For more information about the I/O feature that is available with the z15, see Chapter 3, “Supported features and functions” on page 35.

2.5 Power and cooling

The z15 meets the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Class A3 specifications. ASHRAE is an organization that is devoted to the advancement of indoor-environment-control technology in the heating, ventilation, and air conditioning industry.

2.5.1 Power Options

The z15 19-inch frames are available with the following power options:

- Power Distribution Unit (PDU)

  Use of PDU for z15 can enable fewer frames, which allows for extra I/O slots and improves power efficiency to lower overall energy costs. It offers some standardization and ease of data center installation planning. PDU supports up to 12 PCIe+ I/O drawers.

- Bulk Power Assembly (BPA)

  The BPA supports up to 11 PCIe+ I/O drawers. This option is required when ordered with an Internal Battery Feature (IBF), Water Cooling Unit (WCU), or Balanced Power.

  The z15 operates with two or four sets of redundant power supplies. Each set has its own individual power cords or pair of power cords, depending on the number of Bulk Power Regulator (BPR) pairs installed. Power cords attach a three-phase, 50/60 Hz, 200 - 480 V AC power source. The loss of just one power supply per set has no effect on system operation.

  The optional Balanced Power Plan Ahead feature is available for future growth, which also assures adequate and balanced power for all possible configurations. With this feature, downtime for upgrading a system is eliminated because the initial installation includes the maximum power requirements in terms of BPRs and power cords.

2.5.2 Cooling options

The z15 cooling system is available with two options: Radiator (air) cooling or water cooling. Single chip modules (SCMs) are always cooled with an internal water loop, no matter which z15 cooling option that is chosen. The liquid in the internal water system can be cooled by using a radiator (for air-cooling option) or customer-supplied chilled water supply (for water-cooling option). PCIe+ I/O drawers, power enclosures, and CPC drawers are cooled by chilled air with blowers.

Conversion from air to water-cooled systems, and vice versa, is not available. The following options are available:

- Radiator (air) cooling

  The air cooling system in the z15 is redesigned for better availability and lower cooling power consumption. The radiator design is a closed-loop water cooling pump system for the single chip modules in the CPC drawers. It is designed with N+2 pumps, blowers, controls, and sensors. The radiator unit is cooled by air.