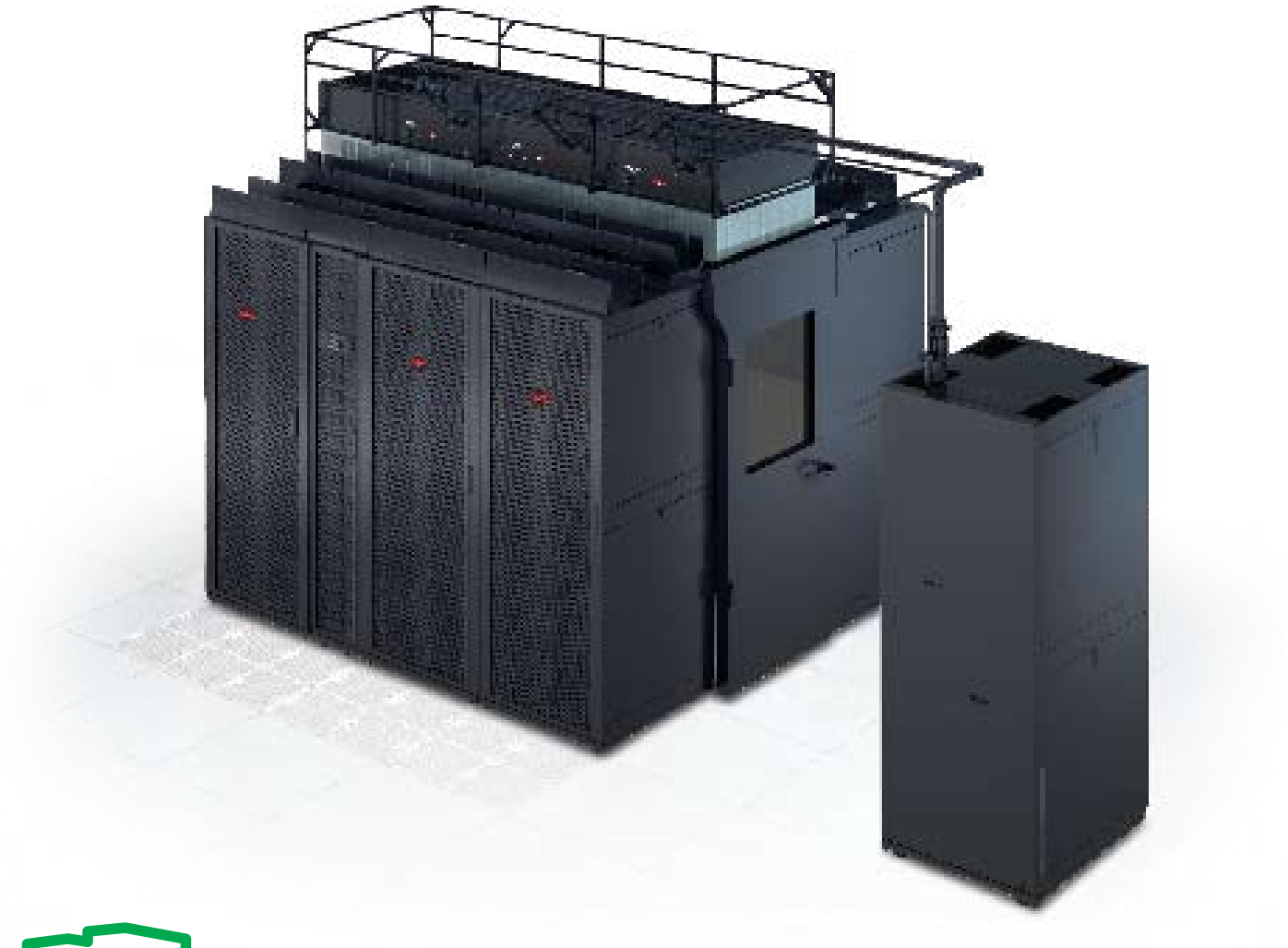
The Next Generation

APC by Schneider Electric InfraStruxure™

Data Centre physical infrastructure architecture



Data Centres
and Networks

APC by Schneider Electric

Introducing the Next Generation InfraStruxure

The data centre architecture that keeps pace with your business

InfraStruxure™ is the scalable and adaptable data centre IT room architecture that dramatically reduces time and complexity from concept and design through installation. Power, cooling, racks, security and management components are conceived and tested as part of an integrated system – as evidenced by the aesthetics, functionality and ease of management software integration. Taking a broad system view enables full realization of the benefits of going fast, going dense and going green while ensuring your critical availability targets are met. An open system, InfraStruxure™ is the proven 'on-demand' architecture for data centre IT rooms small and large, delivering high availability and real energy savings whether deployed on its own, in a zone, or in incremental steps.

This new generation of InfraStruxure delivers:

> Higher performance – 25 percent increase in power and cooling capacity, 15 percent smaller footprint
> More scalability – as big as you want to go
> Faster and easier planning through operations – automated planning and design tools with open and integrated management and operations software
> More innovation and leadership – from the world's leader in data centre physical infrastructure

all while reducing cost!

Why do InfraStruxure data centres mean business?

As the industry's one-of-a-kind truly modular, adaptable, and 'on-demand' data centre system, only InfraStruxure can ensure that your data centre can adapt effectively, efficiently, and, perhaps most important, quickly, to business changes.
To us, a data centre means business when:

> It is always available, 24/7/365, and performs at the highest level at all times
> It is always ready and able to grow at the breakneck speed of business
> It enables IT and facilities to keep pace with the business in a synchronized way
> It continues to achieve greater and greater energy efficiency—from planning through operations
> It lets you add capacity without waiting on logistical delays (e.g., work orders)
> It is able to grow with the business itself
> It supports—instead of hinders—business

InfraStruxure solution delivers efficiency for energy management company

'Headquartered in Louisville, KY, Summit Energy provides unbiased, independent energy management services such as energy procurement, sustainability, energy risk management, and utility consulting to customers in 52 countries.

'My Louisville data centre serves as the data and application hub for our global operations. As a service company, downtime could mean broken customer contracts with direct monetary impact, in addition to lost productivity and an erosion of our credibility.

'Our environment was increasing in complexity and we were experiencing rapid growth in both application and storage requirements. We were completely re-architecting our primary line of business applications to add scalability, stability, and performance, so we had an immediate need to greatly expand our power.

'InfraStruxure has more flexibility so we aren't wasting overdeveloped power infrastructure in one area and overloading another, requiring less capital expense and providing more flexibility than the smaller systems.

'InfraStruxure provided us with flexible, cost-effective power while meeting an aggressive timeline. I am expecting about a 30% efficiency savings for the equipment connected to the new UPS. This also translates into a reduced cooling load and a longer time span until we must upgrade the service amperage to our data centre suite. Over time, we will benefit from lower costs, reduced maintenance and increased flexibility.

'APC products and solutions have helped us narrow deployment timelines and maintenance windows. They have also alerted us to critical environmental issues. I have been very happy with the products, service and support from APC'.

Aligning InfraStruxure to your business

Depending on your business requirements, the Next Generation InfraStruxure can be deployed in one of three ways:

1) Turn any room into a world-class data centre.

Deploy InfraStruxure on its own as an easy-to design, build, and deploy modular, scalable, customized solution made from integrated components . Whether your priority is:

> Availability – N, N+1, 2N, 2N+1 power and cooling
> Greatest efficiency
> Highest density
> Manageability – monitoring and automation, planning and implementation
> Greatest agility to right-size initially and adapt to future needs
> Lowest 10-year lifecycle cost you are able to maximize and optimize around multiple performance vectors.

2) Extend the life of an existing data centre.

InfraStruxure is not an 'all-or-nothing' architecture. Existing data centres can incorporate various aspects of the architecture to increase density, capacity, efficiency, availability and manageability. Overhead cooling can be applied over any hot aisle, for example, to increase density and cooling capacity.

The system's open architecture can monitor and manage components from other physical infrastructure manufacturers.

3) Step and repeat the modular architecture for large data centres.

InfraStruxure can be deployed as a zoned, 'pay-as-you-grow' scalable architecture solution for medium to large data centre environments to greatly reduce time and planning costs. A Pod approach enables you to add capacity when necessary in larger data centre 'chunks'.

Benefits include the following:

> Simple and fast design and deploy cycle through a 'single-source supplier'
> Solution look and functionality
> Use of integrated components designed to work together
> Optimization of costs
> Staggered roll-out
> Minimization of training
> Economies of scale
> Minimization of spares
> Highest efficiency
> Targeted densities or availability
> Predictable cooling
> Integrated management

Promise #1

The Foundation of InfraStruxure

High performance

Starting with the most efficient and reliable components, APC's InfraStruxure™ is engineered as a system to deliver the performance you need. With its flexible architecture you can dial-in your preference for availability, efficiency, density, agility, or cost. Open management tools optimized for InfraStruxure enable you adjust buffer levels to align with your risk comfort levels. Active, open, management across all key domains of the data centre, including power, cooling, rack systems, and security-systems, helps to avoidun planned downtime and maximize energy efficiency. With full integration capabilities to enterprise and building management systems, the InfraStruxure software provides a core platform to monitor, manage and operate your data centre assets.

Fast and easy to design and deploy

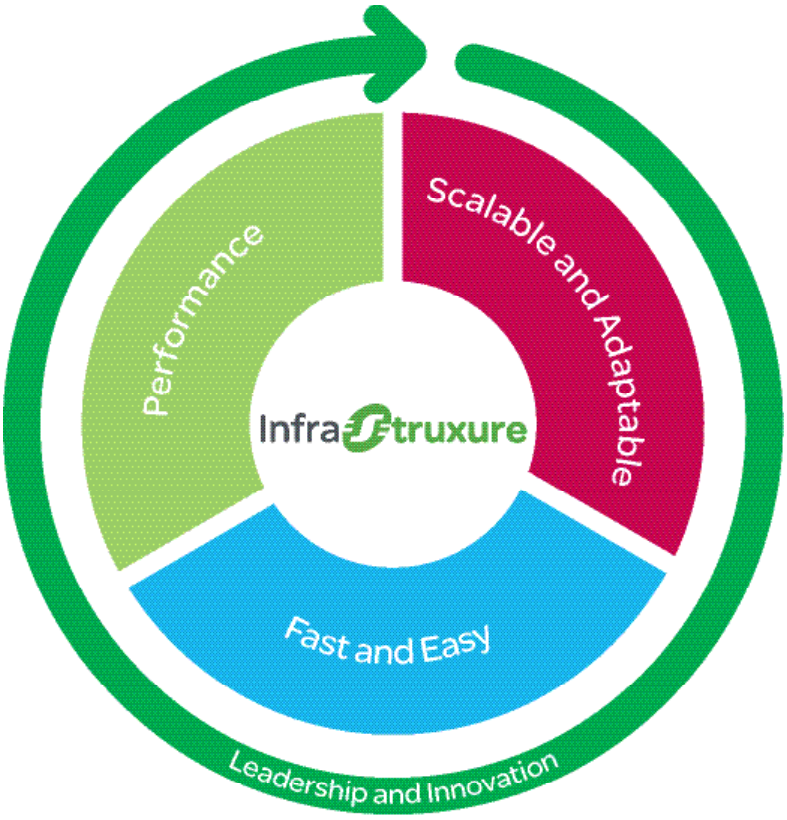
It has become a priority for data centre managers to deliver IT capabilities in a timeframe needed to enable business success. Sophisticated InfraStruxure planning and design tools enable the fast and easy generation of multiple proposals that can be easily modified to deliver solutions tailored to your exact needs. This dramatically reduces valuable time at the beginning of the project. The solutions are expeditiously shipped with deployment and installation happening very fast as all of the components are designed to work together. Regardless of whether it's a retrofit or a completely new build, InfraStruxure gets you from design to online in no time!

Scalable and adaptable

Aligning your IT capabilities with business needs is a top-of-mind concern. Whether you are rightsizing an initial deployment, scaling up to add applications or scaling down, InfraStruxure is the most scalable and adaptable choice. Highly granular modularity in your power, cooling, management, and power distribution are the key.

This new generation of InfraStruxure delivers a 25 percent increase in power and cooling capacity, a 15 percent smaller footprint, all while reducing cost by 15 percent*.

**over previous generation*



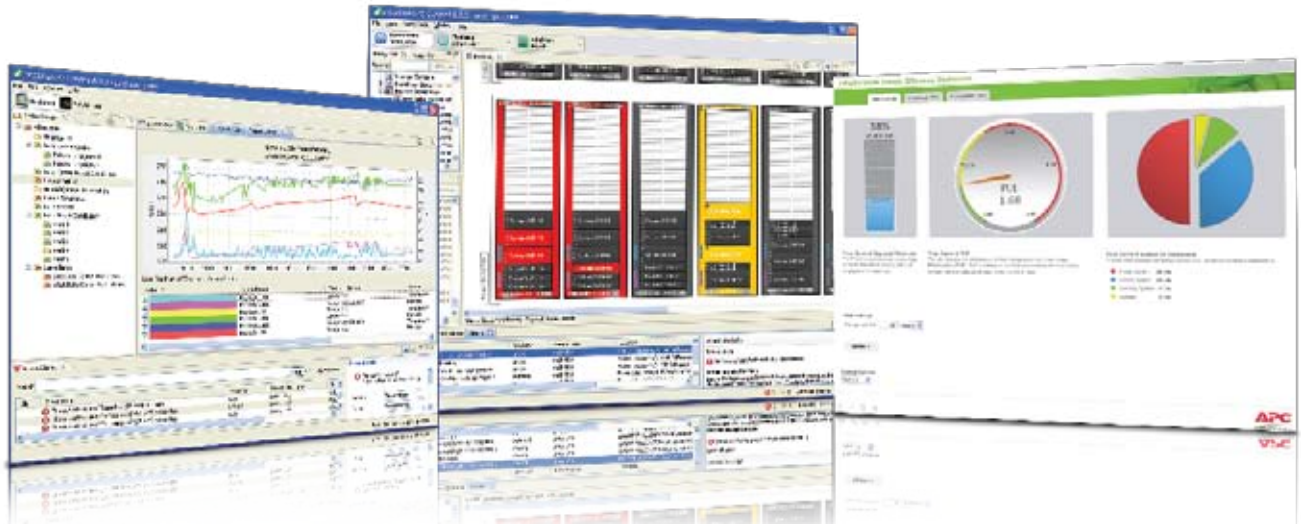
Greater visibility = greater availability and efficiency

As an IT or data centre manager, you work hard to proactively avoid and manage availability risks while working toward greater operational and energy efficiency. Doing your job well means saving lost money and lost time. Until now you've only been enabled to see half the picture. Historically, your view of your data centre architecture has been limited to the IT space.

Today, InfraStruxure Management Software Portfolio, which comprises InfraStruxure Central and InfraStruxure Operations, gives you the visibility and capabilities you need to be completely tapped into the overall health of your data centre.

You can plan proactively, monitor interdependent devices outside the traditional IT space, and adapt your physical infrastructure to business-driven changes. The software also has automated response capabilities to ensure virtual loads always have healthy host environments.

In short, you gain better control and management of your data centre's availability and efficiency so you can better align your IT equipment to your business needs.



Promise #2

Designed, built, and maintained for speed!

Combined with InfraStruxure design tools, our planning and trade-off software helps you make IT-related business decisions up front in a matter of minutes instead of months. You can make informed decisions related to redundancy, efficiency, cost levels, and density levels to ensure IT is in full support and alignment with the business.

InfraStruxure Designer is a Web-based tool for solution design. It delivers faster design, built-in 'rules' for fewer mistakes and a bill of materials at the end. Specifically, you can use it for the following:

- Layout design
- Power/cooling modeling
- Predictive failure simulation
- Power/cooling/rack selection
- Management selection
- Environmental monitoring selection
- Physical threat monitoring selection
- Assembly, integration, start-up, maintenance, and warranty services

APC TradeOff Tools™ are innovative, interactive online calculators that show you the actual implications of decisions in your data centre design or planning. With TradeOff Tools, you easily and quickly can determine the impact new equipment, server virtualization, design changes, and heat containment strategies will have on your facility. The data plugged in is your own data, not industry averages, so the results are your own, as well. TradeOff Tools include:

- Centre Power Sizing Calculator
- Data Centre Carbon Calculator
- Data Centre Capital Cost Calculator
- IT Carbon & Energy Allocation Calculator
- Data Centre Design Planning Calculator
- Data Centre Efficiency Calculator

One-stop professional services

Our one-stop professional services also help you avoid mistakes and shorten the project time. Our services span the data centre life cycle and include the following:

- Analysis
- Assessment
- Planning and consulting
- Design
- Architecture/engineering support
- Project management
  - Equipment scheduling
  - Construction
  - Installation
  - Assembly and start-up
  - Commissioning
  - Integration
- Operations, maintenance and repair
- Remote monitoring – building automation, IT floor, power quality, security
- Training
- Asset planning

What's the holdup?
Now, deploy faster than ever!

With the Next Generation InfraStruxure, nothing should hold back a quick and easy deployment of your infrastructure. Consider, for example, the following scenarios:

Scenario	Target	What's the hold up?	How InfraStruxure makes deployment fast
I need a server	1 to 2 days	Power circuit capacity	Modular power distribution. Need another circuit? Add circuits as needed without scheduling downtime or generating work orders.
I need five more servers, but I have no more floor space for cooling!	3 to 5 days	Cooling capacity	Overhead close-coupled cooling. This unit Installs over the hot-aisle for precise, efficient cooling within the existing footprint.
I need 50 high-density servers, but how can I cool them?	7 to 14 days	Cooling capacity	Close-coupled cooling with containment. (Cold-aisle for retrofit or hot-aisle for best performance) Add hot-aisle or cold-aisle containment as needed to boost performance and efficiency.

Promise #3

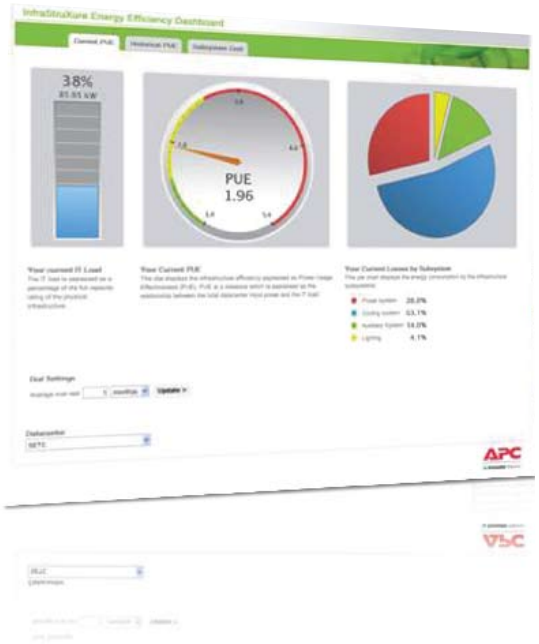
Efficiency-driven cost savings

InfraStruxure is the data centre infrastructure solution that pays you back via more effective planning, implementation, and operations. The integration and management of power and cooling elements in the InfraStruxure architecture maximizes efficiency savings. You are able to plan and design to the highest efficiency with modular UPS and close coupled cooling with InfraStruxure design tools while closely managing your environment with Infrastructure Central. Simulations, updates and tweaks to your data centre for optimal efficiency are guided using InfraStruxure Operations.

Capacity management system consists of the tools and rules that allow a data centre to operate at near capacity (highest efficiency) with extremely small safety margins without compromising availability.

Right-size for greater efficiency and lower cost of ownership

As an agile and flexible system, InfraStruxure ensures that you can right-size your data centre infrastructure to maximize efficiency and costs at all times. With the modular architecture, there's no need to oversize your physical infrastructure up front. Instead, you can right-size your data centre from the very beginning—and at every step as you adjust your infrastructure to your business needs.



Better energy management via InfraStruxure Operations

Several InfraStruxure Operations applications give you the visibility you need to monitor, manage, and streamline your data centre's energy use.

InfraStruxure energy efficiency

Realize greater energy efficiency with full insight into current and historical energy use, efficiency losses, and PUE values at subsystem levels.

InfraStruxure capacity

Ensure efficient equipment provisioning and right-sizing by planning and optimizing use of actual physical infrastructure capacities.

InfraStruxure energy cost

Budget efficiently, calculate energy consumption, and be able to charge back energy costs via cost analysis of energy use on a kW/h basis.

Pay only for the power you need

For example, with three-phase UPS units from APC by Schneider Electric, you can go from 10 to 2 MW quickly in a truly modular, scalable fashion. Only APC by Schneider Electric gives you the fastest and easiest way to scale up or down as your business demands with internal design efficiencies (e.g., three-stage inverters) that deliver even greater efficiencies over the entire load spectrum.

The savings of dynamic cooling

InfraStruxure helps you maximize the cost benefits of using the latest IT equipment with variable load characteristics by dynamically aligning your cooling levels to the changing heat output. Our InRow™ cooling units, which come in two forms (floor-mounted or overhead), are efficiently placed very close to the target heat sources. Rack-mounted sensors monitor the temperature, giving you real-time information on where heat is hiding. As heat loads fluctuate inside of the IT enclosure or even move around the room, unique variable-speed fans automatically adjust the cooling output to meet the specified demand. By closely matching cooling with the heat load, you use only the amount of cooling required in the right place at the right time, dramatically saving money, reducing waste, and eliminating hot spots. With the implementation of aisle containment you can improve efficiency. Overhead units give you the cooling you need within your existing floor print, thereby lowering your total cost of ownership even more.

Real cost savings

By maximizing energy efficiency, the Next Generation InfraStruxure reduces your data centre costs of its lifecycle. In fact, InfraStruxure pays for itself over time while boosting system performance. Specifically, it delivers a 25 percent increase in power and cooling capacity within a 15 percent smaller footprint while reducing cost by 15 percent.

A closer look at Next Generation InfraStruxure

An integrated system with best-in-class components

APC by Schneider Electric InfraStruxure always has been a high-performance data centre solution. Today, it is the only solution that promises high quality, speed, and efficiency-driven cost savings—all at the same time. Next Generation InfraStruxure advancements enable our complete data centre infrastructure solution to deliver on its triple promise:

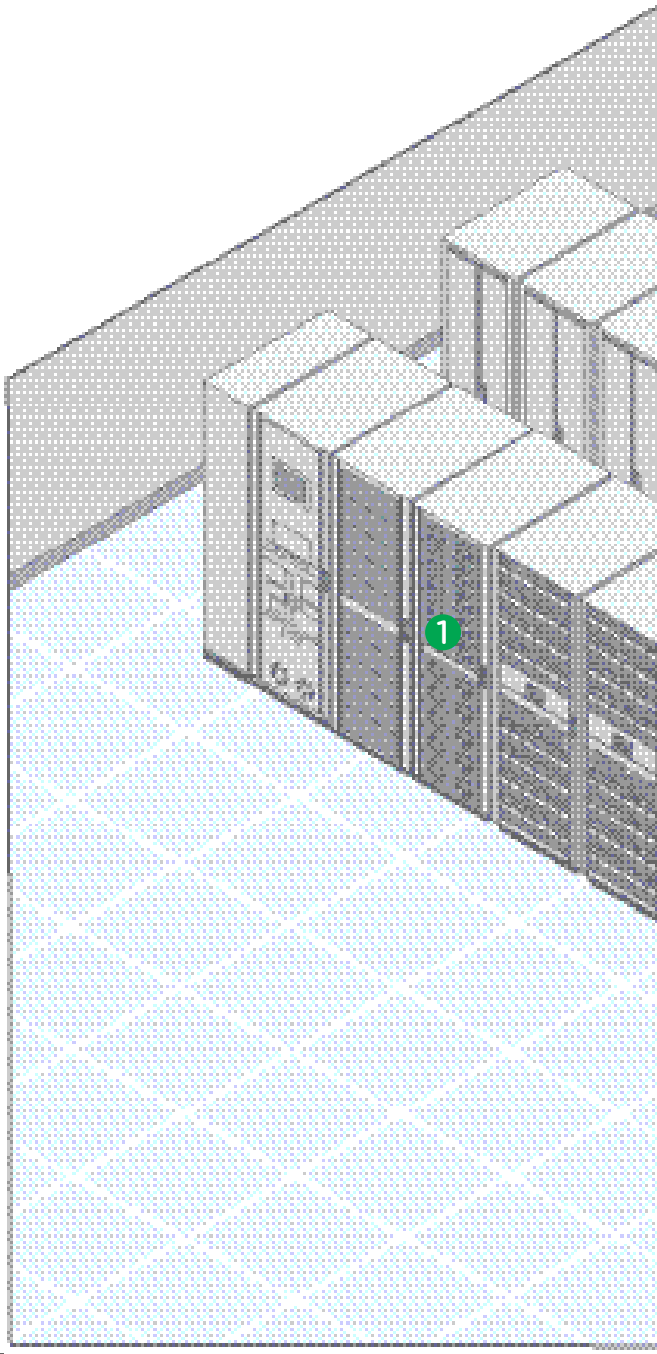
❶ **Scalable three-phase power.** Paralleling capabilities on internally scalable UPS from 10 kW to 2 MW enable right-sizing and on-demand adjustments as your capacity needs change with proven, high-performance Symmetra™ UPS. Highly granular modularity of 2 kW, 4 kW, 10 kW, 12 kW, 25 kW, 66 kW is ideal for data centres that need to scale up or down their power quickly. Other UPS options are available with subsystem modularity – the innovative MGE Galaxy™, for example. Its externally scalable design makes the need for oversizing your three-phase UPS unnecessary.

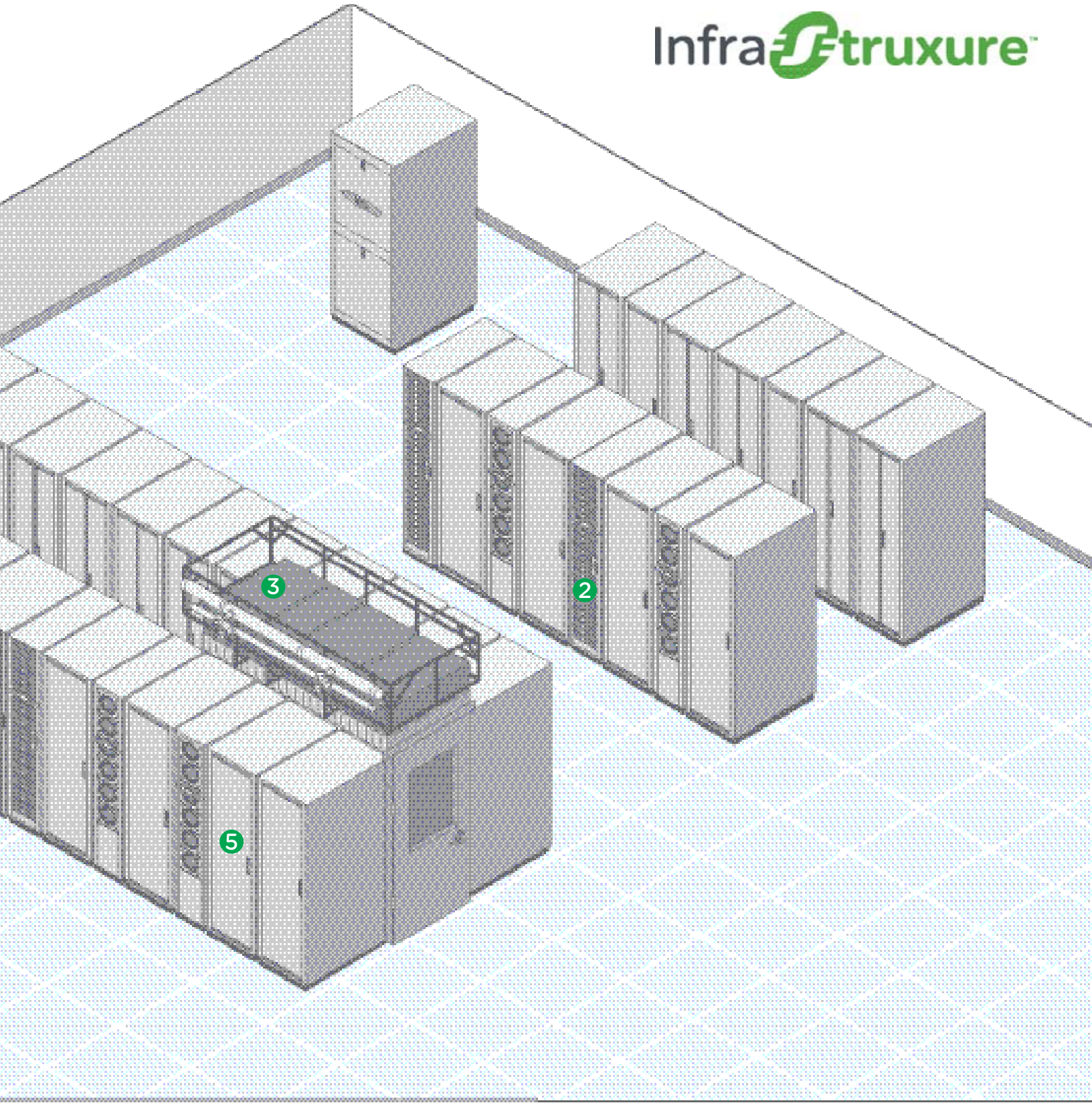
❷ **Easy-to-deploy power distribution units.** Power distribution is an effective way to increase energy efficiency and improve power management. Metered and switched rack PDUs, for example, are designed to help data centre managers manage power capacity and functionality. And our first fully modular three-phase power distribution unit also delivers ultra-high efficiency, advanced flexibility, and right-sized scalability at the rack level. The easy snap-in modules enable fast deployment.

❸ **Efficient cooling options.** Rack-, row-, and room-based cooling options, including our close-coupled cooling advancements, ensure greater efficiency. InRow cooling units, which come in floor-mounted and overhead forms, target cooling at the row level. If floor space is an issue, overhead InRow OA units cool from above using a pumped refrigerant instead of chilled water. The unit is installed above the hot aisle so it frees up floor space, giving you greater flexibility as you plan your high-density zones. It also gives you increased cooling capacity. It captures up to 27 kW of hot IT exhaust air at the source, neutralizes it, and discharges cool air to the IT environment. As with the floor-mounted InRow units, variable-speed fans kick in only when needed, further optimizing energy efficiency. You also get highest availability as the cooling units effectively eliminate hot spots caused by high-density computing.

❹ **End-to-end management software.** The latest InfraStruxure Management Software Portfolio, which includes InfraStruxure Central and InfraStruxure Operations, gives you greater visibility across your data centre physical infrastructure. Now, you can right-size your infrastructure, plan proactively, monitor interdependent devices outside the traditional IT space via MODBUS® integration, realize energy efficiency gains, and adapt your physical infrastructure to business-driven changes. As a result, you easily can make informed decisions at any time about your data centre's physical infrastructure to ensure highest availability, healthy operations, and greater efficiency-driven cost savings. Virtualizing? The software boasts real-time communication between InfraStruxure Operations and the leading virtualization platforms: Microsoft® System Centre Virtual Machine Manager and VMware® vSphere™. Automated response capabilities ensure virtual loads always have healthy host environments.

❺ **High-density-ready enclosures.** With deeper troughs, our HD-ready enclosures can handle HD cables. What's more, they deliver any IT vendor compatibility, affording you the agility you need to redesign or retrofit your data centre instead of facing the cost of a complete overhaul.




InfraStruxure
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Get more information on APC by Schneider Electric solutions at *www.apc.com/products/infrastruxure*

Try our FREE, Web-based applications to experiment with virtualization, efficiency, and more at *tools.apc.com*

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