

Sentry Smart CDU's™ Power a Cabinet with Two HP BladeSystem® c7000 Enclosures

Server Technology's Sentry Smart CDU™ Solutions to Power a Cabinet with Two HP BladeSystem® c7000 Enclosures

The HP BladeSystem® c7000 10U enclosure supports up to 16 half-height or 8 full-height blades for one of the highest densities in the industry. With an average power usage of 4,458 Watts at peak performance¹ for each BladeSystem, this density poses challenges for power distribution and redundancy. This Application Note will illustrate how to power and provide redundancy for two HP c7000 BladeSystem configurations utilizing Server Technology Sentry CDU's (Cabinet Power Distribution Units).

Configuration for a Two HP BladeSystem c7000 Rack

Each HP BladeSystem fully loaded draws approximately 4458 W, which calculates to a total current draw of 21.43 Amps at 208 V for one system or a total of 42.86 Amps for the two systems. Each BladeSystem contains six single-phase, 208 V C20 power supply inlets which will draw approximately 3.57 A each. By utilizing two Server Technology Sentry Switched CDUs, this cabinet can be remotely managed in addition to providing power redundancy in case of power loss to one of the two CDUs.

Server Technology Products Utilized

- > Sentry Switched CW-24VY-L30M
(24 outlet IEC 60320 C13, 208 V, 3-phase, 30 A) CDU, Master
- > Sentry Switched CX-24VY-L30M
(24 outlet, 208 V, 3-phase, 30 A) CDU, Expansion
- > Power cords: IEC 60320 C14 to C19

Power Requirements for a Cabinet with Two HP BladeSystems

- Total power usage: 8916 Watts (4458 W per HP BladeSystem)
- Total power supply requirements: 208 V, 3-phase, 42.9 Amps
- Input power feeds required: Two 208 V, 3-phase, Wye, 30 Amps (each de-rated power feed delivers 8.63 kW of power at 41.5 Amps)
- Number of outlets: 12 IEC 60320 C19 (6 per HP Blade System)
- Other requirements: Redundancy, remote power management, local current indicators to help in load balancing

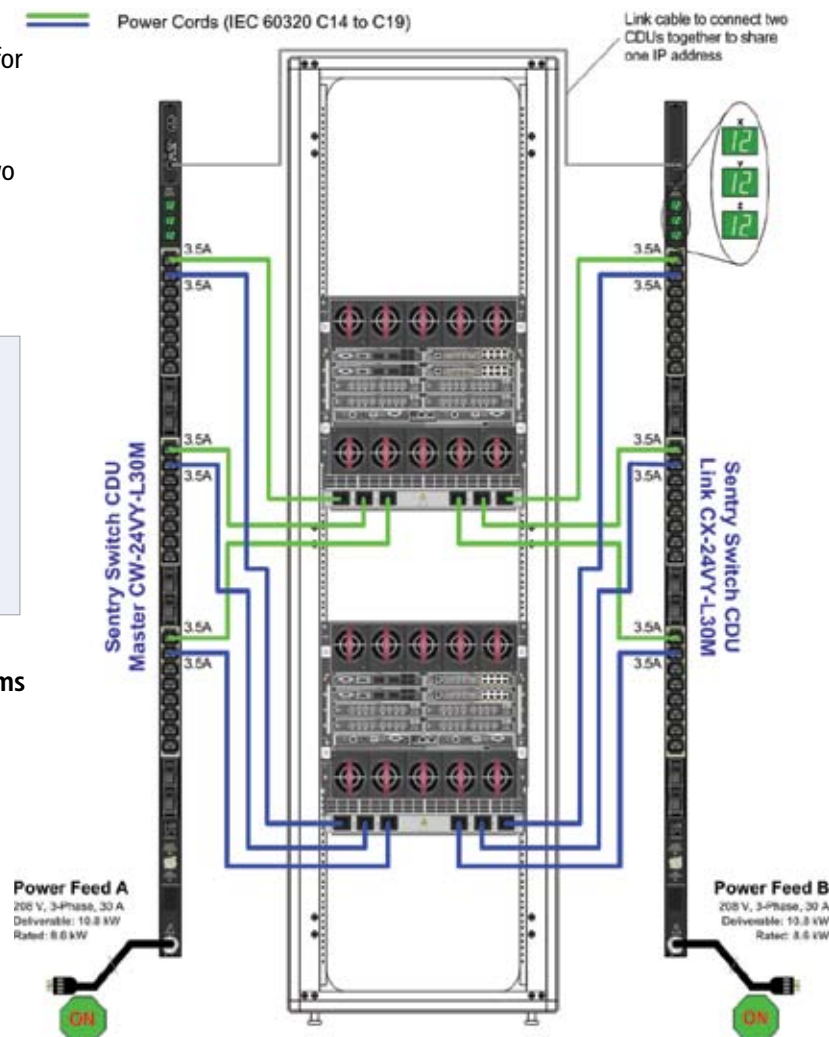


Figure 1: Normal Operation

With both input power feeds live, the system draws 3.5 A per outlet resulting in 12 A per phase circuit.

In the event of power loss to one CDU, the load will be drawn through the other CDU. **Note:** The power saving features of the c7000 must be turned off for all three outlets on each power supply to equally share the load and to properly balance the 3-phase supply.

Key Benefits

Master / Expansion Configuration – link two Sentry Switch CDUs under one IP address, allows grouping of outlets across the Master and Expansion units

Remote Power Management – by creating an outlet group for all six outlets for each of the BladeSystems, a System Administrator can turn off/on or reboot a server remotely (in- or out-of-band) if a system locks up

Three local LEDs – Large, easy-to-read displays let you determine if the load is balanced. Visual indication that power is supplied to the CDU

Utility Outlet – the CW-24VY-L30M features a 120 V, NEMA 5-20R outlet to allow users to plug in their standard notebook power supply or other low power, 120 V devices while troubleshooting a cabinet on site

User Access Levels – Lock out unused outlets to prevent someone from arbitrarily plugging devices into the CDU resulting in an unbalanced load or over loading a branch circuit

Environmental Measurements – Qty (2) temperature and humidity measurements per CDU (local and remote monitoring)

Local and remote notification if a branch circuit is lost

SNMP Traps / Email Alerts

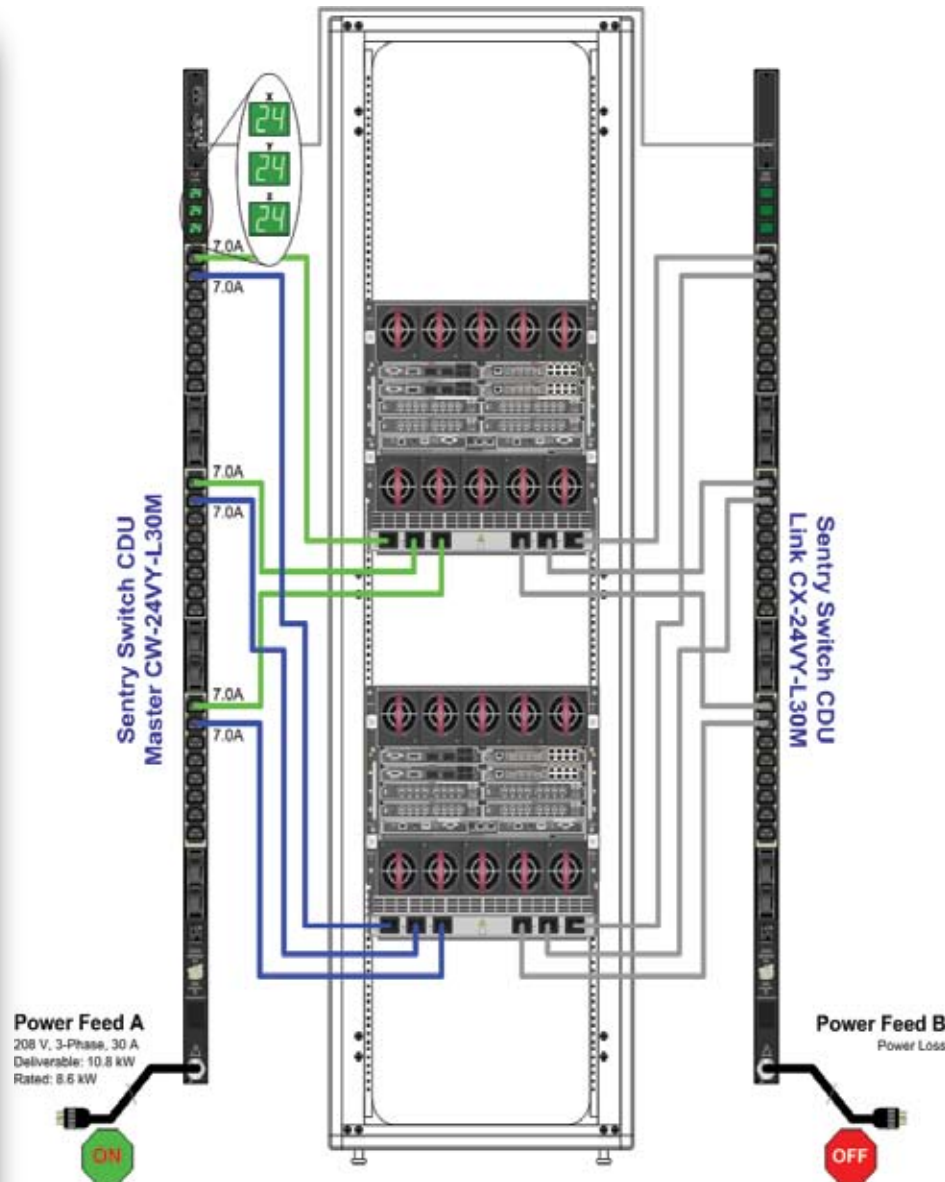


Figure 2: Loss of One Input Power Supply

During the loss of one input power feed, the system will draw all its power from the live supply. In this situation, the current draw is 7.0 A per outlet and 24 A per phase circuit.



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Footnotes:

1. *Principled Technologies, Inc. (2007). SPECjbb2005 performance and power consumption on Dell and HP blade servers. Durham, NC. Principled Technologies, Inc.*

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