



## High Density Reference Design for AI

## AI Reference Design #030

### 10 MW (4x Large PODs) at up to 142kW per rack

A full data center environment designed for a 10MW solution with 4 to make 3 configuration, utilizing the latest NVIDIA DGX GB300 NVL72 architecture.

#### 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** through 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.



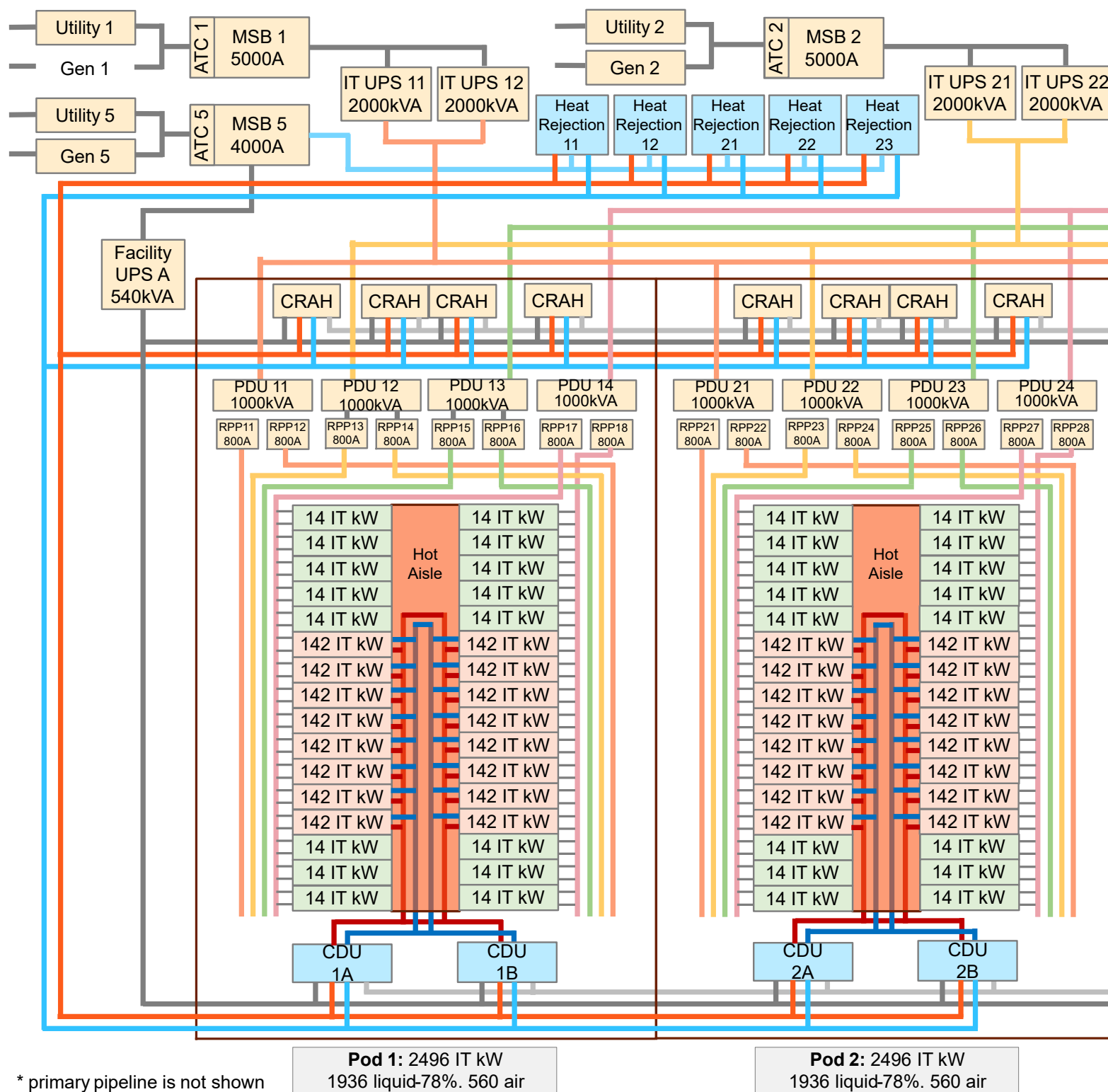
Image is for representation only

#### Design Summary

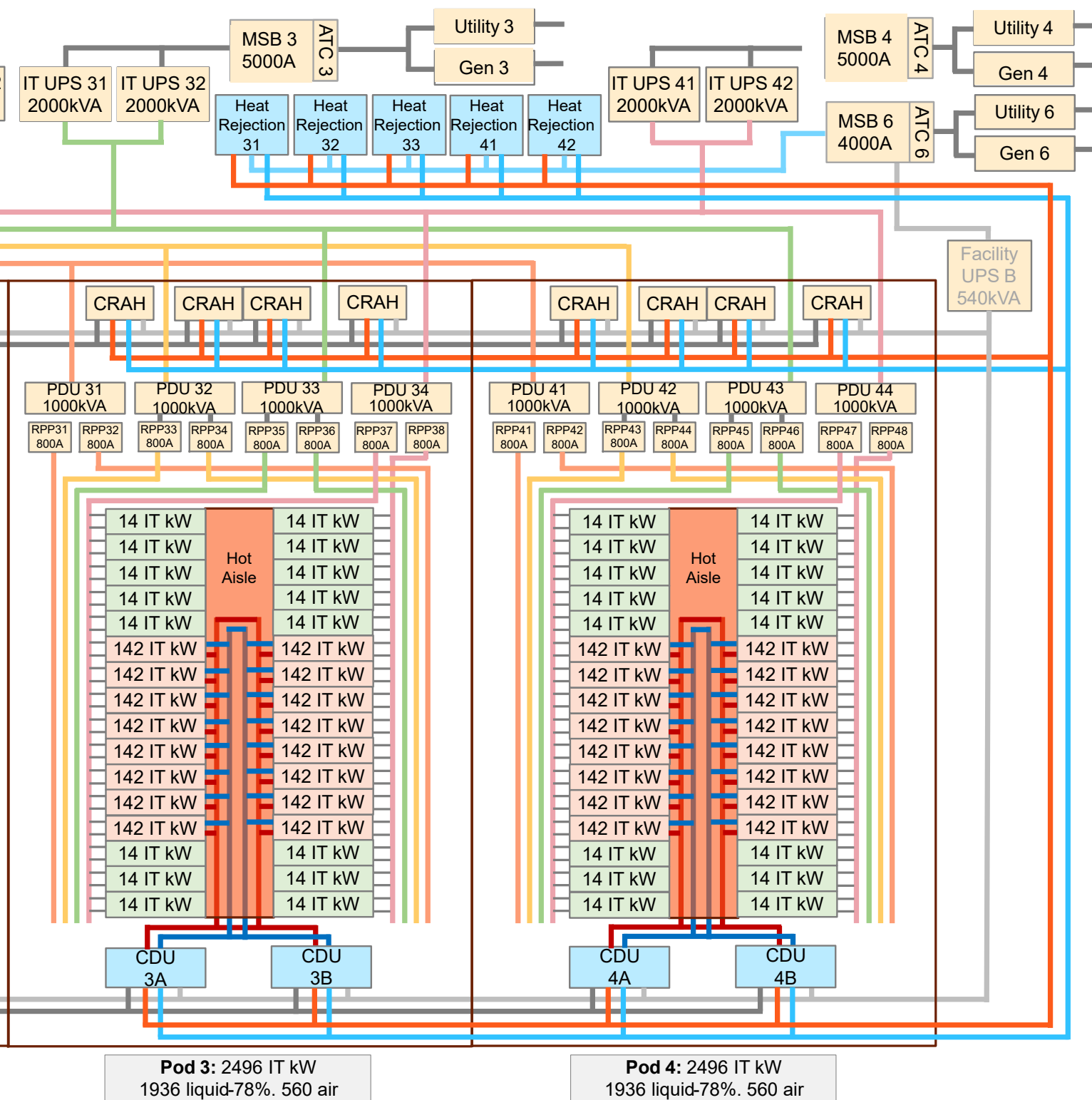
|                               |                                                                                                                   |                                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Solution Capacity</b>      | 10 MW                                                                                                             |                                                                                     |
| <b>Redundancy</b>             | 4 to make 3 for power, N+1 for cooling                                                                            |                                                                                     |
| <b>Total IT Load</b>          | 9,984kW (2,496 per POD)                                                                                           |                                                                                     |
| <b>Rack Density (IT load)</b> | 64 racks @ 142kW, 64 racks @ 14kW                                                                                 |                                                                                     |
| <b>Rack(s)</b>                | 128 total                                                                                                         |                                                                                     |
| <b>Cooling Topology</b>       | 78% liquid<br>22% air                                                                                             |                                                                                     |
| <b>Cooling Equipment</b>      | Liquid: XDU2300<br>Air: CW205<br>Heat Rejection: FF3145                                                           |                                                                                     |
| <b>Power (Facility-level)</b> | 5000A MSB for IT<br>4000A MSB for Facility<br>2000kVA UPS for IT<br>540kVA UPS for Facility<br>1000kVA PDU for IT |                                                                                     |
| <b>Power (POD-level)</b>      | <b>Option 1</b><br>800A 240/415V Busbar<br>60A TOB<br>33kVA DC power shelf                                        | <b>Option 2</b><br>800A 240/415V RPP<br>60A Branch Breakers<br>33kVA DC power shelf |

# Vertiv™ 360AI

## Reference Design Schematic



See next page for more configuration options.



Vertiv Components of the Design

| Component                                                 | Details                                                                                                                     |                                                                                                                                                                    |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main Switchboard (MSB)                                    | 4x 5000A MSB for IT<br>2x 4000A MSB Facility                                                                                |                                                                                                                                                                    |
| UPS for IT                                                | 8x 2000kVA UPS for four PODs, 2 UPS parallel, 4 to make 3 redundancy                                                        |                                                                                                                                                                    |
| UPS for Facility                                          | 2x 540kVA UPS for facility, 2N redundancy                                                                                   |                                                                                                                                                                    |
| Power Distribution Unit                                   | 16x 1000kVA PDU, 4 per POD                                                                                                  |                                                                                                                                                                    |
| Busbar and Tap-off Boxes (TOB) or RPP and Branch Breakers | <b>Option 1</b><br>8x 800A 240/415V busbar per POD<br>2x 60A TOB per compute rack per busbar<br>2x 60A TOB per support rack | <b>Option 2</b><br>4x 800A 240/415V RPP per POD<br>2x 60A branch breaker per compute rack per RPP<br>2x 60A branch breaker per support rack, 1 per every other RPP |
| Rack PDUs for compute racks                               | 8x 33kVA DC power shelf, 4 to make 3 redundancy                                                                             |                                                                                                                                                                    |
| Rack PDUs for support racks                               | 2x 33kVA DC power shelf, 2N redundancy                                                                                      |                                                                                                                                                                    |
| Liquid Cooling                                            | 2x XDU2300 per POD @ 4°C ATD, N+1                                                                                           |                                                                                                                                                                    |
| Air Cooling                                               | 4x CW205 per POD, N+2 for two PODs                                                                                          |                                                                                                                                                                    |
| Heat Rejection                                            | 5x FF3145 with PG30, N+1 for two PODs                                                                                       |                                                                                                                                                                    |
| Compute Racks                                             | 16x 48U racks per POD @ 142kW                                                                                               |                                                                                                                                                                    |
| Support Racks                                             | 16x 48U racks per POD @ 14kW                                                                                                |                                                                                                                                                                    |