

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

## Server Technology's Sentry Smart CDU™ Solutions to Power a Cabinet with Three 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 performance<sup>1</sup> for each BladeSystem, this density poses challenges for power distribution and redundancy. This Application Note will illustrate how to power and provide redundancy for three HP c7000 BladeSystem configurations utilizing Server Technology Sentry CDU's (Cabinet Power Distribution Units).

### Configuration for a Three HP BladeSystem c7000 Rack

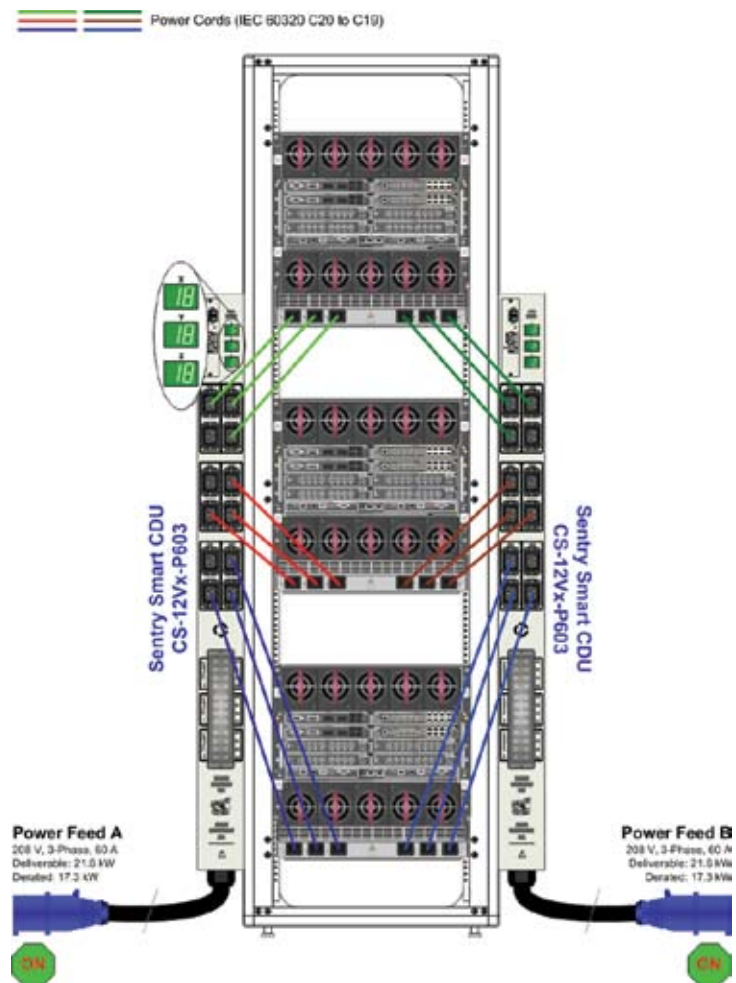
Each HP BladeSystem fully loaded draws approximately 4458 W, which calculates to a total current draw of 21.43 Amps at 208 V for one system or a total of 64.3 Amps for the three systems. Each BladeSystem contains six single-phase, 208 V C20 power supply inlets which will draw approximately 3.57 Amps each.

#### Server Technology Products Utilized

- > Two Sentry Smart Model CS-12Vx-P603 CDU (12 outlet, 208 V, 3-phase, 60 A) CDU
- > Power cords: IEC 60320 C20 to C19

#### Power Requirements for a Cabinet with Three HP BladeSystems

- Total power usage: 13.4 kW (4458 W per HP BladeSystem)
- Total power supply requirements: 208 V, 3-phase, 64.3 Amps
- Input power feeds required: Two 208 V, 3-phase, 60 Amps (each de-rated power feed delivers 17.27 kW of power at 83 Amps)
- Number of outlets: 18 IEC 60320 C19 (6 per HP BladeSystem)
- Other requirements: Redundancy, 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 18 A per phase circuit.

If one of the input power feeds fails, the other CDU must be capable of carrying the whole load (See Figure 2). The Sentry Smart CS-12Vx-P603 CDU is designed to deliver 27.68 Amps at 208 V per phase. **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**

Sentry Smart 60 Amp CDU's reduce the number units needed to deliver the power required in this cabinet configuration. This in turn reduces the number of power cords needed for each cabinet. Fewer power cords means lower infrastructure costs and improved airflow in a raised floor environment, increasing the cooling efficiencies

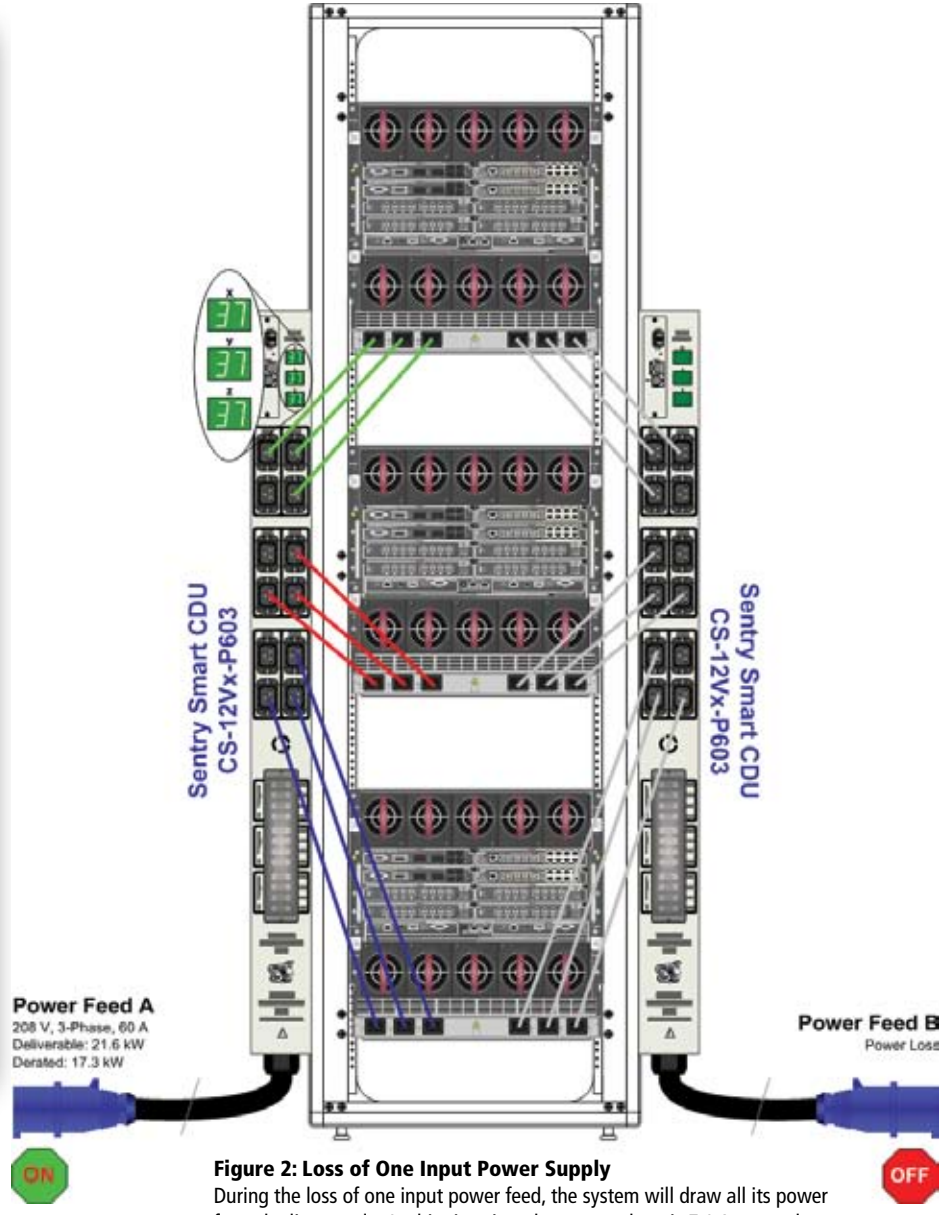
Sentry Smart CDUs allows administrators to view the current load and environmental conditions remotely

**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

**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 7.1 A per outlet and 37 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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