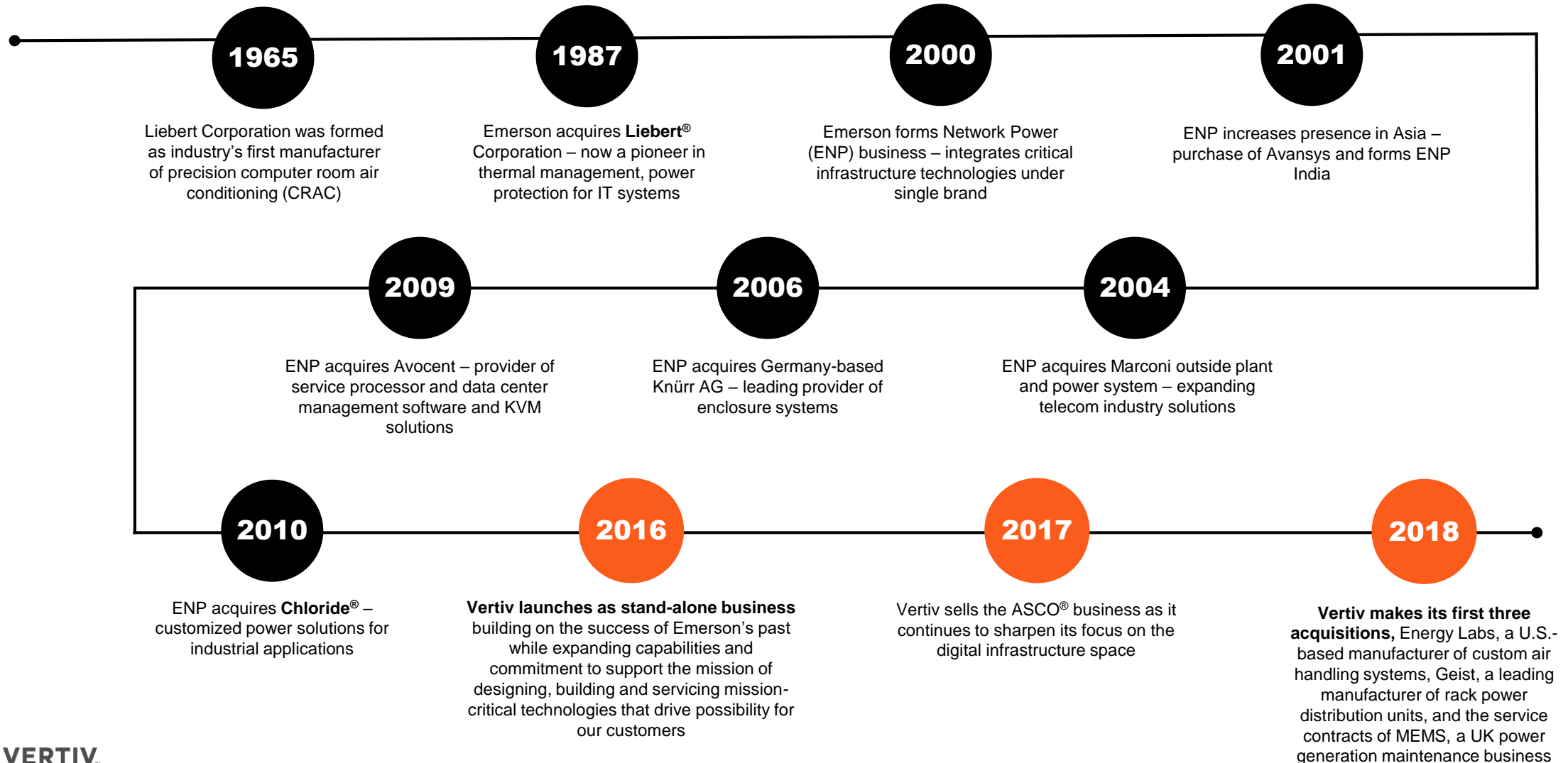


Weibo



Vertiv Timeline

Combining the entrepreneurial spirit of a startup with the resources and reach of an established leader.



Other noteworthy Vertiv Stats

FORTUNE
500

Customer base

We serve **+70% of Fortune 500** companies



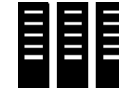
Operating capabilities

We have **20+ GW** of installed cooling capacity and **14+ GW** of installed UPS power. Creating a **~\$15B** installed base



Customer satisfaction

We have a **Net Promoter Score of 67**



Data

We make decisions based on data collected from **1,000,000+ pieces of equipment**



Support

We employ **~2,700 field service engineers and ~330 tech support reps** delivering the **#1 service footprint in the industry**



Performance

We have **83% service renewal rates and 58% warranty capture rate** in power*



Sites

We keep **750,000+ customer sites** connected



First-time fix

We **have 87% first-time fix rate** in site emergency visits. Returning critical load within 24 hours



Remote monitor

We remotely monitor **12,000+ customer sites**

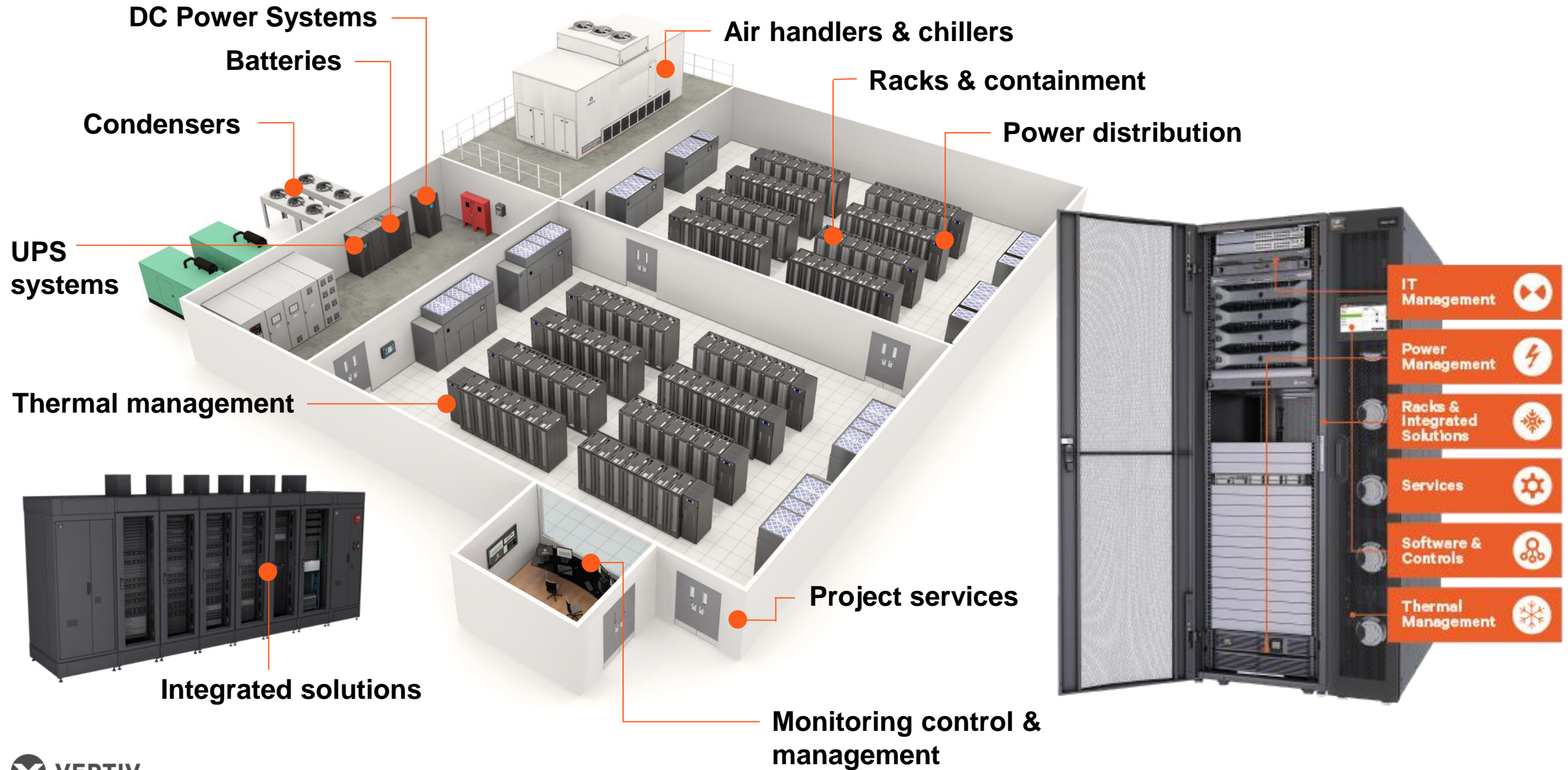


Training

We deliver **~250,000 hours** of technical training each year

* For medium and large UPS

Vertiv Data Center Application



Vertiv Telecom Applications

We deliver product and solution versatility, enabling multiple applications.

**Vertiv XTE 600
M Series / EPC**



**NetSure 2000 /
NetSure 5000**



**NetSure 7000 /
NetSure 5000**



Vertiv XTE 800



NetSure 7000





**NetSure 8000
with Distribution**



NetSure IPE



-  Core Site
-  Access Site

