48 kW, Pod-based build, Tier I, 646 ft^2

Design Overview

Pod IT Capacity
48 kW/pod

Target Availability
Tier I

Total Racks and Average Density
12 traditional racks at 4 kW/rack

IT & Facility Floor Space
646 ft^2 / pod

Regional Voltage and Frequency
120/208V, 60 Hz

Introduction

EcoStruxure Reference Designs help optimize the planning process by providing validated, proven, and documented power, cooling and physical infrastructure plans. These designs serve as a starting point for edge computing and traditional data center projects, providing an initial configuration of products that can be modified to fit the specific requirements of the project it is being used for.

Schneider Electric offers a free-standing, pod-based containment solution called *HyperPod*, for edge computing and data center applications that presents several advantages, like expediting data center setup times by encompassing power distribution support structures and equipment, allowing racks to simply roll in to place. Plus, the solution is scalable and presents an architecture capable of pod-by-pod deployment according to the customer's needs.

This design provides a complete structural and electrical setup for specific requirements from edge computing and traditional data center spaces, showcasing the flexibility of the pod-based containment system. With some adjustments, like the addition of cooling units, this design is ideal for new local edge deployments or pod-by-pod expansions in your existing data center. In addition, the reference design may serve as an initial architecture configuration to suit a customer's application, with changes being readily made by removing certain accessories (roof type, cable supports, etc.) or adjusting specific system parameters (pod length, frame height, etc.).
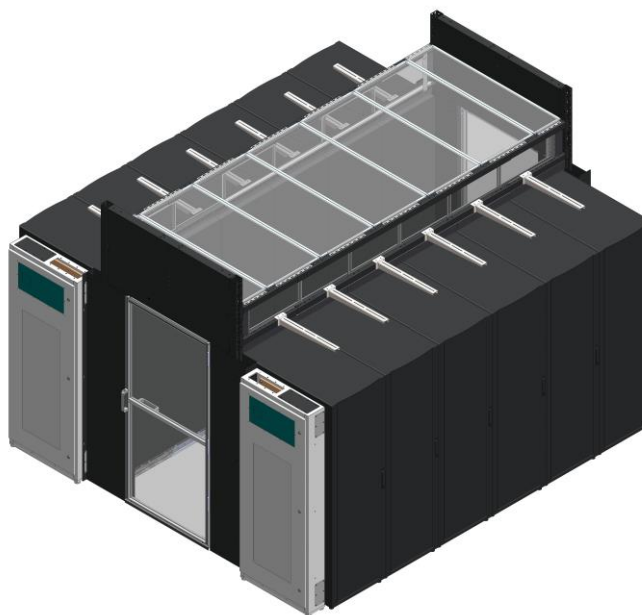
About this Design

- IT Space and power distribution designed to enable pod-by-pod deployment
- *Pod* containment system allows for fully populated and/or hyper-converged racks to be rolled in place
- Battery backup on one power path only allows for cost savings (optional)
- Average rack density of 4 kW/rack with hot aisle containment
- Access this Pod design by searching for **Reference Design 91** within the *Standard Solutions List* at **https://designportal.apc.com**

A 3D image of the *Pod* configuration populated with *NetShelter SX* racks.

Pod Power Block Diagram
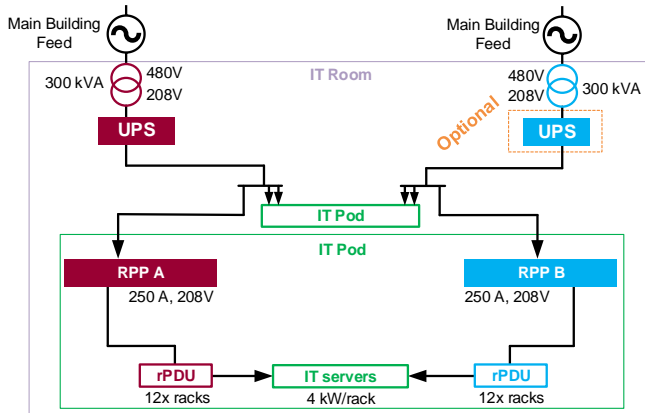
Pod Power

The facility power system supplies power to all the critical and non-critical components within the pod. The electrical architecture used in this Tier 1 pod design is a dual path with one UPS. The main building feed delivers power to a 50kW *Symmetra PX* UPS. The UPS provides critical power to the IT room with 5 minutes of runtime, and integrates a battery cabinet, with external maintenance bypass, that stand outside of the IT pod.

The UPS unit provides power to end-of-row Remote Power Panels (RPP) cabinets that house standard *SquareD* panelboards, with sufficient circuit breakers for each switched rack power distribution unit (rPDU). The RPP cabinets support a pod power of 48 kW.

Every rack is configured with one switched rPDU per power feed. The switched rPDUs support average rack density of 4 kW/rack and integrate with *EcoStruxure IT*.

For increased resiliency at the edge, the *Symmetra PX* has N+1 redundancy internally. An additional *Symmetra PX* may be added to the secondary power path to provide 2N redundancy at the UPS level.

Every component in this design is built and tested to the applicable ANSI, NEMA, UL or IEEE standards. Further design details and schematics are available in the engineering package.
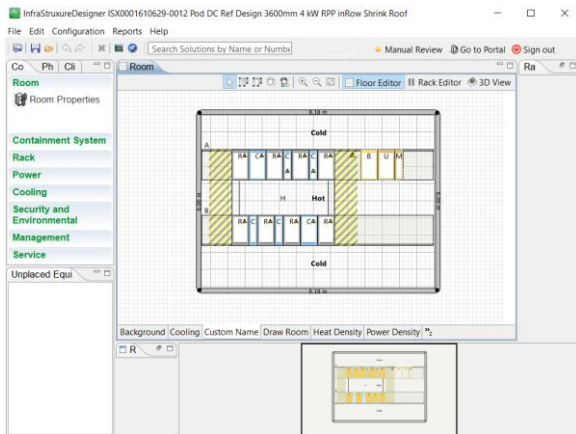
Design Options

This reference design can be modified as follows without a significant effect on the design's performance attributes:

- Change rack options (height, depth)
- Change power distribution options (Rack PDU type: basic, switched, metered)
- Change UPS batteries (type - VRLA or Li-Ion)
- Add additional UPS to secondary power path

Pod Power Attributes

Name	Value	Unit
Input voltage (UPS)	208	V
RPP kAIC	30	kA
Power path	Dual	N/A
IT space UPS capacity	50	kW
IT space UPS redundancy	N + 1	N/A
IT space UPS runtime @ rated load	5	minutes
IT space UPS output voltage	208	V
IT load	48	kW
Supply voltage to IT	120/208	V
Power distribution	42 pole RPP	N/A
Average density	4	kW/rack

Pod Containment System

Access this Pod design by searching for **Reference Design 91** within the *Standard Solutions List* at **https://designportal.apc.com**
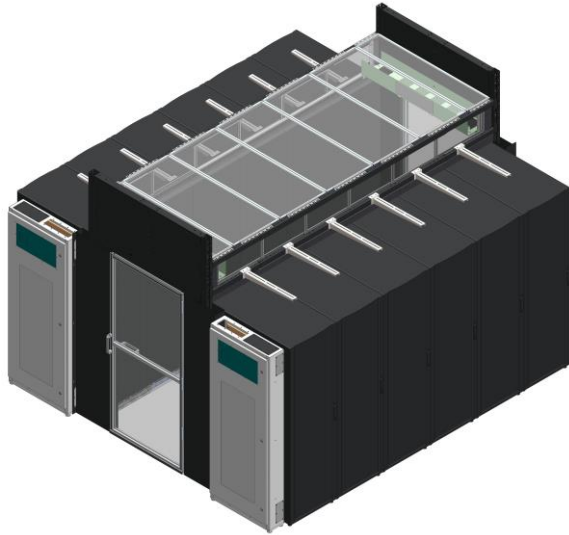
Design Options

This reference design can be modified as follows without a significant effect on the design's performance attributes:

- Add environmental and security management (*NetBotz* sensors)
- Add/change pod accessories
- Change to other roof (drop, simple, vertical duct) or door types in the containment system
- Add cooling equipment, like InRow or Uniflair units

Pod Structure

The pod space design specifies all of the physical infrastructure systems and respective spacing arrangements required to meet the overall design's performance attributes. This includes racks and the hot-aisle containment system.

A total of twelve standard 42U NetShelter SX racks populate the pod, which occupies a square footage of 646. Furthermore, the pod configuration features mini cantilevers and aisle crossover trays to route necessary cables throughout the pod, as well as a simple roof.

The security of the room can be maintained at multiple points with *NetBotz* systems installed on the pod frames. At the rack level, access can be controlled by a door lock and sensor and at the room level, security cameras can be utilized for monitoring.

The pod space design does not include cooling units and requires either of the following conditions: existing cooling be present within the IT space and the installation of the pod-based system occurs as a retrofit, or that cooling be added as a modification to the overall design.

This and other pod-based configurations reside within Schneider Electric's Design Portal and can be copied from the "Standard Solutions" page and edited using InfraStruxure Designer (ISXD). Reference Design 91 includes documentation in the form of a floor layout drawing, 3D rendering, RPP (Remote Power Panel) configuration, and any additional equipment lists for necessary components.

Pod Structure Attributes

Name	Value	Unit
Containment type	Hot aisle	N/A
Rack Height	42U	N/A
Number of racks	12	racks
IT floor space	646	ft^2
Single or dual cord	Dual	N/A
Pod width	11	ft
Pod length	13	ft

Pod Accessories Attributes

Name	Value	Unit
Mini cantilevers	Yes	N/A
Large cantilevers	No	N/A
Aisle crossover tray	Yes	N/A
Overhead support frame	No	N/A
Raceway	No	N/A
Roof type	Simple	N/A
Door type	Swing	N/A

Design Attributes

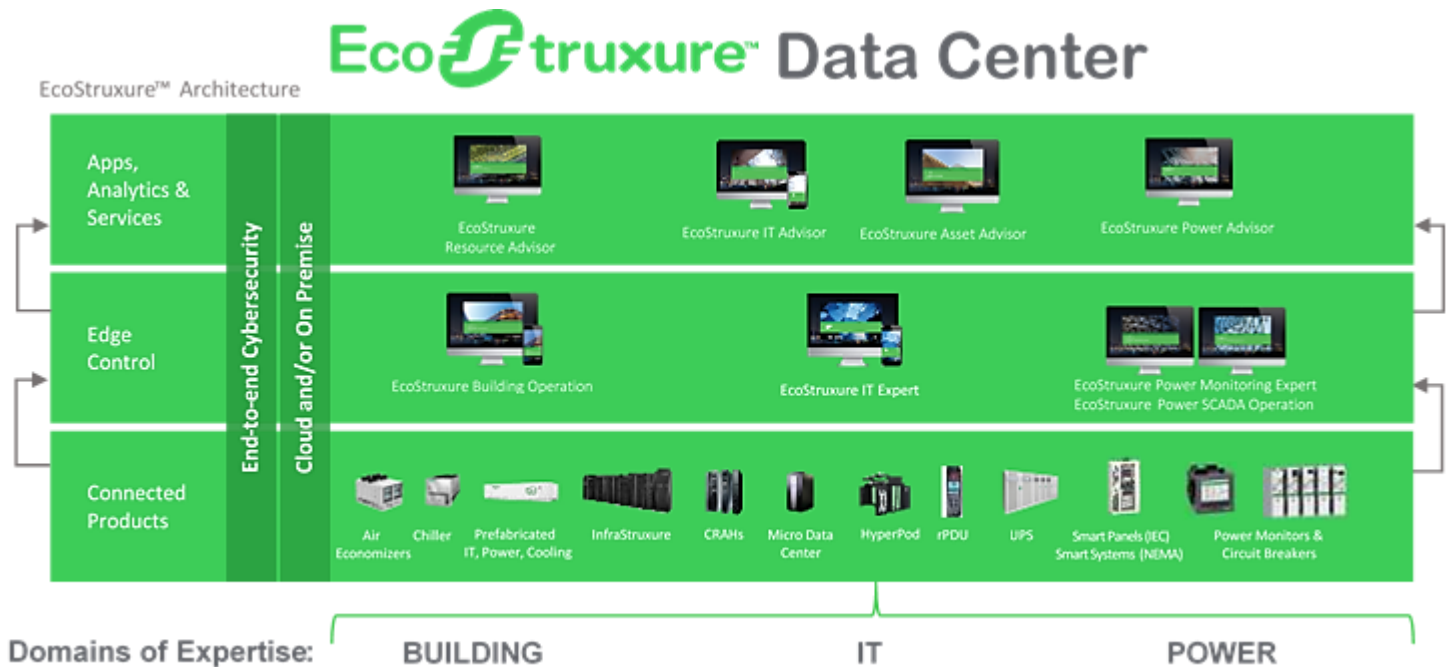| Overview	Value	Unit
Target availability	Tier 1	Tier
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IT & facility floor space	646	ft^2
Average density	4	kW/rack
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Regional voltage and frequency	120/208V, 60 Hz	N/A
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EcoStruxure Data Center

EcoStruxure ™ is Schneider Electric's open, interoperable, integrated Internet of Things (IOT)-enabled system architecture and platform. *EcoStruxure* delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers. *EcoStruxure* leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level. It consists of three layers: connected products, edge control, and applications, analytics, and services. This includes Connected Products, Edge Control, and Apps, Analytics & Services. *EcoStruxure ™* has been deployed in 480,000+ sites, with the support of 20,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services.

The connected products layer communicates with the edge control layer, which allows users to remotely monitor and control the connected products in real time. The edge control layer communicates with the application, analytics, and services, which will translate data into actionable intelligence and better business decisions. All three layers are secured with end-to-end cybersecurity. *EcoStruxure* can either be located on-premise (this will only consist of the connected products and edge control layers) or the cloud.

EcoStruxure Data Center is a combination of three domains of *EcoStruxure:* Power, Building, and IT. Each domain is focused on a subsystem of the data center: power, cooling, and IT. These three domains combined will reduce risks, increase efficiencies, and speed operations across the entire facility.

- *EcoStruxure Power* monitors power quality, generates alerts, while protecting and controlling the electrical distribution the electrical distribution system of the data center from the MV level to the LV level. It uses any device for monitoring and alerting, uses predictive analytics for increased safety, availability, and efficiency, while lowering maintenance costs.

- *EcoStruxure Building* controls cooling effectively while driving reliability, efficiency, and safety of building management, security, and fire systems. It performs data analytics on assets, energy use, and operational performance.

- *EcoStruxure IT* makes IT infrastructure more reliable and efficient while simplifying management by offering complete visibility, alerting and modelling tools. It receives data, generates alerts, predictive analytics, and system advice on any device to optimize availability and efficiency in the IT space.

Visit *EcoStruxure for Data Center* for more details

Schneider Electric Life-Cycle Services

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How do I install and commission?

Operate
How do I operate and maintain?

Optimize
How do I optimize?

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How do I renew my solution?

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2 Standardized, documented, and validated methodology leveraging automation tools and repeatable processes developed over 45 years

3 Complete portfolio of services to solve your technical or business challenge, simplify your life, and reduce costs

Get more information for this design:

RPP Configuration

Engineering Schematic

Bill of materials

Engineering Package

Every reference design is built with technical documentation for engineers and project managers. This includes engineering schematics (PDF), equipment lists containing all the components used in the design and 3D images showing real world illustrations of our reference designs.

Documentation is available in multiple formats to suit the needs of both engineers and managers working on data center projects.

Email referencedesigns@se.com to receive the Engineering Package for this design