

Overview

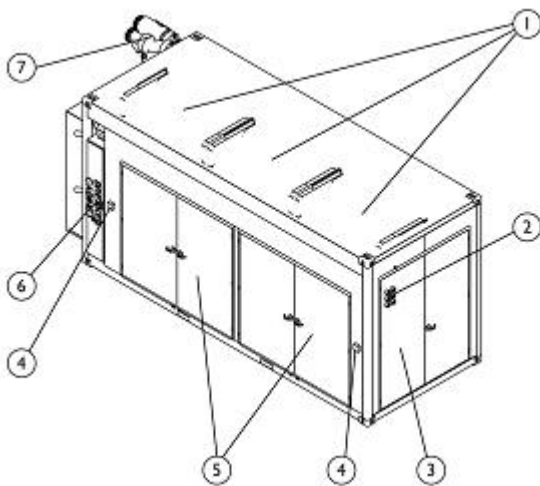
The HP Performance-Optimized Data Center is a containerized data center equipped with power infrastructure, cooling and IT power distribution. The HP Performance-Optimized Data Center (POD) delivers a fast, flexible and efficient path to data center ROI. It can be deployed within weeks instead of months or years and offers advanced cooling infrastructure that is more energy efficient than typical data center build-outs.

The HP POD delivers best-in-class technology to provide flexible and energy-efficient data centers that can ship fully integrated and tested with IT from an HP factory in as little as six weeks - slashing the time for data center build-out. It offers configurations optimized for power density, enabling you to quickly upgrade or extend the capacity of your physical infrastructure.

Provisions for cooling water, power and communication connections are provided. Connections to your central utility infrastructure are required. HP can provide assistance with design and implementation of the infrastructure supply and connections.

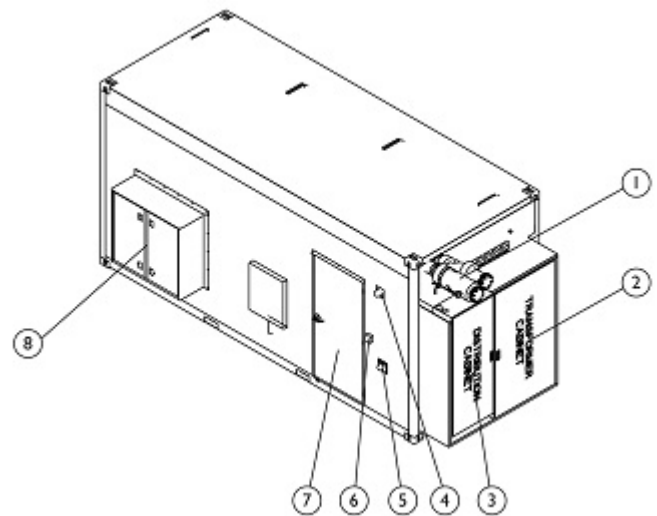
The HP POD 2000c is 20 feet (6 meters) and provides flexibility for a variety of technology deployments. The 20 feet/6 meter HP POD 2000c comes with 500U of total rack capacity, with 10 50U industry-standard racks. It gives you up to 290kW, non-redundant power capacity or 145kW capacity with N+N redundancy.

HP Performance Optimized Data Center (POD) 2000c



Hot Aisle View

1. Roof doors (to access heat exchangers)
2. Network cable pass-through
3. Cold aisle doors
4. Security keypad
5. Hot aisle doors
6. Breaker cabinet
7. Chilled water connections



Cold Aisle View

1. Chilled water connections
2. Power transformer cabinet
3. Power distribution cabinet
4. EPO (Emergency Power Off) strobe
5. EPO (Emergency Power Off) button
6. Security keypad
7. Hot aisle doors
8. Fire suppression cabinet

Product Features

IT Capacity

- Average load of up to 29kW+ per rack, up to max 34.5kW in single racks - providing capability for very high power density loads
 - 500U of available rack space - ten 50U racks.
 - Offers the equivalent of 2,000 square feet (200 m2) of traditional data center space
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IT Flexibility

- Racks are standard 19" universal RETMA rails
 - Supports HP and third-party industry-standard hardware with front-to-back air flow.
 - Racks can be fully integrated, tested and installed through Factory Express.
 - Allows you to use your IT racks the same way you do in your data center-providing complete access to front and rear of racks, without having to move them
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Power Capacity

- Up to 290kW in non-redundant configuration
 - Up to 145kW in redundant power configuration
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Cooling and Energy Efficiency

- Close-coupled cooling to match heat removal with IT loads
 - Delivers a Power Usage Effectiveness (PUE) ratio as low as 1.25 (including water chiller)
 - Allocates only 4 percent of power to the cooling fans
 - Close-coupled temperature control allows use of higher chilled water supply temperatures, which delivers improvements in energy efficiency
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Standard Datacenter Building Controls

- Fire panel, smoke detection, and alarms are standard
 - Low pressure fire suppression systems are available as customer options.
 - Integrated Environmental Control System (ECS) for monitoring fans, heat exchanger, chill water functionality
 - Emergency Power Off (EPO) system enabling immediate POD shut-down
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Location and Site Provisions

- 428 ft2 (40m2) footprint for POD and required clearances
 - Can be located inside or outside your facility. The HP POD is weatherized, and can be deployed as a standalone solution or as an extension of an existing facility. When installed outdoors, minimal shelter is recommended to aid in security and serviceability.
 - Standard operating temperature 0°F-130°F /-18°C-54°C when operating with at least 100kW of IT load. Lower operating temperature of -20°F-130°F /-29°C-54°C available with cold weather protection option.
 - Link to additional information - <http://h18004.www1.hp.com/products/servers/solutions/datacentersolutions/pod/index.html>
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Regulation and Certifications

- Listed to UL60950-1, UL50, CSA C22.2#60950-1
 - Listed to UL50 and CSA C22.2#94.1; Nema Type 3R
 - Classified to NFPA 70, 2008, National Electric Code
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Product Features

Serviceability

- The HP POD has a 36-inch (914mm) cold aisle, allowing IT equipment to be fully removed and serviced. Additionally, rear IT access is provided by two sets of large double doors on the hot aisle. IT serviceability is comparable to that of a traditional data center.
 - Provides overhead component serviceability for the internal cooling system
 - Offers a complete global portfolio of HP POD Infrastructure Services, ranging from basic deployment and commissioning services to complete solution maintenance and management.
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Rack Information / Requirements for IT

- 10 x 19" industry standard full depth 50U racks
 - 3500lbs (1587kg) loading capacity
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Rack PDU Info

- 3-phase 400V power; 32-amp power input feed with 230V output
 - Input current monitor measure the aggregate current draw on each power circuit
 - PDUs available with (24) C13 outlets or (18) C19 outlets
 - Up to 2 PDUs can be installed per rack
 - LED digital displays report the input current of each phase or branch circuit
 - IP access and security - Web interface, SSL, SSH, Telnet, SNMP, FTP, SNTP, Syslog, LDAP, LDAPS, TACACS and RS-232 Access
 - Reboot a single or dual power server with one command
 - Compliant to UL 60950-1
 - UP-489 rated circuit breakers
 - Agency approvals: FCC Class A, Part 15; CE; EMC-EN55022 ClassA, EN55024; EU; European Union (TUVGS mark) to EN 60950-1:2001
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HP POD Environmental control system (ECS)

- Stand alone system designed for monitoring and controlling HP POD environment.
 - HP ECS can be customized to integrate with some existing building monitor systems.
 - ECS Monitors: House panel and busway power distribution (voltage, amperage and kW load); individual heat exchangers (water inlet/outlet temps); drain pan sensors; fan tray amperage; ambient zone temperature (hot and cold aisles).
 - Configuration settings: Fan step setpoints; fan current tolerance; humidity, filter difference pressure, water and air temperature alarm points.
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Fire Suppression options

- Air Sampling Smoke Detection (ASSD) system and fire alarm panel with releasing capabilities provided standard with all HP PODs.
 - Manual pull stations, abort stations provided
 - Horns and strobes provided to indicate alarm conditions
 - Full interior fire protection provided with an appropriate number and placement of distribution nozzles
 - 3M Novec 1230 or FM200 fire extinguishing gas provided in two canisters (main and reserve)
 - Canisters are located in a NEMA 4 rated environmentally controlled cabinet or inside the POD itself depending on destination of POD and size of POD.
 - Capable of interfacing to site system
 - Fire suppression system requires that doors to be kept shut for optimum performance
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Product Features

- Cold Weather Protection option**
- US R value (TBD) moisture/mold resistant insulation installed in the walls, ceiling, floors, and doors.
 - Allows steady state operation to -20F provided a minimum of 50KW load in 20' POD and 100 KW load in 40' POD is present
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Controlled Access Option Readers:

- Card reader includes 12-key pad with 125 KHz proximity and 13.56 MHz contactless smart card capability (ideal for higher security applications requiring two factor authentication - card and/or pin number).
- Meets ISO standards 14443 and 15693
- Door locks have 1600+ lb pull force magnetic locks mounted to the interior frame of the door at man entry doors and hot aisle doors
- System is capable of acting as a "node" within existing compatible infrastructures
- Status LED's shall provide information about the alarm zones, tampering, and power fault.

System compatibility with:

- 13.56 MHz Smart Card Applications (Secure MIFARE, Secure ISOX, Secure ISOX Lite, DESFire)
 - 13.56 MHz Smart Card CSN (CSN HID iClass, CSN Inside Picotag, others on request)
 - 125 kHz Technologies (HID Prox GE/CASI Prox, AWID Prox, LenelProx)
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- Filter sensor option**
- Pressure sensor monitor and alarm through the HP POD ECS when the differential pressure reading indicates that filters need cleaning
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- Humidifier option**
- Provides 2-8 lbs/hour of water vapor into cold aisle to maintain POD environment within 20-80% relative humidity



Models and Options

Performance Optimized Datacenter	HP POD 2000c, 20ft/6m (2x225A busways)	AT980A
POD Options	HP POD 20ft Novec 1230 Fire suppression Kit HP POD 20ft FM 200 Fire Suppression Kit HP POD 20ft Cold Weather Kit HP POD 20ft Access Control Kit HP POD 20ft Filter Sensor Kit HP POD Humidifier Kit	AY500A AY502A AY504A AY505A AY507A AY516A
POD Racks and rack accessories	HP POD 50U Rack NOTE: Ten required for each HP POD 2000c. HP POD 50U Sidepanel NOTE: One required for each HP POD 2000c. HP POD 50U Rack Interface Air Seal NOTE: Nine required for each HP POD 2000c. HP POD 50U Rack Tie Down Kit NOTE: Ten required for each HP POD 2000c. HP POD Filler Panel Kit, 10 pack NOTE: One Filler Panel required for each empty rack U-space. HP POD Filler Panel Kit, 100 pack NOTE: One Filler Panel required for each empty rack U-space. HP POD Network Switch Enclosure Modifies airflow for network switches with side cooling HP POD Air Filter Replacement Kit, 6 pack	AT978A AN991A AP013A AP014A AQ682A AS933A AT960A AT979A
POD Power Distribution	HP POD Busway Dropbox Kit NOTE: Ten required.	AS613A
POD Rack PDUs	NOTE: One PDU required per rack, up to a maximum of 2 per rack. Quantity dependent on the IT configuration and level of redundancy required. Minimum Qty = 10. Maximum Qty = 20. PDU Bracket Kit contains one left and one right bracket. HP POD PDU Bracket Kit 32A PDU C13 Optimized with 24 remotely switched outlets and branch circuit monitoring HP POD 3ph PDU C13 Kit 32A PDU C19 Optimized with 18 remotely switched outlets and branch circuit monitoring HP POD 3ph PDU C19 Kit	AQ683A AS614A AS989A



POD Configuration Examples

Example of Redundant HP POD 2000w configuration:

Qty	SKU	Description
1	AT980A	HP POD 2000c, 20ft/6m (2x225A busways)
1	AY500A	HP POD 20ft Novec 1230 Fire Suppression Kit
1	AY505A	HP POD 20ft Access Control Kit
1	AY507A	HP POD 20ft Filter Sensor Kit
10	AN978A	HP POD 50U Rack
1	AN991A	HP POD 50U Sidepanel Kit
9	AP013A	HP POD 50U Rack Air Seal Kit
10	AP014A	HP POD 50U Rack Tie Down Kit
13	AQ682A	HP POD Filler Panel 10pk Kit
10	AS613A	HP POD Busway Dropbox Kit
10	AQ683A	HP POD 3ph PDU Bracket Kit
20	AS989A	HP POD 3ph PDU C19 Kit



Service and Support, HP Care Pack, and Warranty Information

Service and Support

- HP Services Product support includes either 9X5 NBD or 24X7 4 hour response on site service.
- Product Warranty: POD warranty is 1 year 9X5 NBD on site support. HP services offers uplifted support for 4 hour 24X7 response.
- HP Services offers a custom deployment service which provides the necessary installation, start-up, and commissioning services to insure a successful POD deployment.
- Other optional POD services include:
 - Tailored Factory Express for PODs
 - Build systems at the factory, integrate systems into racks, test, load integrated racks into the POD
- Onsite integration
- Custom Furnished Equipment installation/start-up
- Datacenter relocation services
- Assessments
- Capacity analysis (ensures adequate power and cooling)
- Site analysis (Mech/Elec conceptual plans and pricing to support POD)
- Site design
- Construction Documents
- Construction Administration services
- Mission Critical Facilities Commissioning (in addition to Standard Cx)
- Pre commissioning
- Enhanced commissioning
- Failure mode testing
- Integrated testing

Technical Specifications

	HP POD 2000c
Length (plus clearance)	22 ft (plus 2 ft.)
Width	8 ft 6 in
Height	10 ft
Site length requirement	28 ft
Site width requirement	15 ft 4 in
Site height requirement	10 ft
Max Container Weight	49,500 lbs.
Max Weight per Rack	3500 lbs total / 3250 lb IT load
Standard ISO Container spec	Yes
Power distribution	2 x 225A busway
Container Load Limit	up to 291 kW non redundant / up to 145 kW redundant
Avg power per rack (kW)	29 kW average / 14.5 kW average
Max power per PDU	17.2 kW (max rack power 34.4 kW using 2 PDU)
Input power voltage	2 x 480V 3phase Delta, 400A, 50-60 Hz
Voltage to rack	240V, phase to neutral
Cooling technology	Chilled Water to Heat Exchanger, Hot/Cold Aisle
Flow rate	120 gpm
Temperature (Max Inlet)	55° to 75°F / 12° to 24°C
Flange/Pipe diameter	3in/150#
Airflow per rack	1800 cfm
Rack Type	19" Industry Standard Full Depth
Support for 3rd party IT Equipment	Yes
Max number server racks	10
Available U space per rack	50U
Total Supported rack space	500U
Max server nodes per container	up to 1600 nodes using BL2x220c
Maximum Blade slots per rack	80
Smoke detection (VESDA)	Yes
Fire suppression	Optional
Emergency power off (EPO) switch	Included
Humidity Monitoring	Yes
Humidifier	Optional
Building Management System (BMS)	Included
Networking	2-1/2" / 6.35cm pass through (6 at each end)
Security	Key Locks Std., Others Optional
Operating min-max temp	0°F-130°F / -18°C-54°C (-20°F-130°F / -29°C-54°C with optional cold weather protection)
Operating humidity range	0-100%
Operating altitude	10,000 ft max



Technical Specifications

20ft/6m POD	Number of 3phase PDUs Per POD	Number of Drop Boxes Per POD	Avg Power Capacity Per Rack	Total POD Power Capacity
2 x 225A busway Non redundant configuration	10-20 (1 - 2 per rack)	10	29 kW	291kW
2 x 225A busway N+N Redundancy	20 (2 per rack)	10	14.5 kW	145 kW

Input Voltage	Non- redundant kW load
415/240V	291 kW
400/230V	280 kW
380/220V	267 kW

Rack	Dimensions	Installed	50U rack space 54.6cm (21.5in) wide x 89.6cm (35.26in) deep x 229.6cm (90.4in) tall
	Weight	Operating Shipping	Net weight = 122 kg (268.5lbs) Gross weight = 133.4kg (293.5lbs)

PDU	Dimensions	Installed	69.0 in (1753mm) x 1.75 in (44mm) x 3.5 in (89mm)
	Weight	Operating Shipping	Net weight = Gross weight =

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