Vertiv™ 360AI

High Density Reference Design for AI

AI Reference Design #024

500kW Cluster at up to 58kW per rack with rear-door heat exchangers (RDHX)

A full data center environment designed for a 500kW solution with N configuration, using NVIDIA DGX B200 System.

Design Principles

1. **Design both Power and Cooling together** to optimize AI infrastructure.
2. **Power is at a premium**. Eliminate stranded power by aligning AI clusters to data center 'capacity blocks.'
3. **Consider total cost of ownership, redundancy, and blast radius** in AI power and cooling designs, and the tradeoffs among them.
4. **Handle AI workload surges** though system-level controls and power and cooling buffers.
5. **Design for a mix of liquid and air cooling**, which have a combined and interdependent impact on the ability to remove heat.
6. **Design for the future**. Anticipate your needs by upgrading to the latest power and cooling technologies today.



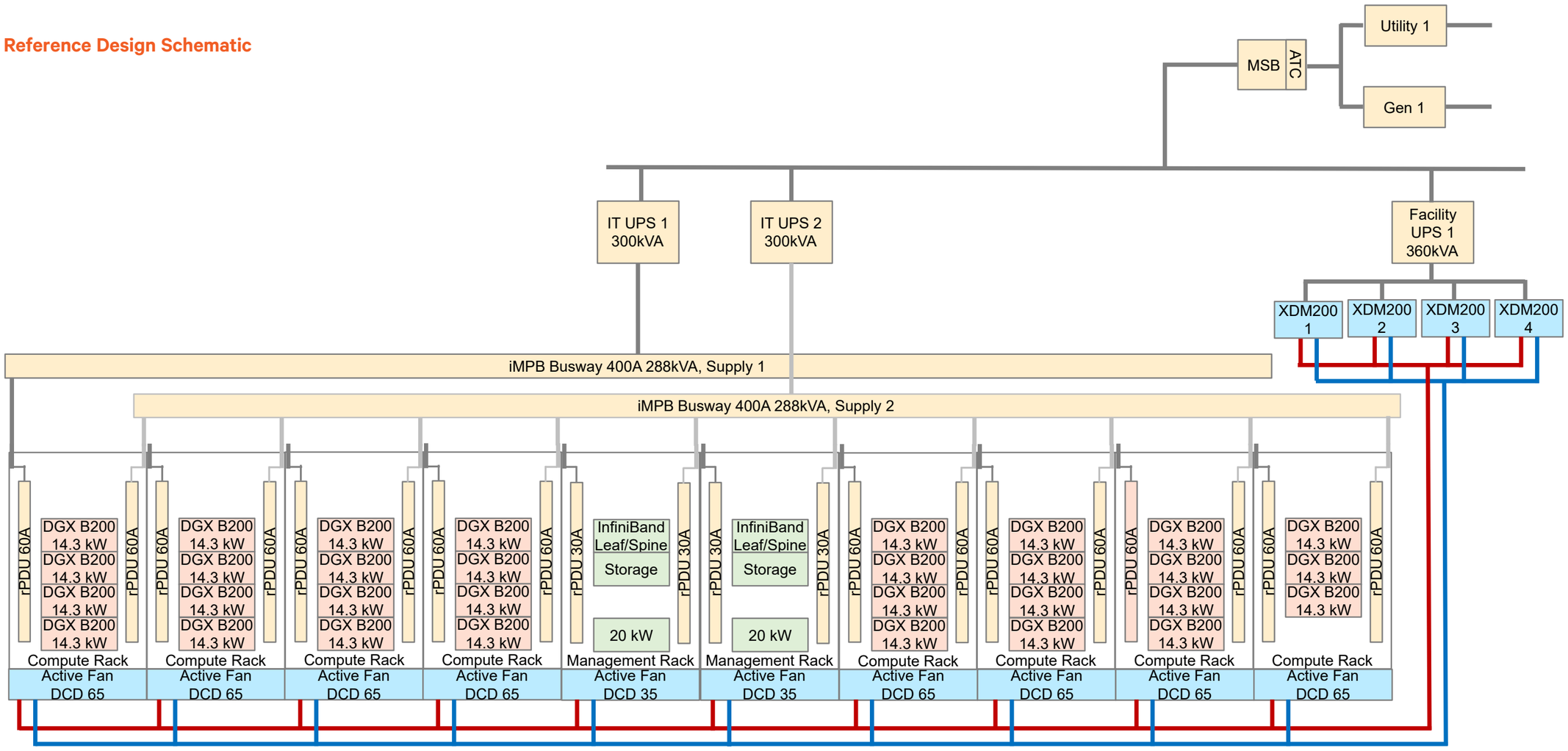
image is for representation only

Design Summary

Solution Capacity	500kW
Redundancy	N for power, N+1 for cooling
Total IT Load	484kW
Rack Density (IT load)	7 racks at 58kW, 1 rack at 43kW, 2 racks at 20kW
Rack(s)	10
Cooling Topology	100% Air (RDHx units)
Cooling Equipment	Split Indoor Chiller XDM200
Rack PDU(s)	60A vertical rack PDU, 2 per compute rack 30A vertical rack PDU, 2 per management rack
Busway	400A busway, 2 per POD 60A tap-off box, 2 per rack
UPS for IT	300kVA UPS, N configuration, 2 per POD
UPS for facility	360kVA UPS, supplying four XDM200

Vertiv™ 360AI

Reference Design Schematic



Legend

- Critical Power
- Thermal Management
- Networking & Storage Racks
- Computer Racks
- Liquid loop, cold/supply
- Liquid loop, hot/return

Utility supply

Generator

Key Terms

STS: Static Transfer Switch
UPS: Uninterruptible Power Supply
PDU: Power Distribution Unit
CDU: Coolant Distribution Unit
CW181: 150kW Vertiv™ Liebert® Chilled water cooling
XDU1350: 1350kW Coolant Distribution Unit (CDU)

References: https://www.nvidia.com/en-us/data-center/dgx-superpod-gb200/

Vertiv™ 360AI

Vertiv Components of the Design

Component	Details
IT UPS for IT	2x 300kVA N configuration UPS for POD
UPS for Facility	360kVA UPS for cooling unit
Busbar and Tap-off Boxes (TOB)	2x 400A busbar for each row, 1x 60A TOB per compute rack, 1x 30A TOB per management rack
Rack PDUs for compute racks	2x 60A vertical rack PDUs per rack
Rack PDUs for management racks	2x 30A vertical rack PDUs per rack
Cooling Unit	4x 200kW indoor chiller for POD
Air-cooling for compute racks	Rear door heat exchanger for each compute rack
Air-cooling for management racks	Rear door heat exchanger for each management rack
Compute Rack	8x VR9357, 48U 800×1200
Management Rack	2x VR9357, 48U 800×1200

Vertiv.com | **Vertiv Headquarters,** 505 N Cleveland Ave, Westerville, OH 43082, USA

© 2025 Vertiv Group Corp. All rights reserved. Vertiv™ and the Vertiv logo are trademarks or registered trademarks of Vertiv Group Corp. All other names and logos referred to are trade names, trademarks or registered trademarks of their respective owners. While every precaution has been taken to ensure accuracy and completeness here, Vertiv Group Corp. assumes no responsibility, and disclaims all liability, for damages resulting from use of this information or for any errors or omissions. Specifications, rebates and other promotional offers are subject to change at Vertiv's sole discretion upon notice.