

Data Center Specification Bermuda

AN INTERNATIONAL-STANDARD DATA CENTER SERVING MULTIPLE BUSINESSES

A world-class data center in Devonshire, Bermuda, offers clients the opportunity to locate high density servers in a multi-cabinet facility supplied with power, cooling, and all emergency back-up services for critical equipment. Central to local companies as well as firms in the U.S. mainland and the Caribbean, the windowless structure – solid reinforced concrete with four-foot-thick walls and roof – can withstand Category 5 hurricanes. It stands at one of the island's highest elevations, 114 feet above sea level.

Complementing the circular center's solid exterior, there are internal columns and an interior raised floor comprising 24" x 24" tiles with load capacity up to 2000 lbs. Below this, a two-foot plenum provides open space for chilled water pipes and electrical feeders.

The UPS room is in a building on another area of the property and level with the data center. UPS batteries are just below in a separate room. This exits directly to the outside, easing any necessary battery maintenance or replacement.

With a comprehensive infrastructure in place, this facility represents an ideal solution for clients who choose to share power resources while enhancing individual server productivity.

Server Cabinets

Depending on specific business requirements, the cabinets offer three separate power capacity configurations, all connected to fully redundant power distribution units installed within and all with local and remote monitoring capability. Users can opt for 5kW three-phase 120/208V; 10kW, three-phase 120/208V; or 12kW, three-phase 120/208V.

Redundancy

Infrastructure systems provide N+1 redundancy, with power utility feeders and the chiller plant partly redundant. If one feeder fails, the generator plant will assume augmentation, guaranteeing uninterrupted operation. If one chilled water circuit out of four lapses, the others will maintain cooling. There is full redundancy in the utility transformers, the electrical distribution system (switchgears, panel boards and feeders), the emergency generating plant, and all UPS systems.

Climate Control

Designed for high-density server arrangements, the data center's climate will be stable at 72° F and 50% humidity. Four Liebert downflow, 60-ton capacity chilled water units, with cool air distribution via the raised floor plenum and perforated tiles control this environment. Hot/cold aisle layouts ease heat removal and rack-mounted cooler units sit atop all cabinets, further lowering heat released into the hot-air aisle.

Outside the building, two 300-ton, nominal-capacity air-cooled chiller units, each with a two-pump circulation system and two chilled water circuits, supplement the interior cooling sources while ensuring redundancy.

Power Distribution

The local power utility company supplies two 4160V feeders to a newly built transformer vault on the property. If one utility feeder fails, double-ended switchgear allows the site to maintain power. This switchgear further creates two partly redundant systems – Side A and Side B. When added to the support of the generating system in case of one feeder failure, this creates a full N+1 configuration. The Side A/Side B setup continues down to individual data center cabinets via distribution panel boards supplying climate control and UPS systems.

Emergency Power

Three 1000kW generators, connected in an N+1 redundancy system, provide emergency power to the facility via two automatic transfer switches (ATS) mounted at the double-ended main switchgear. To provide 55 hours of generator operations before refueling, a UL-rated tank at the on-site generating plant holds 10,000 gallons of diesel fuel.

Uninterrupted Power

Two Liebert 1000 kVA, battery-equipped UPS systems allow 20 minutes of battery backup. The systems' auxiliary maintenance switchgear prevents server power interruption and the battery monitoring system is capable of overseeing UPS batteries from a remote locale in real time. Because the UPS systems connect to power distribution as Side A/Side B, if one fails, the second one can support every client cabinet in the data center.

Ten power distribution units (FPC) mounted in the data center disseminate UPS power. Equipped with a step-down (from 480V to 120/208V) transformer and a monitoring panel capable of displaying local and remote monitoring of voltage, current, and frequency, these units also can display FPC status. Five are connected to Side A UPS, five to Side B. Two power supply circuits – one from FPC Side A, one from FPC Side B – power each server cabinet.

Fire Alarm And Fire Suppression

A VESDA early warning detection system and FM-200 fire suppression system protect the data center.

Grounding And Lightning

Data center grounding and support equipment grounding comply with Telecordia specifications NFPA-70 frequentations and IEEE 1100 (Emerald Book). The building's lightning protection system includes an underground grounding conductor installed in a loop configuration with down conductors connected to lightning air terminals on the roof in compliance with NFPA-780. Two TVSS surge protection units are installed on the main switchgear.

Questions?

For additional information about how this unique individual server facility can work for clients, contact your Cable & Wireless Account Manager or call Sales at (441) 497-7000 e-mail: salesbda@bda.cwplc.com

DATA CENTER FACILITIES OVERVIEW

Data Center 1

Data building:

Designed and built to withstand a Category 5 Hurricane.
Four foot (48") thick outer walls constructed of reinforced concrete around a steel frame.
No external windows.
Located 114 ft above sea level - one of the highest elevations in Bermuda.

Data floor:

Total data floor measures approximately 3400 sq ft.
Chilled water pipes and electrical feeders located below raised floor.
Raised floor constructed using 24" x 24" tiles with load capacity up to 2000 lbs.
Individually locked 42U equipment cabinets using master key and customer-programmable combination lock arrangement.
Each cabinet is configured with power capacity options of 5kW, 10kW or 12kW 120/208V circuits.
Each cabinet has two fully redundant power distribution units.
Local and remote monitoring and reporting of individual cabinet usage and remote control of power receptacles to allow remote power cycling.
Designed for high-density high-power server environment to support power capacity options using redundant cool air distribution system via the raised floor plenum and perforated tiles using hot/cold aisle layout.
72° F and 50% humidity maintained climate.
Each cabinet equipped with rack mounted chilled water cooler unit for cooling hot air before it leaves the cabinet into the hot air aisle.

Power:

Fully redundant 4160V/1000 kW Belco power plant with two feeders to on-site transformer vault with 1000 kVA step-down transformers to 480V.
Fully redundant electrical distribution system; switchgears, panel boards, on-site feeders.
Three 1000 kW emergency generators connected to a 2+1 redundancy system to provide emergency power to 100% of the data center load.
Generator plant equipped to run for a minimum of 55 hours before refuelling.
UPS room located separately but close to the data center for best environmental management.
Two fully redundant 1000 kVA UPS systems, each with 20 minutes battery back-up for guaranteed uninterrupted power supply when transitioning from Belco to generator power.

Climate Control and Mechanical Support System:

Two external 300-ton, nominal capacity air-cooled chiller units in a load sharing arrangement with each able to provide 100% of the cooling. Each chiller also has two chilled water circuits and two circulation pumps for redundancy.

Security

Very Early Smoke Detection Apparatus (VESDA) installed.
FM200 fire suppression system.
Integrated fire alarm system with Cable & Wireless Teleport complex.
CCTV system covering all entrances/exits and main areas and aisles.
24-hour video recording.
Electronic security card access system.
Meet and greet of all persons entering the building/ data floor with 7x24x365 availability.

Network Connectivity

Full range of network connectivity, including:
Metro Ethernet via Quantum and/or BTC up to 1Gb/s
Internet DIA access up to 1Gb/s
Domestic and International PLCs up to STM-16
C&W Global MPLS up to 100Mb/s
Other options available on request
24x7x365 technically manned network monitoring.

Grounding and Lightning System

Data center and support equipment grounding in compliance with Telecordia specifications, NFPA-70 frequentations and IEEE 1100 (Emerald Book).

Lightning protection system including underground grounding conductor in loop configuration with down conductors connected to lightning air terminals on the roof in compliance with NFPA-780.

Two TVSS surge protection units installed on main switchgear.

Amenities

Separate goods delivery area away from data floor.
Separate preparation area away from data floor.
Storage area for manuals, spares, small tools, etc.
Rest room.
Access to lunchroom with kitchen.
Snack and drink vending machines.

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Frequently Asked Questions

Why collocate with Cable & Wireless when I can host my servers on-site?

With C&W's comprehensive infrastructure, security and redundancy this facility is an ideal solution where you will benefit by sharing power resources and enhance individual server productivity.

The data center sits on the backbone of Bermuda's fastest, most redundant international capacity.

How much power can my rack draw?

Choose between a 5kW, 10kW or 12kW individually locked 42U cabinet. Each rack is fit with combination lock, programmable by the customer. Carefully configured to maximize power draw and data center climate control, racks are pre-assigned according to customer requirement. Clients are therefore asked to consider future requirements and a dedicated C&W Account Manager will guide you. Cabinets are individually monitored for power usage with rack 'meter readings' reported monthly. This ensures that you pay only for the power you use.

Is the data center fully redundant for maximum uptime?

Yes. There is a fully redundant 4160V/1000 kW Belco power plant with two feeders to an on-site transformer vault with 1000 kVA step-down transformers to 480V. We use a fully redundant electrical distribution system; switchgears, panel boards, on-site feeders. Three 1000 kW emergency generators are connected to a 2+1 redundancy system to provide emergency power to 100% of the data center load. The generator plant is equipped to run for a minimum of 55 hours before refuelling. The UPS room is located separately but close to the data center for best environmental management. Two fully-redundant 1000 kVA UPS systems, each have 20 minutes battery back-up for guaranteed uninterrupted power supply when transitioning from Belco to generator power. Two external 300-ton, nominal capacity air-cooled chiller units are configured in a load sharing arrangement with each able to provide 100% of the cooling. Each chiller also has two chilled water circuits and two circulation pumps for redundancy.

What Climate Control is in place in the Data Center?

Designed for high-density server arrangements, the data center's climate is stable at 72°F and 50% humidity. Four downflow, 60-ton capacity chilled water units, with cool air distribution via the two-foot raised floor plenum and perforated tiles control this environment. Hot/cold aisle layouts ease heat removal and rack-mounted cooler units sit behind all cabinets, further lowering heat released into the hot-air aisle.

What security measures are in place?

In keeping with the Cable & Wireless standard, the data center deploys a VESDA early warning detection system and FM-200 fire suppression system.

Data center grounding and support equipment grounding comply with Telecordia specifications NFPA-70 frequentations and IEEE 1100 (Emerald Book). The building's lightning protection system includes an underground grounding conductor installed in a loop configuration with down conductors connected to lightning air terminals on the roof in compliance with NFPA-780. Two TVSS surge protection units are installed on the main switchgear.

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