

780 kW, Pod-based build, Tier I, 1873 ft²

Design Overview

Pod IT Capacity

780 kW/pod

Target Availability

Tier I

Total Racks and Average Density

52 traditional racks at 15 kW/rack

IT & Facility Floor Space

1873 ft² / pod

Regional Voltage and Frequency

277/480V, 60 Hz

About this Design

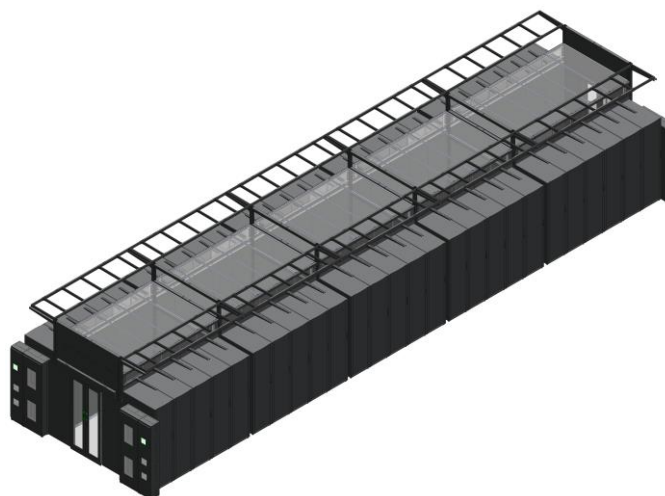
- IT Space and power distribution designed to enable pod-by-pod deployment
- Pod containment system allows for fully populated and/or hyper-converged racks to be rolled in place
- Battery backup on one power path only allows for cost savings (optional)
- Average rack density of 15 kW/rack with hot aisle containment
- Access this Pod design by searching for **Reference Design 98** within the *Standard Solutions List* at <https://designportal.apc.com>

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.

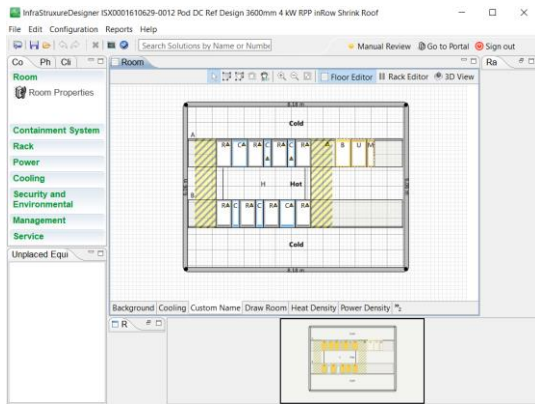
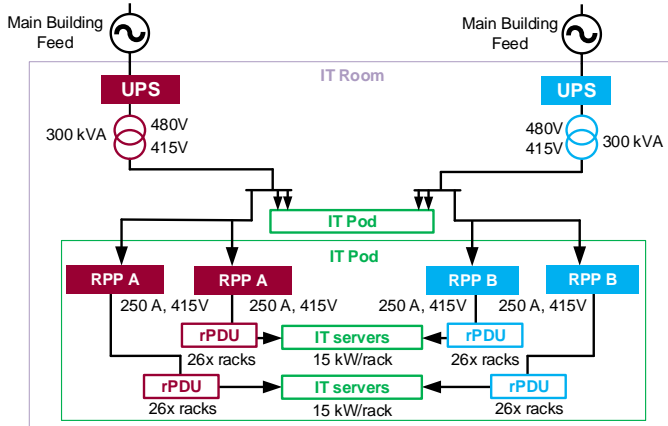
Schneider Electric offers a free-standing, pod-based containment solution called *HyperPod*, for edge computing and data center applications that presents several advantages, like expediting data center setup times by encompassing power distribution support structures and equipment, allowing racks to 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.).



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

Pod Power Block Diagram



Access this Pod design by searching for **Reference Design 98** 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:

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

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 two UPS per path. The main building feed delivers power to two 400kW *Symmetra PX* UPS. The UPS provides critical power to the IT room with 5 minutes of runtime, and integrates a battery cabinet, with internal maintenance bypass, that stands outside of the IT pod.

The UPS unit provides power to end-of-row RPP (Remote Power Panel) cabinets that house standard *SquareD* panelboards, with sufficient circuit breakers for each metered rack power distribution unit (rPDU). The UPS receives 480V as the input voltage and outputs 480V as well. The voltage must be transformed to 240/415V to provide the proper voltage type to the RPP cabinets. The RPP cabinets support a pod power of 780 kW. The RPP cabinets house 84 poles and a distribution block would be required to power each 42 pole section.

Every rack is configured with three metered rPDU per power feed. The metered rPDUs support average rack densities of 15 kW/rack and integrate with *EcoStruxure IT*.

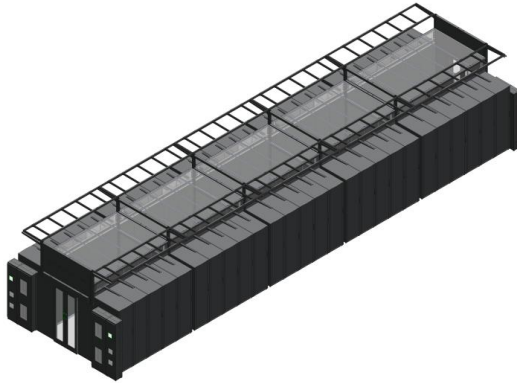
For increased resiliency at the edge, an additional *Symmetra PX* services the secondary power path to provide 2N redundancy at the UPS level.

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.

Pod Power Attributes

Name	Value	Unit
Input voltage (UPS)	480	V
RPP kAIC	3	kA
Power path	Dual	N/A
IT space UPS capacity	800	kW
IT space UPS redundancy	2N	N/A
IT space UPS runtime @ rated load	5	minutes
IT space UPS output voltage	480	V
IT load	780	kW
Supply voltage to IT	240	V
Power distribution	84 pole RPP	N/A
Average density	15	kW/rack

Pod Containment System – Option 1



Pod Containment System – Option 2



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 52 standard 48U NetShelter SX racks populate the pod. In addition, the pods occupy a square footage of 1873. Furthermore, the pod configurations feature different pod accessories to route the necessary cables throughout the pod, and different roof types as well.

A second configuration is pictured at left, option #2, which differs only from option #1 in that it features a vertical duct roof. The second configuration can be accessed from within Schneider Electric’s Design Portal and can be copied from the “Standard Solutions” page and edited using InfraStruxure Designer (ISXD), by searching for **Reference Design 98 – Vertical Duct**.

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 98 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 Accessories Attributes

Name	Option #1	Option #2	Unit
Mini cantilevers	Yes		N/A
Large cantilevers	Yes		N/A
Aisle crossover tray	No		N/A
Overhead support frame	Yes		N/A
Raceway	No		N/A
Roof type	Simple	V-duct	N/A
Door type	Swing		N/A

Pod Structure Attributes

Name	Value	Unit
Containment type	Hot aisle	N/A
Rack Height	48U	N/A
Number of racks	52	racks
IT floor space	1873	ft ²
Single or dual cord	Dual	N/A
Pod width	11	ft
Pod length	54	ft

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

Design Attributes

Overview	Value		Unit
Target availability	Tier 1		Tier
Pod IT capacity	780		kW
IT & facility floor space	1873		ft ²
Average density	15		kW/rack
Number of racks	52		racks
Regional voltage and frequency	277/480V, 60 Hz		N/A
Pod Power	Value		Unit
Input voltage (UPS)	480		V
RPP kAIC	3		kA
Power path	Dual		N/A
IT space UPS capacity	800		kW
IT space UPS redundancy	2N		N/A
IT space UPS runtime @ rated load	5		minutes
IT space UPS output voltage	480		V
IT load	780		kW
Supply voltage to IT	240		V
Power distribution	84 pole RPP		N/A
Average density	15		kW/rack
Pod Structure	Value		Unit
Containment type	Hot aisle		N/A
Number of racks	52		racks
Rack height	48U		N/A
IT floor space	1873		ft ²
Single or dual cord	Dual		N/A
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Pod length	54		ft
Pod Accessories	Option #1	Option #2	Unit
Mini cantilevers	Yes		N/A
Large cantilevers	Yes		N/A
Aisle crossover tray	No		N/A
Overhead support frame	Yes		N/A
Raceway	No		N/A
Roof type	Simple	V-duct	N/A
Door type	Swing		N/A

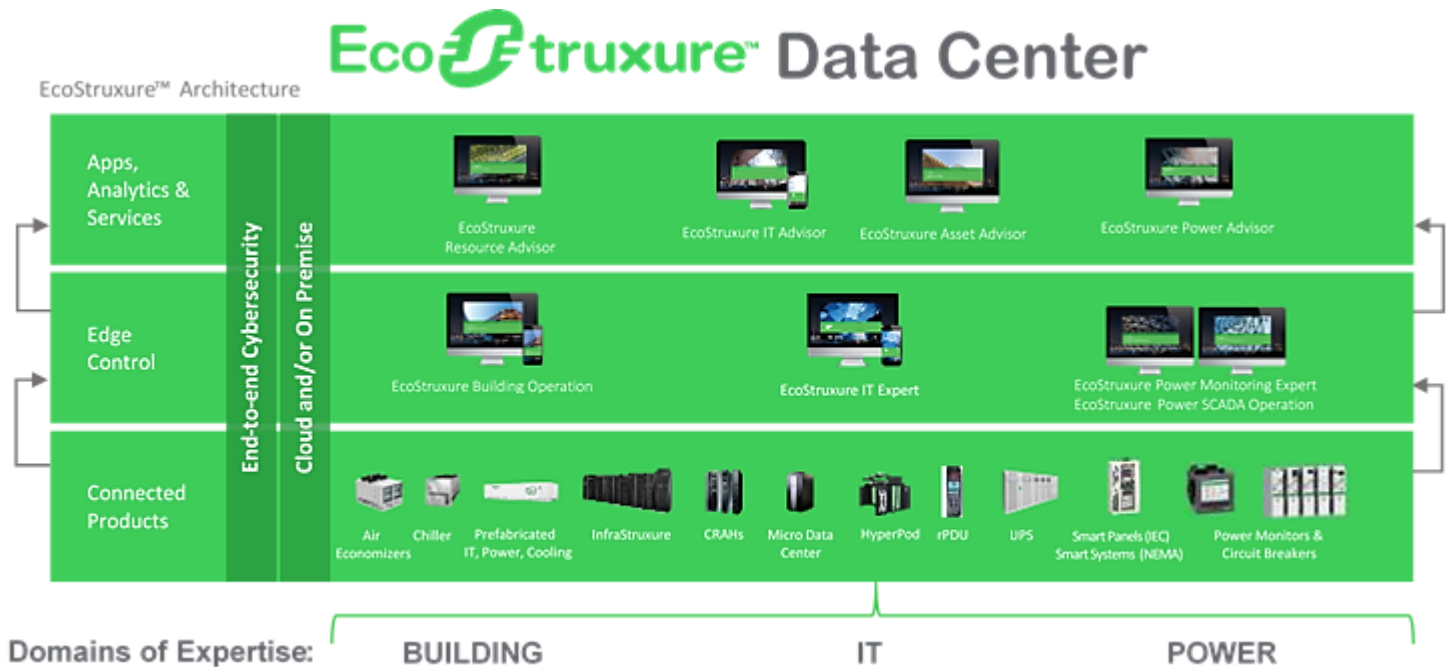
EcoStruxure Data Center

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.

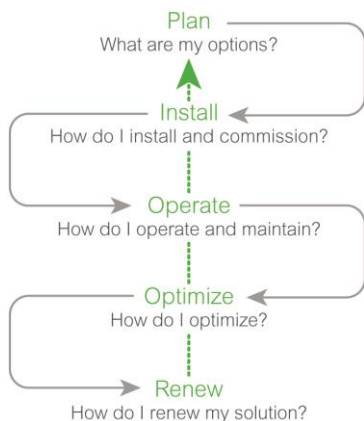
- *EcoStruxure Power* monitors power quality, generates alerts, while protecting and controlling the electrical distribution the electrical distribution system of the data center from the MV level to the LV level. It uses any device for monitoring and alerting, uses predictive analytics for increased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

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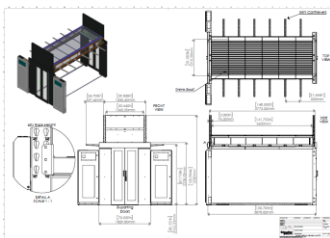
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Get more information for this design:

Project Name: Pcs Ref Design 1.8
Revision: 000001 - Rev 01
Date: 01/03/2019

Quote Number: 047914
Quote Date: 01/03/2019

RPP Configuration



Engineering Schematic

BCM Report
BOM Report
Revision Number: 00000010000000000000000000000000
Total Relative Weight: 8143.81 kg

Quantity	Item	Description
1	1813000000	1813000000
1	1813000000	1813000000
1	1813000000	1813000000
1	1813000000	1813000000

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