



Vertiv™ SmartRow™ 2

Intelligent, integrated
converged infrastructure solution



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The Vertiv™ SmartRow™ 2 is a Pre-Engineered Edge Data Center complete with power, cooling, fire suppression and all the critical pieces required to ensure data center availability.



80%
Faster deployment*



30%
Lower deployment cost*



20%
Lower carbon emissions*

*For illustration purposes only. Figures are estimations based upon Vertiv's internal engineering studies and analysis. Actual deployment times, costs, and savings may vary depending upon scope, specifications, geographic locations, etc.

Centralized infrastructure management

Enables central management of all intelligent equipment and IT devices within the system. Reading & data are consolidated into single platform.

Racks with pre-integrated containment

EIA310 19-inch rack system coupled with tempered glass door enables fully enclosed system design. Allows focused cooling in IT environment.

Precision cooling

Row-based solution designed to provide maximum cooling in a compact footprint. Cooling modulation enables cooling on demand and quickly adapts to load fluctuation.

9-inch touchscreen panel

User-friendly display enables easy access to system running status & condition.

Intelligent rPDU

Power management & distribution

Pre-assembled & pre-integrated switchboard with surge protection.

Power protection

On-line double conversion UPS with unity power factor ensures clean power feeding to critical IT equipment.

Optional Fire Suppression Cabinet

Favorable implementation costs compared to using a conventional data center approach, due to savings from integrated fire suppression.

Electronic lock

Enables rack level security and access log is recorded intelligently. Supports local & remote door authorization.

Emergency ventilation

Activates automatically in the event of overheating or cooling unit failure.

Environmental sensor

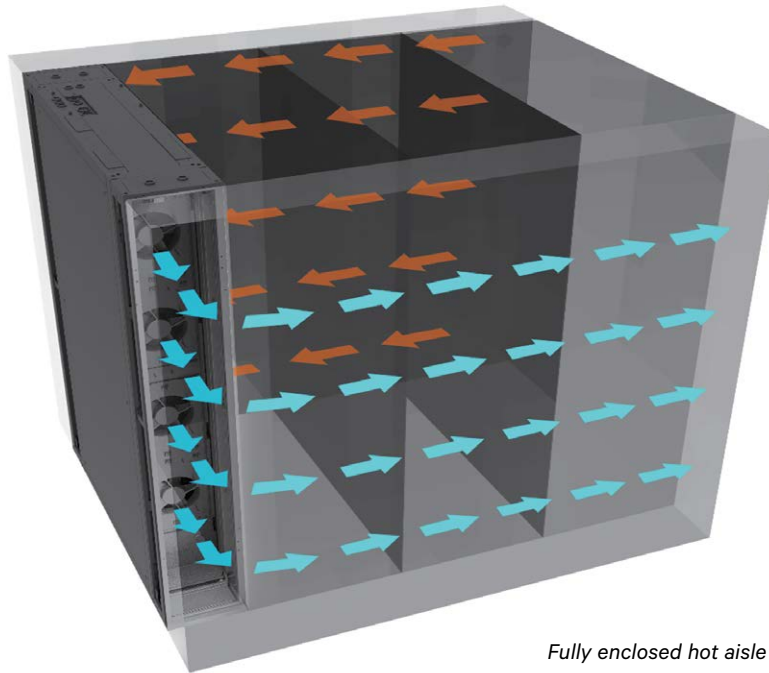
Report critical environmental information and alarm notification. Assist IT equipment is kept in desired condition.

● Power management & protection

● Thermal management

● Management & monitoring

Top benefits of the Vertiv™ SmartRow™ 2



Fully enclosed hot aisle & cold aisle containment

Faster installation

- Vertiv™ SmartRow™ 2 is a deployment-ready solution that can be installed in about 3 - 5 days.

Reduce carbon footprint and save energy

- Hot and cold aisle containment reduces cooling energy consumed by approximately 30% compared to a typical space with perimeter cooling.
- Cooling units include capacity modulation to reduce compressor cycles and component wear and tear.
- Multiple temperature and humidity measurement points are monitored to assist precise control over the environment.

Lower deployment costs

- The solution is Engineered by Vertiv to eliminate most of the planning and design that normally comes with a new Edge Data Center deployment.

Full redundancy capability helps prevent downtime

- Redundant power and cooling can optionally be built into each system to add another layer of protection from downtime.

Centralized IT and infrastructure management system

- Enable access to server's service processor (IPMI 2.0), query sensor information, execute remote plan, and conditional power cycle.

- Allows serial console management via serial connection.
- Local (control panel) and remote system health check via IP-based webpage.
- Alarm notifications via email or SMS with downloadable activity logs and alarm history.
- Integrated fire suppression System.
- Easily deploy and effectively manage an integrated IT infrastructure without being limited by building systems such as fire suppression and cooling.
- *Saves up to 66% over room-based systems by avoiding room upgrades.

Intelligent safety & security

- Systems include intelligent locks, cameras, and optional surveillance.
- Enable remote door access via IP-based webpage, local access with proximity card.

Maximize existing space with a room neutral design

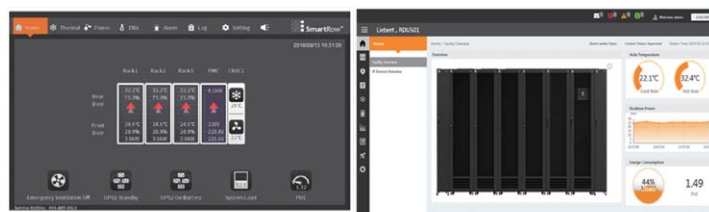
- In-Row power and cooling systems enable more compute capacity in a smaller footprint.
- System can be placed virtually anywhere – no raised floor is required.

Optional fire suppression system

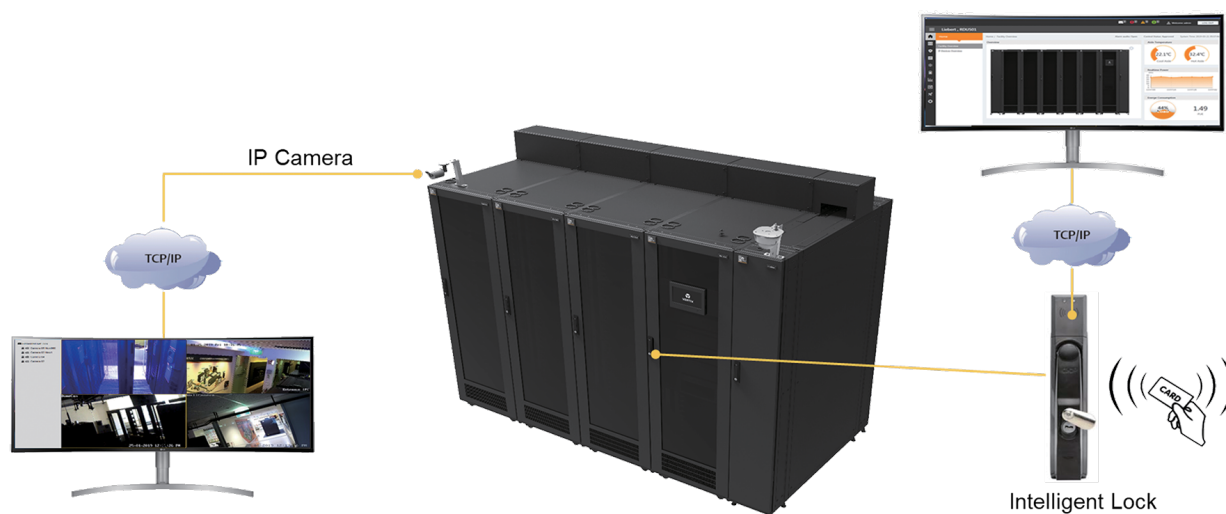
- By consolidating all your computer and air conditioning equipment within a single enclosure, you've created an ideal computing environment. This setup allows you to efficiently control the air conditioning within a smaller, more contained space, significantly reducing both cooling and fire suppression costs compared to managing an entire room.
- Inert gas systems are slightly more expensive than chemical agents, but they offer greater flexibility when it comes to maintaining room integrity. This can result in significant savings for the customer—potentially thousands of dollars—in avoiding the need for costly patching and sealing of the protected space. Additionally, inert gas is one of the most environmentally friendly options available on the market.



Management Appliance



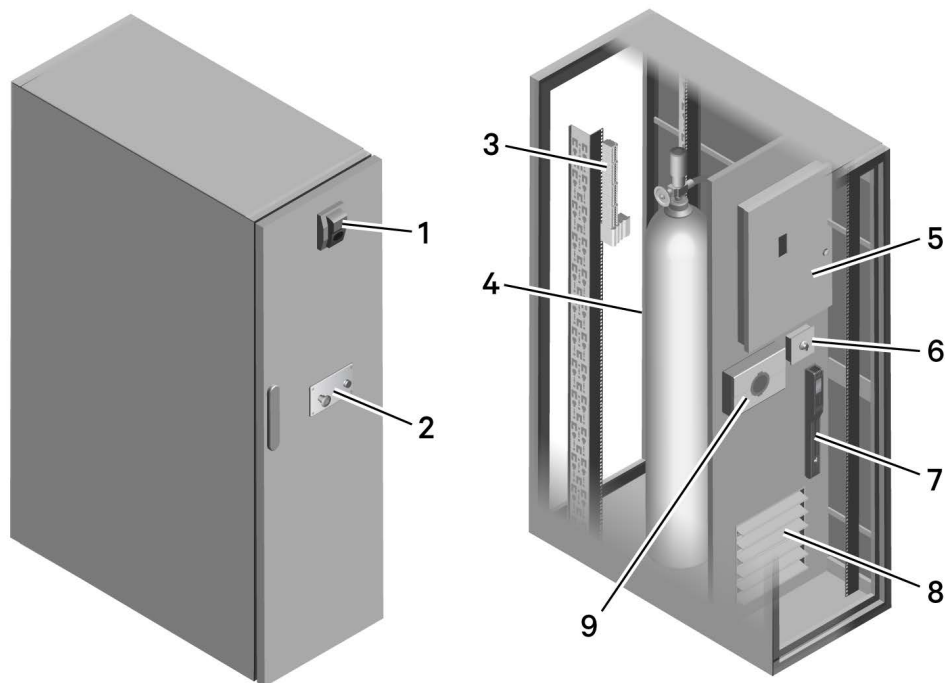
HMI & Web Interface



Vertiv™ SmartRow™ 2

Optional Fire Suppression System

- **Consolidated Equipment:**
Enables efficient cooling within a compact enclosure.
- **Cost-Effective:** Reduces both cooling and fire suppression costs compared to entire-room systems.
- **Optimal Computing Environment:**
Creates a perfect setting for your IT infrastructure in a single enclosure.
- **Streamlined Management:** Easily manage IT infrastructure without being limited by building system constraints.
- **Substantial Savings:** Saves up to 66% compared to room-based systems by eliminating the need for room upgrades.
- **Efficient Deployment:** Combines fire suppression and cooling for an optimized solution.



Inert gas systems:

- **Flexible & Cost-Efficient:** Slightly higher initial cost but offers significant flexibility, preserving room integrity.
- **Saves Money:** Avoids expensive room sealing and patching, leading to significant savings.
- **Environmentally Friendly:** A more eco-conscious choice compared to other fire suppression methods.

Internal and external view of fire suppression cabinets descriptions

Number	Description	Function
1	Horn and Strobe Light	Activates when the system detects smoke
2	Manual Release and Abort Button	Manually discharge the fire suppression agent into the system, or prevent the fire suppression system from dumping due to a false alarm
3	Terminal Block	Connects power, fire alarms and the EPO bypass switch (if desired)
4	Inert Gas Tank	Reduces the oxygen concentration inside the protected room until it reaches a level where combustion is no longer supported. The gas tank uses IG-55, a blend of environmentally inert, all-natural Argon and Nitrogen gases. The fire suppression agent enters the room within 60 seconds at a steady flow rate, preventing destructive turbulence from occurring
5	Fire Control Panel	A microprocessor-based, compact, conventional fire alarm and fire suppression releasing control panel
6	EPO Bypass Switch	This two-hour switch prevents activation of the UPS EPO and is used during maintenance. It is provided to minimize the chance of an unnecessary activation of the EPO system while inspecting the clean agent fire suppression system
7	PSI5, 1500 VA UPS	PSI5, 1500 VA UPS* *The PSI5 UPS is dedicated to powering the fan when UPS output may be unavailable
8	Louvered 3 Speed Fan	The fan mixes air for the fire suppression system at Release. Lowest speed is for 2 to 4 rack systems. Medium speed is for 5 rack systems
9	Very Early Smoke Detection Apparatus (VESDA) Unit	Provides the fastest detection of a combustion event as well as sensing an entire row length with a single apparatus. For more information, refer to the Xtralis VESDA VLF-500 Product Guide (P/N 7209_16) provided with your system

Edge deployment challenges

Adding compute capacity at the Edge can be a long and complicated process for IT and Facility leaders.

Time consuming process

The process from planning to commissioning takes 6 – 12 months on average and is difficult to predict with confidence.

Hidden costs

Over half the cost of a deployment goes to the process, including planning, consulting, site prep, etc.

Cooling capacity

Computing generates too much heat for the existing infrastructure, requiring additional cooling capacity.

Power upgrades

New compute technologies may require more power than the current facility can handle.

Optional Fire Suppression

No fire suppression system upgrades to the room are needed since fire suppression is integrated into the solution.

Management

IT distributed across multiple sites and from different vendors is very challenging for IT teams to manage efficiently.

Sustainability

With energy costs and demand both rising at the Edge, the pressure is on to find more sustainable technologies.



Did you know that 60% of network outages are related to power or cooling?



How Vertiv™ SmartRow™ simplifies deployment

Pre-engineered systems simplify edge deployments with a repeatable and scalable solution, enabling business agility for future growth.



Accelerate deployments

Accelerate the deployment process by reducing planning, build, and overall deployment time.



Reduce costs

Reduce costs associated with planning, construction and renovation and make the budget for the project more predictable.



Integrated cooling

Many solutions offer integrated cooling and containment to maximize cooling capacity and energy efficiency in the space.



Pre-Integrated power distribution

Solutions can include Busway, UPS battery backup, surge protection, and pre-integrated power distribution to IT rack enclosures to simplify installation and commissioning.



Integrated fire suppression

Easily deploy and effectively manage an integrated IT infrastructure without being limited by building systems such as fire suppression and cooling, and save up to 66% over room-based systems by avoiding room upgrades.



Remote management

Standardized, single-vendor solutions include remote management options to simplify environments.



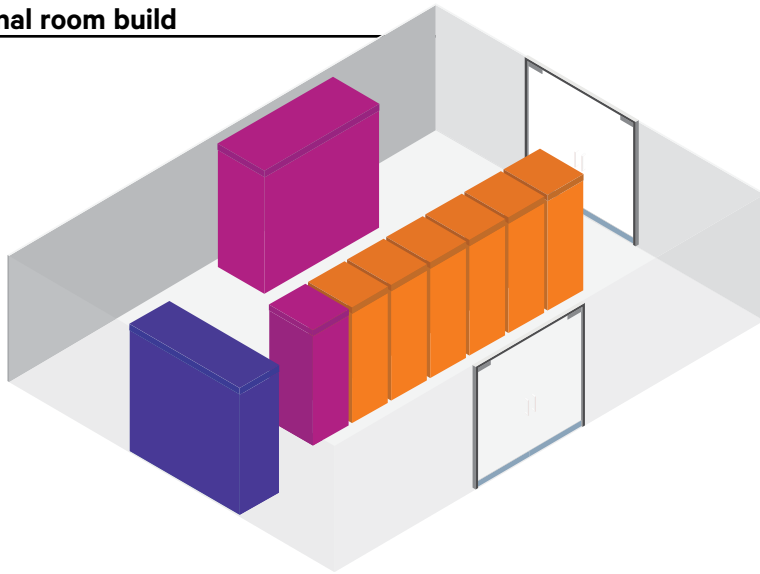
Contained in-row cooling

Contained systems with dedicated cooling are proven to reduce cooling energy use and carbon emissions by as much as 30%.

Vertiv is a global leader in data center power and cooling solutions

It is time to rethink the traditional process

Traditional room build



Racks



Power



Cooling

Complex process

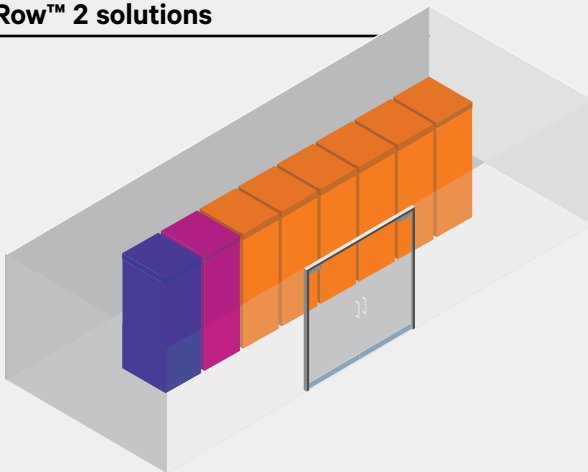
Months of planning, design, procurement, legal permitting, and consulting go into creating custom designs for a room build or upgrade. It takes months for each deployment, and each room is typically repeated all over again for every location.

Planning and labor consume

50%

of the deployment cost

Vertiv™ SmartRow™ 2 solutions



Racks



Power



Cooling



Fire
Suppression

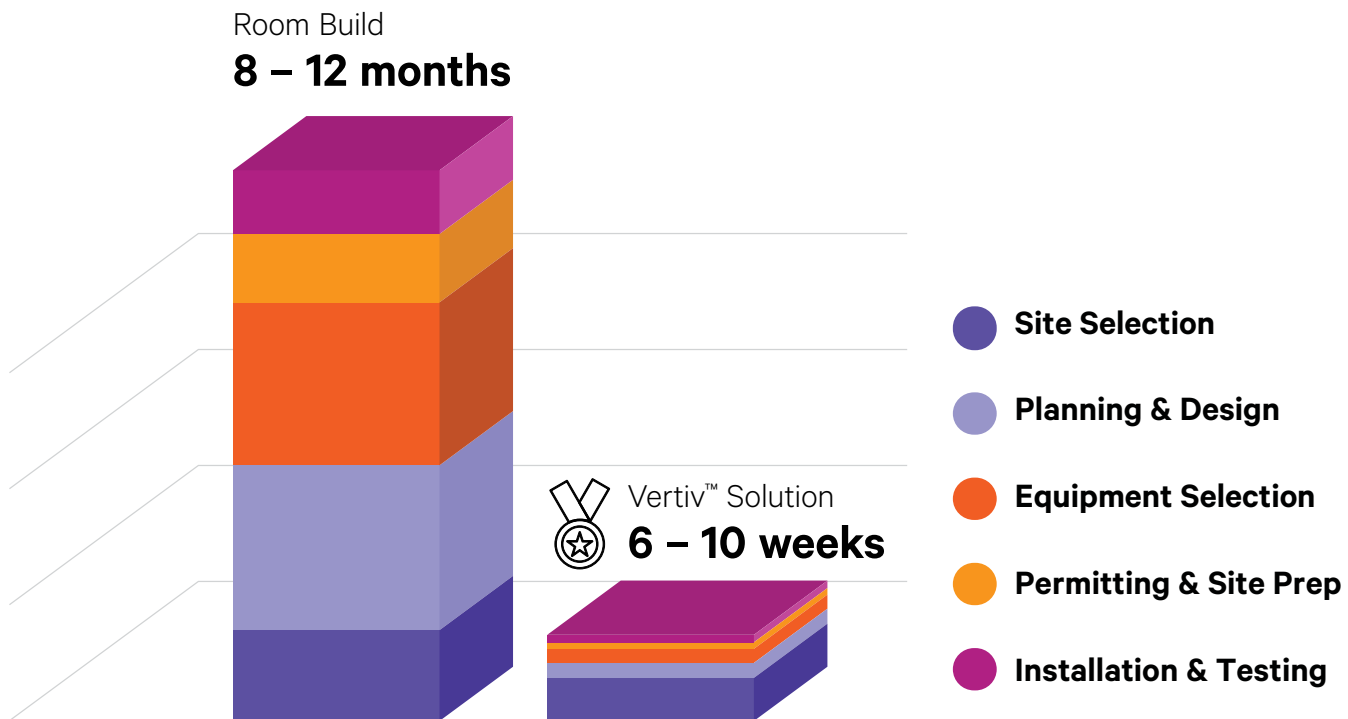
What's included

- Rack enclosures
- In-row cooling
- Hot & cold aisle containment
- Power distribution & UPS
- Power and cooling Redundancy options
- Optional Fire Suppression System
- Remote management
- Physical security
- Fire suppression

Pre-Engineered Systems eliminate most of the design and planning that goes into Edge deployments.

Vertiv™ SmartRow™ 2 vs Room Build

The Vertiv™ SmartRow™ 2 offers a simplified approach to deploying an Edge Data Center when compared to designing and building or retrofitting a room.



80% Faster time to deployment*



30% Initial cost savings per deployment*



20% Reduction in carbon emissions*

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Flexible system configurations

Scalable design architecture allows the solution to be tailored to your needs while remaining room neutral so that you can place the system virtually anywhere.

- IRC: In-Row Cooling
- PMC: Power Management Cabinet



IRC

PMC

IT Rack

Vertiv™ SmartRow™ 2 (1+3)



Vertiv™ SmartRow™ 2
(1+3)



Vertiv™ SmartRow™ 2
(1+4)



Vertiv™ SmartRow™ 2
(1+5)



Vertiv™ SmartRow™ 2 (1+6)



Vertiv™ SmartRow™ 2 (2+6)

*Vertiv™ SmartRow™ 2 (A+B), Where A denotes the Number of Cooling (IRC) and B denotes Number of Racks (IT + Infrastructure (PMC))

High efficiency thermal management

Each system includes hot aisle and cold aisle containment with in-row cooling and airflow management to maximize cooling efficiency and reduce energy costs.

Intelligent monitoring

Each enclosure includes 6 sensors in each enclosure to ensure precise control over temperature and humidity.

Capacity modulation

Cooling units include capacity modulation to minimize wear and tear on the compressor and extend the useful life of each cooling unit.

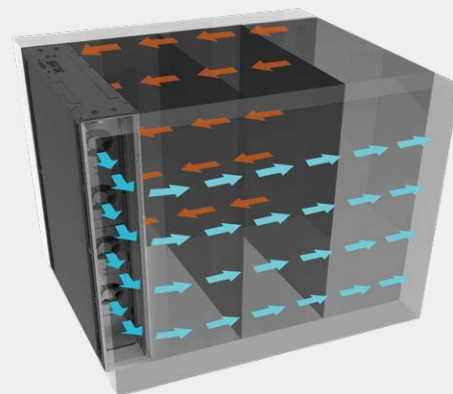
Emergency ventilation

Emergency fans in each rack automatically turn on in emergency situations to move heat out of the system, enabling a controlled system shutdown.



Reduce Cooling Costs & CO2 Emissions by 20%

In a traditional room build, precision cooling units are required to cool an entire room. The Vertiv™ SmartRow™ 2 is a fully contained system that includes hot aisle and cold aisle containment. This is an industry best practice proven to significantly increase cooling efficiency, which reduces the energy required to cool the system by 30%, and reduces total carbon emissions by an estimated 20%.*

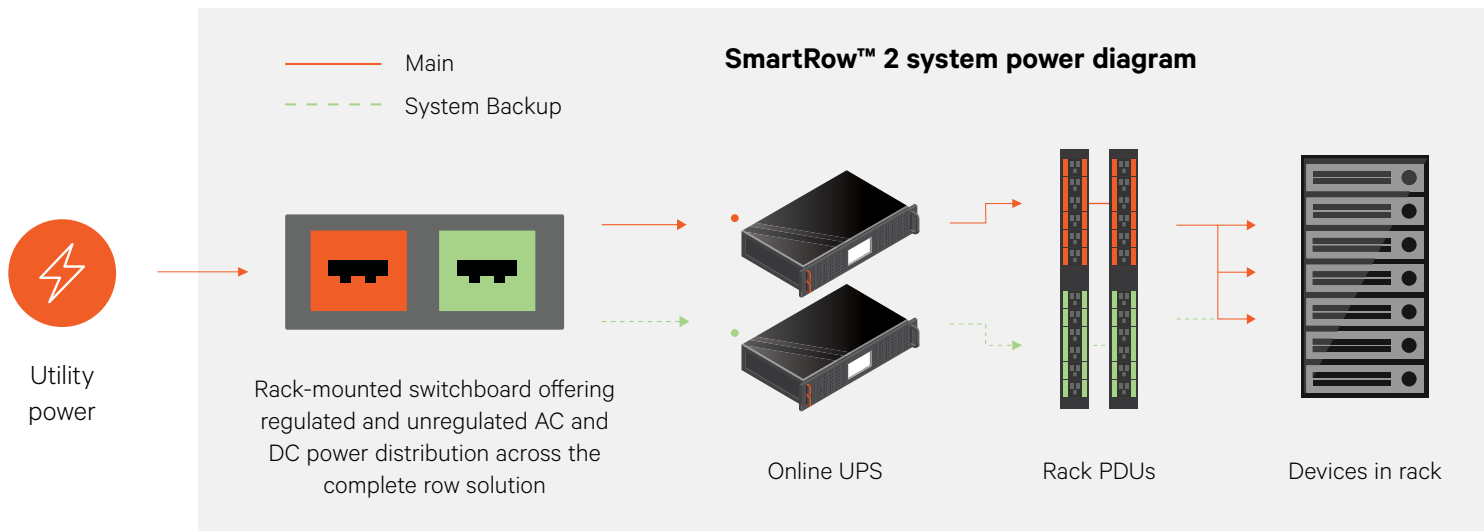


Fully Enclosed Hot Aisle & Cold Aisle Containment

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Complete power management

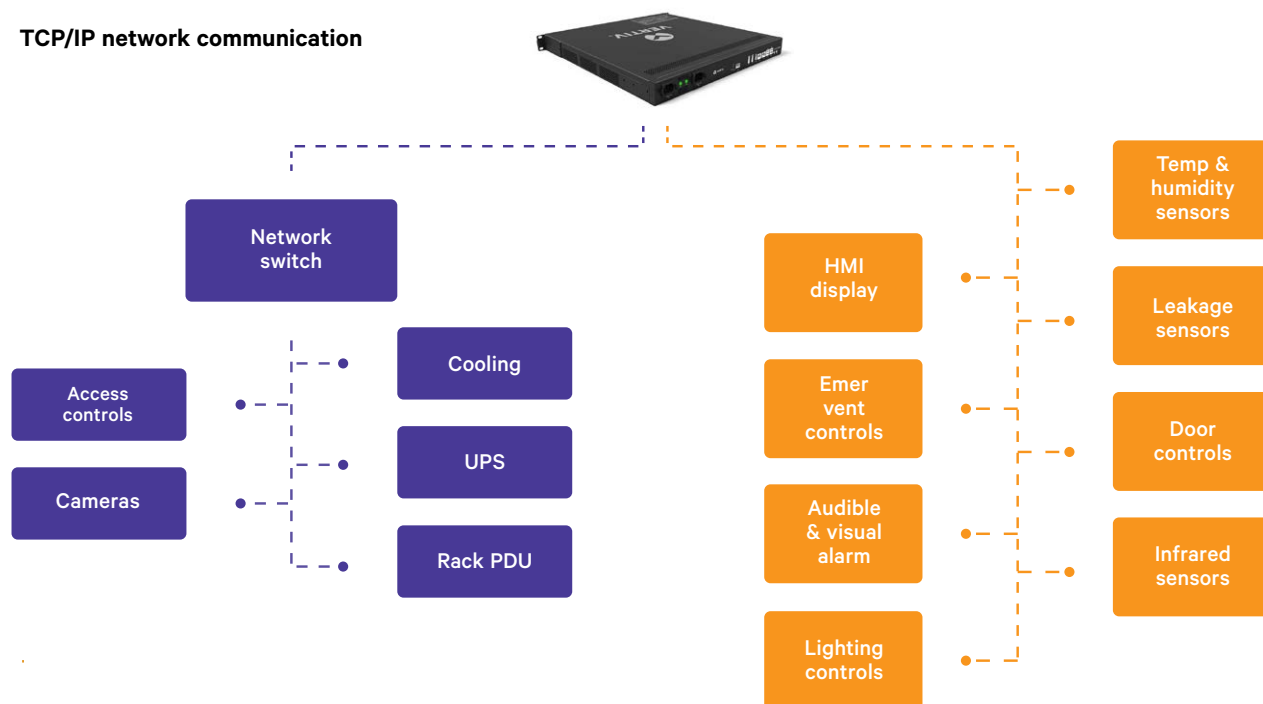
Each system includes pre-integrated power management complete with online double-conversion UPS, N+1 power redundancy, and pre-integrated distribution to PDUs in each rack enclosure.



Integrated monitoring & remote management

Infrastructure management gateway appliance

- RS485 serial communication
- TCP/IP network communication



Site planning data

Part Number	Max Power Capacity (kW)	IT Racks	Rack Type (U x mm x mm)	Capacity per Rack (kW)	Cooling Units	PDU Type	PDU Count	Distribution Type	Length (mm)
SR2N02010NAA1	10	2	42Ux600x1400	5	1	30 A	2	10kW PMC	2100
SR2N02010PAA1	10	2	42Ux600x1400	5	1	30 A	4	10kW PMC	2100
SR2N02010FAA1	10	2	42Ux600x1400	5	2	30 A	4	10kW PMC	2400
SR2N03010NAA1	10	3	42Ux600x1400	3,3	1	30 A	3	10kW PMC	2700
SR2N03010PAA1	10	3	42Ux600x1400	3,3	1	30 A	6	10kW PMC	2700
SR2N03010FAA1	10	3	42Ux600x1400	3,3	2	30 A	6	10kW PMC	3000
SR2N03020NAA1	20	3	42Ux600x1400	6,6	1	30 A	3	20kW PMC	2700
SR2N03020PAA1	20	3	42Ux600x1400	6,6	1	30 A	6	20kW PMC	2700
SR2N03020FAA1	20	3	42Ux600x1400	6,6	2	30 A	6	20kW PMC	3000
SR2N04020NAA1	20	4	42Ux600x1400	5	1	30 A	4	20kW PMC	3300
SR2N04020PAA1	20	4	42Ux600x1400	5	1	30 A	8	20kW PMC	3300
SR2N04020FAA1	20	4	42Ux600x1400	5	2	30 A	8	20kW PMC	3600
SR2N05020NAA1	20	5	42Ux600x1400	4	1	30 A	5	20kW PMC	3900
SR2N05020PAA1	20	5	42Ux600x1400	4	1	30 A	10	20kW PMC	3900
SR2N05020FAA1	20	5	42Ux600x1400	4	2	30 A	10	20kW PMC	4200

Site planning data with Fire Suppression

Part Number	Max Power Capacity (kW)	IT Racks	Rack Type (U x mm x mm)	Capacity per Rack (kW)	Cooling Units	PDU Type	PDU Count	Distribution Type	Length (mm)
SR2N02010NAA2	10	2	42Ux600x1400	5	1	30 A	2	10kW PMC	2700
SR2N02010PAA2	10	2	42Ux600x1400	5	1	30 A	4	10kW PMC	2700
SR2N02010FAA2	10	2	42Ux600x1400	5	2	30 A	4	10kW PMC	3000
SR2N03010NAA2	10	3	42Ux600x1400	3,3	1	30 A	3	10kW PMC	3300
SR2N03010PAA2	10	3	42Ux600x1400	3,3	1	30 A	6	10kW PMC	3300
SR2N03010FAA2	10	3	42Ux600x1400	3,3	2	30 A	6	10kW PMC	3600
SR2N03020NAA2	20	3	42Ux600x1400	6,6	1	30 A	3	20kW PMC	3300
SR2N03020PAA2	20	3	42Ux600x1400	6,6	1	30 A	6	20kW PMC	3300
SR2N03020FAA2	20	3	42Ux600x1400	6,6	2	30 A	6	20kW PMC	3600
SR2N04020NAA2	20	4	42Ux600x1400	5	1	30 A	4	20kW PMC	3900
SR2N04020PAA2	20	4	42Ux600x1400	5	1	30 A	8	20kW PMC	3900
SR2N04020FAA2	20	4	42Ux600x1400	5	2	30 A	8	20kW PMC	4200
SR2N05020NAA2	20	5	42Ux600x1400	4	1	30 A	5	20kW PMC	4500
SR2N05020PAA2	20	5	42Ux600x1400	4	1	30 A	10	20kW PMC	4500
SR2N05020FAA2	20	5	42Ux600x1400	4	2	30 A	10	20kW PMC	4800

