InfraStruxure

Configure-to-order physical infrastructure for small data centers, server rooms, and edge computing environments



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The InfraStruxure Solution

The design, build, and operation of IT room and data center physical infrastructure systems don't need to be complicated, time-consuming, or fraught with riskier "one off" custom engineering work. InfraStruxure[™] is a pre-engineered, yet highly configurable, scalable architecture encompassing racks, power, cooling, and management systems. Compared to traditional custom systems, InfraStruxure offers simplicity, greater predictability, and fast deployment, while efficiently ensuring your IT is secure and available in the years to come. InfraStruxure is ideal for both new builds and retrofits.

Design validation offers speed and peace of mind

Orderable solutions are quickly generated in a powerful rules-based tool called InfraStruxure Designer. Unique in the industry, the Designer tool empowers Schneider Electric engineers and certified partners to rapidly design and quote validated solutions. Designer automates many of the complex design calculations. This ensures the required capacity and redundancy of power and cooling resources, as well as all of the parts and interfaces, are accounted for, sized properly, and work together. Because components are designed to fit and work together, the build phase goes from being a construction project to being more of an assembly project. InfraStruxure Designer's validation of user-configured solutions provides peace of mind, reduces equipment selection errors, and speeds up the process of designing and ordering. Designing, building, or retrofitting an IT room or data center has never been so efficient or simple.

Reduces human error in every phase of the data center life cycle

Plan:

Design Build What am Who will I going to manage my construction? improve/ build? How do I operate at plan optimum What are Oper evels? my best options? Where am I now? Assess

Use Reference Designs and TradeOff Tools to easily analyze complex options and trade-offs in minutes.

Design:

Quickly and easily create sound designs that are validated and orderable as a single solution.

Build:

Designer ensures correct number, size, and type of parts are included. All solution parts ship together as single order.

Components are engineered for quick and easy assembly.

Operate:

Components are designed for ease of operation and speed of maintenance. Effective planning, design, and build phases help ensure reliable and efficient operation for years to come.

Assess:

Integrated DCIM solution makes it easy to monitor capacities, redundancies, efficiency, and other key metrics.











InfraStruxure solution: Surmounting today's challenges

Speed, simplicity, efficiency, and reliability have always been valued by business. But today's technology trends and business challenges make embracing these values more imperative than ever. Traditional physical infrastructure systems, however, have been characterized as being slow to source and deploy, complex, heavy, and inflexible. The Schneider Electric[™] InfraStruxure solution dramatically changes this paradigm supporting dynamic IT in a way that keeps it efficiently aligned to changing business needs.

Starting a new or retrofit project?

Plan and design an orderable solution faster, simpler, and with less error using the InfraStructure Designer tool.

Converged IT?

Enable the fast deployment speeds made possible by Converged IT by selecting a pre-engineered and configured InfraStruxure solution for the market's top Converged IT offers.

Expanding capacity?

Scale faster by "stepping and repeating" using InfraStruxure's pre-engineered, highly modular solutions.

Outsourcing or consolidating?

Protect and secure your remaining equipment's vital connection to the cloud or colocation data center with InfraStruxure's remotely manageable power solutions. Use the StruxureWare DCIM suite to easily monitor and manage all of your assets across all locations from one dashboard.

Highly virtualized?

The Schneider Electric StruxureWare[™] DCIM suite interacts with the VM manager to ensure it is aware of power and cooling status before creating or moving VMs.

Computing "on the edge" or part of the "Internet of Things"?

InfraStruxure is the ideal physical infrastructure solution for reliably powering, cooling, securing, and managing the IT gear in remote offices and branch offices, as well as other gear on the edge of wide area networks. InfraStruxure maintains connectivity to help ensure the flow of data to and from the outside world. Its standardization, rules-based design, and remote monitoring capabilities minimize maintenance needs.



InfraStruxure components: Rack systems

NetShelter[™] enclosures and open frame racks integrate seamlessly with all InfraStruxure components. Their design simplifies shipping, speeds installation, facilitates the installation of IT, and maximizes airflow.



NetShelter SX: The world's most versatile rack for demanding IT environments

NetShelter SX rack enclosures offer the most standard features on the market today. Influenced by 10 years of customer feedback, Schneider Electric specifically engineered the nextgeneration NetShelter SX enclosure to handle today's power-hungry, high-density server and networking applications.

Features

- 1. Cable access roof
- 2. Integrated baying brackets
- 3. Preinstalled leveling feet and castors
- 4. Toolless, Zero-U accessory channel
- 5. Easily adjustable vertical mounting rails
- 6. Half-height side panel



NetShelter CX: Soundproof "server room in a box" for nondedicated spaces

Designed for branch offices, small offices, and any non-IT space where there isn't the room, time, or budget to build a dedicated IT zone — the NetShelter CX server enclosure is an ultra-portable, secure, economic, plug-and-play IT solution. You simply roll it in to the open office, put your equipment inside, plug it in, and close the doors.

Features

- 1. Cable management
- 2. Soundproof wooden structure
- 3. Integrated fan module
- 4. Zero-U rack PDU
- 5. Cable egress
- 6. Castors

Rack systems

Rack power distribution

Schneider Electric rack power distribution units (PDUs) have sufficient power and receptacle outputs to meet high kW loads in a minimal amount of space.

- Basic Rack PDU Entry-level power distributor for rack-mount equipment
- Metered Rack PDU Advanced power distribution provides real-time remote monitoring of connected loads
- Switched Rack PDU Premium power distribution allows remote control of individual outlets and monitoring of aggregate current consumption
- · Metered-by-outlet Provides real-time remote monitoring of each outlet
- Rack Automatic Transfer Switch Provides redundant power to single-corded equipment



Rack airflow management

Accessories to prevent air recirculation and eliminate bypass air, to ultimately ensure efficient airflow.

EcoAisle — an intelligent thermal containment solution to increase cooling system efficiency while protecting critical IT equipment and personnel.

- Active flow control
- Flexibility in design for hot or cold aisle
- · Fire safe system
- Build value with LED lighting kit
- Safe sliding doors
- Air return system



Aisle containment



Rack containment



Colored locking IEC cords

Locking IEC power cords in a variety of colors provides an easy identification feature for rack power distribution

Cable management



Vertical cable management



Horizontal cable management



Overhead cable trough and partitions

InfraStruxure components: UPS and power distribution

Schneider Electric is a global leader in battery backup and power distribution systems that, together, ensure safe, clean, and reliable power regardless of the state of the utility grid or power supply.

In serving this critical function, these modular products are well optimized to integrate and support the larger InfraStruxure solution. All cabling and interfaces are correctly accounted for, measured, and included to connect the UPS system with PDUs. Highly modular in design and optimized for very high efficiency and a small footprint, space for IT and telecom equipment is maximized. Built-in intelligent communications between the UPSs, PDUs, and battery systems reduce operator errors and ensure the system status is understood. Auto-discoverable by the Schneider Electric StruxureWare for Data Centers DCIM suite, the UPS and Power Distribution components can be easily monitored and managed from any central location.

Single-phase UPS



Smart-UPS[™] 0.75 – 5 kVA



Smart-UPS On-line 1– 20 kVA



Symmetra[™] 2 – 16 kVA

Three-phase UPS



Smart-UPS VT IEC: 10 – 40 kVA ANSI: 10 – 30 kVA



Symmetra PX IEC: 16 – 500 kVA ANSI: 10 – 500 kVA



Galaxy[™] VM IEC: 160/200 kVA ANSI: 180/225 kVA

Power Distribution



IEC: 138 kW PDU, 277 kW PDU

ANSI: 72 kW 5U PDU, 144 kW PDU, 266 kW PDU, 277 kW PDU

InfraStruxure components: UPS and power distribution

Single-phase UPS

The single-phase and three-phase UPS range from Schneider Electric offers state-of-art technology that increases availability, flexibility, and performance.

Smart-UPS

0.75 – 5 kVA, advanced line interactive power protection for servers and network equipment



The world's most popular network and server UPS, this award-winning Smart-UPS protects critical data by supplying reliable, network-grade power in either traditional tower or rack optimized convertible form factor. Included PowerChute[™] management software provides IT administrators with the comfort of safe system shutdown and advanced management.

- Alpha numeric LCD display
- High-efficiency green mode
- Slim 2U rack/tower convertible
- Smart external battery connector
- Emergency power off
- Predictive battery replacement

1 – 20 kVA, rack and tower convertible, double-conversion, on-line UPS with advanced management features



Smart-UPS On-line provides high-density, double-conversion online power protection for servers, voice/data networks, medical labs, and light industrial applications.

- High power factor
- High-efficiency "Green Mode"
- Flash upgradable firmware
- Enhanced intelligent battery management
- Embedded NMC with environmental monitoring
- Up to unity power factor (pF)

Symmetra

2 - 16 kVA, rack and tower convertible, scalable power and runtime



High-performance with built-in network manageability, the online Symmetra is the choice to protect high-performance IT and telecom equipment in business-critical server and network rooms.

- Configurable N+1 redundancy
- Modular design
- Network manageability
- Removable input/output wiring tray
- Field-replaceable distribution panel

Smart-UPS On-line

InfraStruxure components: UPS and power distribution

Three-phase UPS

Smart-UPS VT

10 - 40 kVA (10 - 30 kVA for ANSI), high-density, double-conversion online power protection with scalable runtime



Compact three-phase power protection with excellent efficiency and scalable runtime for small data center and other business critical applications

- Small footprint
- Tower and rack mount
- Modular batteries
- Parallelable up to 3 units for capacity and redundancy
- Scalable architecture
- Step load voltage stabilization
- Start-up service included

Symmetra PX

16 - 500 kW (10 - 500 kW for ANSI), modular, scalable, high performance



Industry-leading efficiency, high-performance, right-sized, modular, hotscalable, three-phase power protection with ultra-high availability for any size data center and mission critical environment

- Redundant power and runtime protection in a single unit
- · Fault-tolerant (N+1) design for highest level of availability
- · Corrected unity power factor using double conversion technology
- Modular and scalable without forced shutdowns
- Space-saving high-density design
- Rack-based for agility and aesthetics

Galaxy

10 - 1000 kVA (10 - 225 kVA for ANSI), highly efficient, easy to deploy, robust protection for all critical applications



Highly efficient, easy to deploy, three-phase power protection that seamlessly integrates into the electrical, physical, and monitoring environments of customers operating medium data center or industrial and facilities applications.

- Optimized footprint
- Parallel capacity capable
- Automatic internal bypass
- Built in Web/SNMP management
- Flexible modular and traditional battery options available

Modular Power Distribution

Up to 277 kVA, scalable, agile, safe, and efficient for IT equipment in any size data center



Modular Power Distribution mitigates the need to predict the future requirements and configurations of your data center. This visionary power distribution system matches the needs of your data center today and enables rapid expansion or reconfiguration in the future

- Minimal white space footprint
- Truly safe with scalable modules
- Toolless expansion
- Easy integration with InfraStruxure solutions
- Preconfigured breakers and cord sets for ease of deployment
- Fully compliant, global offering
- IEC: 138 kW PDU, 277 kW PDU
 ANSI: 72 kW 5U PDU, 144 kW PDU, 266 kW PDU, 277 kW PDU



InfraStruxure components: Cooling and air distribution

Schneider Electric offers a comprehensive portfolio of high-efficiency cooling solutions for virtually any need in critical IT environments, from network closets and server rooms to data centers of all sizes. Our efficient, flexible, and reliable solutions are easy to install and service.

The InfraStruxure Solution offers a choice of either close-coupled InRow[™] cooling systems ideal for higher density equipment or uncontained spaces, or room-based perimeter cooling systems. Our Eco-Aisle air containment system separates hot and cold air streams to yield the highest efficiency. InfraStruxure Designer tool ensures the right number of cooling units and all of the parts and subsystems are accounted for in the orderable solution given the heat load, density, and redundancy levels you specify.

Close-coupled, InRow



- InRow Chilled Water (up to 70 kW), InRow DX (up to 37 kW)
- Minimizes air mixing greatly improving predictability
- Increases efficiency using variable speed fans and shortening air path
- Quick to install deploys like an IT rack
- Active response controls that vary cooling capacity to match heat load

Room-based, perimeter



Air Distribution



- Uniflair LE perimeter cooling units (20 kW to 180 kW)
- Multiple heat rejection configurations: chilled water, air-cooled, water-cooled, glycol-cooled, twin-cooled, and economizer systems
- Multiple air flow configurations: upflow and downflow with options for top, bottom, rear, or front air return.
- High efficiency through use of tandem scroll compressors, economizer modes, and electronic expansion valves
- · Thermal containment solutions that increase cooling efficiency
- Room air ventilation (up to 3.5 kW) for wiring closets
- · Rack-air distribution (up to 16.5 kW) for high density and low pressure areas
- · Air distribution accessories to optimize performance and functionality

InfraStruxure components: Security and environmental management

- Surveillance: Leverage NetBotz[™], Pelco[™] by Schneider Electric IP, and CCTV camera technology to monitor IT assets remotely
- Management capabilities: Alarming allows alerts, multiple notification methods, scheduling, graph and video attachments, and escalation
- StruxureWare: Available for centralized monitoring of multiple appliances
- Environmental monitoring: Wide range of sensor support to monitor the health of your IT assets — temperature, humidity, leak, door, smoke, vibration, dew point, airflow, dry contact, 4 – 20 mA and 0 – 5 V
- Access control: Control and manage access privileges for NetShelter SX
 enclosures over the network

Data Center Infrastructure Management (DCIM)

StruxureWare for Data Centers (DCIM) is a management and monitoring software suite designed to collect and manage data about a data center's assets, resource use, and operation status throughout the data center life cycle. This information is then distributed, integrated, and applied in ways that help managers optimize the data center's power usage effectiveness (PUE) and meet IT, business, and service-oriented goals. From IT assets to racks, rows, rooms, and buildings, StruxureWare for Data Centers delivers the right information to the right users at the right time.

- Adjust the facility's cooling needs when the IT loads change for optimal resource use.
- Optimize existing data center physical infrastructure to reduce OpEx and delay future CapEx.
- Dynamic virtual machine management maximizes application and system availability.
- Provide graphical representation of systems for proactive monitoring and management.
- · Instantly calculate recommended IT installation locations for greater agility.
- Support your business process for space and cage management for multitenant facilities.





NetBotz sensors





NetBotz rack access

High-level security option for NetShelter SX

- NetBotz rack access PX HID system AP9361
- NetBotz rack access pod 170 NBPD0171





AP9361

NBPD0171



InfraStruxure components: Services

One company to assess, plan, design, manufacture/build, and operate your data center ... to improve performance, cost, and speed.

Key figures

- 170-year history of service culture
- 1,200 Field Service Engineers
- 170 service centers in 100 countries
- 900 service provider partners worldwide
- 6 regional service centers
- 100M+ combined man-hours of field service experience

Installation services

Schneider Electric certified installation and commissioning of your solution ensures your equipment is properly and safely configured for optimal performance and reliability.

Maintenance services

Schneider Electric offers a comprehensive service portfolio designed to ensure your mission-critical applications receive the proper maintenance they need to operate at optimal levels at all times.

Maintenance services include Preventive Maintenance, Service Plans, and response time upgrades where available.

Battery services

Battery service and replacement are vital components of any UPS maintenance program since one failed battery can compromise an entire system. Whether you need to replace one or all of your batteries, we ensure that they are a reliable back up.

Remote monitoring service

Remote monitoring service is a 24/7 monitoring services that acts as a primary and secondary support function. Trained technicians will monitor the health status of the physical infrastructure to help diagnose, notify, and resolve problems before they become critical.

- · Single point of contact
- Turnkey solution provider
- Competitive delivery \$\$/kW
- Improved speed-to-market
- Able to design, estimate, construct, and manage turnkey data center projects
- Fully licensed engineering and construction
- Fixed price, GMP, owner's agent, CM flexible delivery methods



Maintenance Management



Emergency Preparation



Facility Optimization



Reporting and Analysis



InfraStruxure design tools: White papers and TradeOff Tools



With hundreds of thousands of downloads each year, fact-based, vendor-neutral white papers by Schneider Electric are a highly respected information source.

whitepapers.apc.com



TradeOff[™] Tools are easy-to-use planning tools that model complex interactions of systems based on data and science. The user makes simple inputs on one side of a single screen to instantly generate outputs on the other, allowing for quick and easy trade-off analysis and "what if" scenarios.

tools.apc.com

Reference designs

Reference designs are documented and validated conceptual plans covering the electrical, mechanical, and IT spaces. Acting as a common platform and language for discussion, reference designs are a great starting point for any new or retrofit project.

Reference designs make it easy to rapidly compare and contrast design alternatives. Each design includes:

- Design summary with standardized performance specs
- Electrical one lines (CAD and PDF)
- Piping diagrams (CAD and PDF)
- Dimensioned floor layouts (CAD and PDF)
- Equipment list







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Designer tool

Unparalleled software tool that empowers Schneider Electric engineers and partners to rapidly design and quote efficient, reliable, and validated solutions.

- Supports new or existing environments
- Easily configure and design an orderable solution
- Provides expert guidance based on best practices
- Solution is validated to work before ordering
- Ensures all parts, pieces, and interfaces are accounted for
- Simplifies and accelerates plan, design, and build phases



To benefit from the Designer tool, contact your local Schneider Electric representative or certified partner.



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