



# OEM SOLUTIONS

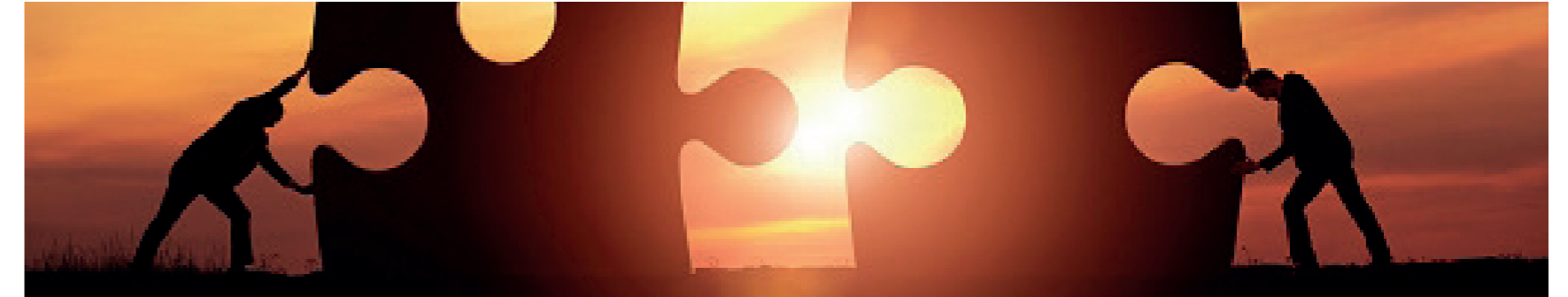
for the network edge and beyond



» We help **grow** your business. «

Please contact us for further information.

**COMBINING THE ENTREPRENEURIAL SPIRIT OF A STARTUP WITH THE RESOURCES AND REACH OF AN ESTABLISHED LEADER.**



**Vertiv** - formerly Emerson Network Power - specializes in the areas of data center power, cooling, access and control, monitoring and manageability. We offer the expertise you need, the reliability you demand and the resources that only a global partner can provide.

For us, being an OEM means developing products that are continually **enhanced throughout their lifecycle**. This includes ongoing improvements, new product releases and run-out strategies. OEM product development differs from project business mainly in terms of the maturity (1-2 years) and delivery cycles (7-10 years).

We support you throughout the entire development process and lifecycle of your product. During the design stage, we help you to determine your precise needs, including incorporating the necessary flexibility to allow your system to adapt as your needs change. Depending on your requirements, we can integrate specific components into a new product or completely modify your existing infrastructure. At the same time, we can optimize functional details such as labeling, sizing and even enclosure colors.

Once your system has been carefully specified, built and commissioned, we provide you with comprehensive service support, including training, technical assistance, change management and even customized technical manuals. We also ensure compliance with industry standards and develop personalized logistics concepts to ensure the smooth running and maximum availability of your product throughout its lifecycle.

**Knürr GmbH** is a German system developer for IT infrastructures and is active across Europe, North America, South America, Asia and the Middle East. Knürr started life in 1931, producing sheet steel enclosures and system components for the IT sector. Since then, the company has developed into a leading specialist in racks and integrated solutions. Today, Knürr's extensive portfolio covers:

- POWER DISTRIBUTION**
- MECHANIC**
- COOLING**
- CABLE MANAGEMENT**
- MONITORING**
- INTEGRATED AND CUSTOMIZED SOLUTIONS**

As well as **DATA CENTERS**, we provide support for:

- NETWORK**
- HEALTHCARE**
- TRANSPORTATION**
- INDUSTRY**
- TELECOMMUNICATION**
- AUTOMOTIVE**

## RACKS & INTEGRATED SOLUTIONS

Individual to contained aisle

## POWER DISTRIBUTION UNITS

From strip to modular to adaptive

## REMOTE MANAGEMENT TECHNOLOGY

Access, diagnose and fix any IT asset remotely

## CONTROL ROOM INFRASTRUCTURE

From off-the-shelf items to mission critical

AC POWER  
UPS Systems

**INTEGRATED  
RACK  
SYSTEMS**

## EXPERTISE



- ▶ Over **80+ YEARS** of IT Rack Engineering, Integration and expertise
- ▶ **PIONEER** in custom rack design
- ▶ Specialist rack level heat dissipation solutions
- ▶ UPS **TECHNOLOGY LEADERSHIP** - 40+ years in EMEA region
- ▶ High performance and secure connectivity
- ▶ Ergonomic Control Room planning, design and execution

## INNOVATION



- ▶ **330 PATENTS** across product lines
- ▶ Industry leader in all categories
- ▶ Flexible Product Platforms to cater to a **VARIETY OF NEEDS**
- ▶ **INDUSTRY-LEADING** efficiency levels
- ▶ LIFE Services (remote monitoring & diagnostics)

## QUALITY



- ▶ Red Dot Design Award
- ▶ Multiple Frost & Sullivan awards
- ▶ ISO Certifications, TUV Certifications
- ▶ Energy Star Certified Efficiency
- ▶ UL certifications, CE Certifications
- ▶ RoHS

## MANUFACTURING



In a fast-changing industry that requires customized equipment, Vertiv offers fully integrated systems that meet the needs of its customers across the entire lifecycle. In doing so, it works closely with customers to develop innovative solutions that offer both performance and value. Vertiv provides a full range of high-quality data center solutions, from free cooling chillers to racks and other containment systems to power control and monitoring systems. This ensures that all of your mission-critical needs are met. Vertiv also offers complete integration as well as logistical and support services. Vertiv has proven manufacturing capabilities that it puts to work on behalf of its customers.

## INTEGRATION



The right solution will only work well if it is integrated seamlessly into your current architecture. At Vertiv, we take a holistic approach to customer solutions, offering simplified and standardized designs that can be deployed rapidly while achieving significant cost savings. The modular design of the systems also makes it possible to build IT applications over time, providing customers with the flexibility they need in structuring their technology solutions. This ensures that data centers and other IT applications are based on the customer's current requirements. It also saves both time and money when deploying and expanding systems to meet changing needs.

## PARTNER SUPPORT



The key to the right solution lies not only in the quality of the products, but also in the services that are offered during and after integration. Vertiv offers its customers end-to-end support throughout the entire lifecycle of its products, from design and production to deployment and start-up. This ensures that Vertiv's high-quality products meet its customers' needs precisely. Vertiv also offers training, technical support, change management and even customized manuals, if needed. At Vertiv, customer service doesn't stop when the sale is made – it continues for as long as our customers need us.

### ARNSTORF GERMANY

CUSTOM ENGINEERING  
CUSTOMER EXPERIENCE  
RESEARCH & DEVELOPMENT  
CUSTOM ASSEMBLY

### PILSEN CZECH REPUBLIC

PDU ENGINEERING  
PRODUCT DEVELOPMENT

### SHANNON IRELAND

PARTNER SUPPORT CENTERS

### VOLYNE CZECH REPUBLIC

RACK SERIAL PRODUCTION  
COMPLETE PDU PRODUCTION  
OEM DIRECT SHIPMENT

### USA

END ASSEMBLY HUB  
LOGISTICS

### SOUTH AFRICA

END ASSEMBLY HUB  
LOGISTICS

### CHINA

END ASSEMBLY HUB  
LOGISTICS



# OFFERINGS

1

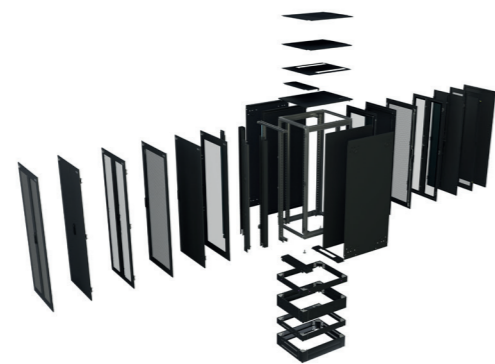
## STANDARD



- ▶ Vast range of standard products
- ▶ "Plug & play" - ready to deploy products
- ▶ Speed to market

2

## CONFIGURED



- ▶ Configuration/modification of standard products
- ▶ Customization to meet customer needs
- ▶ Lego building box approach to product & component integration
- ▶ Project management / execution

3

## ENGINEERED



- ▶ Unique, 100% customized product development based on technology, business objectives and customer site requirements
- ▶ Solutions engineered to customer/ application requirements
- ▶ Expert engineers and design tools for co-development
- ▶ Prototyping & testing

# PROJECT



- ▶ Full data center projects
- ▶ Small computer rooms
- ▶ Core, edge, micro, cloud applications
- ▶ Aisle containment solutions
- ▶ Racks and Accessories
- ▶ Power Distribution and IT Management
- ▶ Control Room Solutions

# OEM



- ▶ **Proven OEM capabilities to speed up time-to-market using a complete portfolio of world-class capabilities and support**
- ▶ **Customization, delivery and full lifecycle management: from design and engineering, through to supply chain management and from integration to logistics and support services.**

# CHANNEL



- ▶ Value based solutions
- ▶ Volume based orders / indirect sales
- ▶ Partner enablement, support & tools
- ▶ Solution portfolio
- ▶ Maximising profit margins for partners

## RACKS & ACCESSORIES

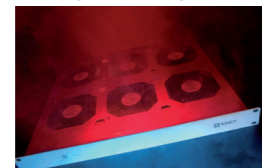
### BASIC NEEDS

- ▶ **PHYSICAL LOAD**
  - Stable and robust construction
  - Versatility for various equipment types
  - Organized compute infrastructure
  - Brand Extension & Aesthetics
- ▶ **POWER DISTRIBUTION**
  - Power management
  - Metering
- ▶ **HEAT DISSIPATION**
  - Rack cooling
  - Aisle containment
- ▶ **CONNECTIVITY & WIRING**
  - Cable management
  - Physical Separation
- ▶ **ACCESS & SECURITY**
  - Physical/Remote Access
  - Alarming
  - Remote Management

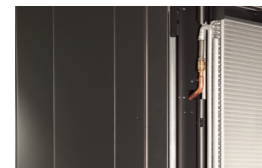
CABLE MANAGEMENT



AIRFLOW MANAGEMENT



COOL DOORS



### ADVANCED NEEDS

- ▶ **AWARENESS**
  - Ambient conditions, Rack Occupancy, Location
- ▶ **CONNECTIVITY & INTERACTION**
  - Connectivity Gateway
  - Near Field Comm., App & Web-based access
- ▶ **INTEGRATION**
  - Pre-defined Rack+PDU, Self contained cooling & power
  - Plug & Play Installation
  - Integration of external products
- ▶ **DESIGN**
  - Modifications
  - Customer specific design
- ▶ **ANALYTICS**
  - Trending/Metering/Aggregation, Change Records
- ▶ **CONTROL**
  - Auto-shut off, Set threshold values, Compliance

## CONTROL ROOM INFRASTRUCTURE

### BASIC NEEDS

- ▶ **PHYSICAL LOAD**
  - Stable and robust construction
  - Versatility for various equipment types
  - Organized compute infrastructure
  - Ergonomically
- ▶ **LIGHTING**
  - Task light, Console light, Room oriented lighting
  - Ambient lighting
- ▶ **COOLING**
  - Computers & Switches
- ▶ **CONNECTIVITY & WIRING**
  - Cable management
  - Physical Separation
- ▶ **DISPLAY**
  - Flat screen Supports
  - Monitor Stacks

ERGONOMIC MULTI USER CONTROL



DISPLAY INTEGRATION



KVM



### ADVANCED NEEDS

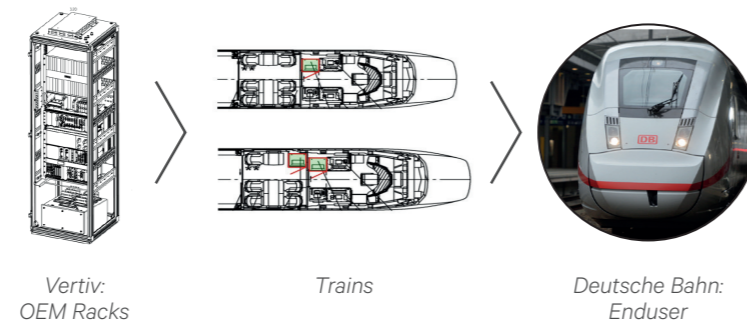
- ▶ **ERGONOMICS**
  - Dynamic, multidimensional and user-specific settings
- ▶ **CONNECTIVITY & INTERACTION**
  - KVM, AV->IP Video signal
  - Operator centric display systems
  - Smart Desk sharing
  - Building Automation
- ▶ **INTEGRATION**
  - Power distribution & interconnection
  - Console pre-cabling for plug & play installation
- ▶ **ILLUMINATION**
  - Tasklight, Signal & Ambient light actively controlled
- ▶ **ACOUSTICS**
  - Active sound-absorbing
  - Sound showers

The increasing demands of modern IT infrastructure require flexible and optimized systems to keep pace with growing data volumes. High-density configurations, downtime, space and security can pose a challenge for your organization. Racks are a cornerstone in this ever-changing environment, ensuring infrastructure reliability. The key to selecting the most appropriate solution is to think about flexibility and adaptability. Your IT needs will continue to evolve and rack solutions need to be able to evolve with them. When evaluating rack systems, you also need to look for solutions that offer the most comprehensive support options and a partner that can support you during the design and testing of a product, as well as once the equipment is installed. We have been designing, developing and delivering data center racks and a wide variety of IT cabinets of all types and sizes for more than 80 years.

## CUSTOMIZATION

Our customized solutions are precisely defined at product level, based on your specifications, and delivered within a defined timeframe. Thanks to our global scale and expertise, we can deliver any system according to tried and tested processes in any country or region. No matter what your needs, from the development of an entirely new product to the complete overhaul of an existing system, we will always find the ideal solution.

All our solutions are carefully tested, documented and certified in accordance with all relevant standards. Our engineering center offers a comprehensive support service, including tools that enable precise customization, e-drawings, 3D rendering and CAD, prototyping, testing and certification. Remote monitoring and on-site cooling rooms enable you to constantly oversee the safe functioning and reliability of your system. We can also assist you with any necessary physical modifications, from customized rack mounting to special color schemes.



## Active monitoring throughout the product life cycle – **it all starts with an idea**

### 1. IDEA

- Draft an Idea in cooperation with the client
- Solutions workshop
- Requirements - clarify and determine
- Joint concept development

### 2. ENGINEERING

- Use existing platforms
- Convert into customer-oriented solution
- Development / proof of concept
- Rapid prototyping
- Testing and certification
- Development of a new series

### 3. IMPLEMENTATION

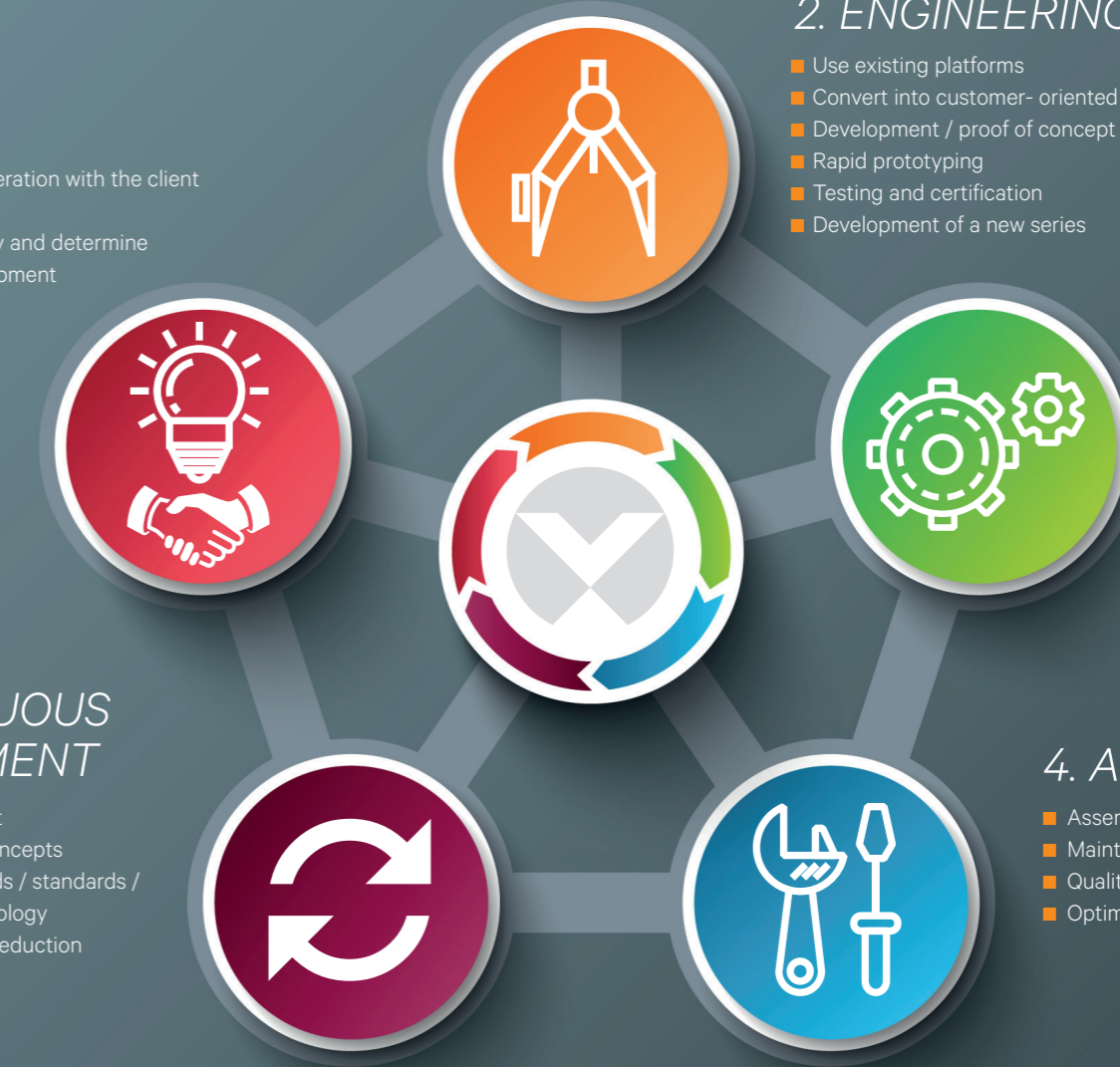
- Global production structure
- Custom support and logistics concept
- Cost-optimized procurement / production
- Centralized operations, local contact person

### 4. APPLICATION

- Assembly, commissioning
- Maintenance, service & support
- Quality management
- Optimizing logistics process

### 5. CONTINUOUS IMPROVEMENT

- Product development
- Improved logistics concepts
- Adapt technical trends / standards / manufacturing technology
- Cost improvement / reduction



# Typical Customer Requests and Realization

» Thanks to our international presence and **high technological standards**, we guarantee worldwide tailor-made solutions of the same quality as that provided in Germany. «

Siegbert Priller, Business Manager OEM and Global Accounts, Racks & Integrated Solutions, EMEA

## Solution

- Knürr® Miracel Racks
- Knürr® DI-Strip PDUs
- Integrated Solutions (individual adaptation of racks & accessories)

## Results

- Rapid provision of individual, made-to-measure server racks and PDUs
- Energy-efficient, scalable solutions with consistently high quality
- Central and local contact partners for branches in Brazil, China, England, Mexico, Austria, South Africa and the USA

## Locations worldwide

- 31 Manufacturing locations
- 13 Development sites
- 43 Sales offices

## Sold Racks

- 3.500

## GLOBAL DYNAMICS FOR IT

IT infrastructure components, efficient coordination and local services on four continents: The specially developed 19" computer cabinets and power distribution units (PDUs) are available upon request in the required quality for IT managers of different branches in Europe, Brazil, China, South Africa and the USA.

## Challenge

### Real-time data and applications for just-in-time delivery

Innovation and rapidity: the requirements for competitive automobile production 4.0. Processing power underlies nearly every process from development to production, logistics and delivery. The communication density in networks is increasing rapidly with M2M communication, the sharp increase in mobile terminals and multi-channel contact with partners, customers, suppliers and fellow employees. Deficiencies and capacity constraints can result in delays. Particular challenges are faced in the field of logistics. Information, data and applications have to be made available everywhere in real time and fulfill the corresponding requirements in order to guarantee just-in-time delivery. The concept of on-site links with dealers and suppliers requires flexible, energy-efficient, fail-safe IT assets both in centralized computing centers and on a decentralized basis for national and international logistics centers and production sites. Vertiv, formerly Emerson Network Power,

supplies and delivers racks and integrated solutions. The specialist in critical infrastructures offering a global presence and flexibility, both of which are necessary for successful cooperation.

## Solution

### Racks, PDUs and accessories to suit all requirements

The subsidiary IT departments now have the possibility of selecting items from their own product catalogue including around 30 cabinet types and corresponding accessories, e.g. wall housing, air conditioning units, cable management and roof ventilator units. The entire product line is created according to the automobile manufacturer's individual specifications and is based on the Knürr® Miracel rack. Thanks to the modular construction, the racks offer flexible possibilities for adapting cable management and the planned air conditioning units to the service and space requirements. For example, the packing density of the server is continually increasing due to the growing number of users and increasing capacities. This needs to be taken into account with regard to the racks as well as air conditioning and cable routes. The power distribution units (PDUs) are also developed to suit specific customer requirements. In this context, different multiple sockets are used in preference to rail-mounted systems, due to the high cost of the latter. The Knürr DI-Strip PDUs are mounted on an increasing number of electronic components in the server rack and are batch produced.

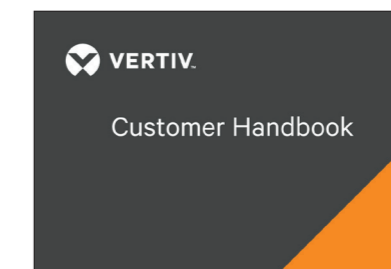
## Adaptable technology – Close up on scalability and energy efficiency

Vertiv deals with the order processes directly from the corporate group as well as requests from general contractors and coordinates the complete logistics process for racks and accessories. The specialist places a great deal of emphasis on energy efficiency for critical infrastructures and ensures that high standards are used in IT equipment worldwide. The service provider is available on site and is able to make the necessary adaptations in the event of amendments or updates in computing centers. Certain new features are currently being introduced in Germany in relation to ventilator technology and regulatory control which will lead to a marked improvement in terms of resource efficiency and the durability of computing centers. Vertiv is involved in the overall manufacturing process for racks as well as supplier management if components are required from external providers. All the racks listed in the product catalog are available in the short term, which means that the required quantity can be obtained simply by email from a local or German branch.

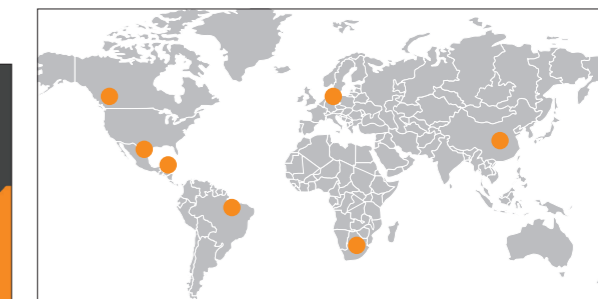
## IT equipment and services on-demand for enhanced innovative capacity

In Germany, the automobile manufacturer is equipping its new logistic centers with individually produced server racks and PDUs. The IT infrastructure is growing continually on an international scale: A new factory in Central America has recently been equipped with around 500 racks and peripheral devices in two computing centers. The automobile manufacturer calls upon on-site support if necessary which Vertiv provides via application experts and partners. Cooperation is expected to develop further on the basis of high-quality, flexible technological and logistic services.

### Customer handbook



### Logistical setup to customer



**Three pre-defined configuration levels**

- **basic**: for non-critical networking applications with demand for uninterrupted power
- **high**: for critical networking and computing applications with increased demand for availability and security
- **top**: for critical computing applications with highest demand for availability and security

Model	Weight	Capacity
01.200.001	21 kg	10
01.200.002	21 kg	10
01.200.003	21 kg	10

**Pre-installed options**

Option number	Weight	Capacity
01.200.001	21 kg	10
01.200.002	21 kg	10
01.200.003	21 kg	10

**Remote Monitoring**

- Conditioned online monitoring on integrated web interface (DIP+LIFE)
- Compatible with TruView™ and other SNMP based software suites

**Remote IT Management**

- Access\* ACS-8000 Serial Console and LCD Local Back Access Consoles on request

**Service**

- Dispatchment, start up and maintenance services available in virtually any location
- Vertiv™LIFE™ Service provides remote diagnostics and preventive monitoring service





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