HGX B300 reference clusters

Three cluster sizes, 64, 128 and 288 nodes, built to one specification

A 1Legion cluster is a complete NVIDIA HGX B300 system dedicated to one customer: GPU nodes, CPU nodes, control plane, storage, a non-blocking east-west fabric, the north-south network and the internet edge. These are the three reference sizes; larger clusters are designed to order.

Reference configurations

	64 nodes	128 nodes	288 nodes
GPU nodes (8 GPUs each)	64	128	288
GPUs	512	1,024	2,304
CPU nodes	24	48	108
Control plane nodes	6	6	6
Storage, appliance option (usable)	512 TB	1,024 TB	2,304 TB
Storage, storage-node option	9 nodes	17 nodes	38 nodes
Estimated IT load	about 0.98 MW	about 1.95 MW	about 4.39 MW

Estimated IT load uses planning figures of about 14 kW per GPU node, 1.0 kW per CPU node, 0.5 kW per control plane node, 1.3 kW per storage node and 5 percent of GPU load for the network.

Storage

Option A: appliance	Vendor-managed VAST Data, WEKA or DDN appliance, as the customer prefers; at least 1 TB usable per GPU; committed throughput and latency per tier; 24/7 vendor escalation
Option B: storage nodes	Nodes for the customer's own storage software; at least 3 TB raw per GPU; 30.72 TB NVMe PCIe 5.0 drives; self-encrypting drives supported; at least 9 nodes

Networks

East-west fabric	Rail optimized and fully non-blocking; 1 x 800 or 2 x 400 Gb/s planes per GPU; NVIDIA Spectrum-X or Broadcom Tomahawk 6 preferred, NVIDIA Quantum InfiniBand or Tomahawk 5 accepted; dedicated to one customer
North-south	400 Gb/s per node preferred, 200 Gb/s minimum; no oversubscription on storage leaves, below 4:1 on GPU leaves; RoCEv2 capable; MTU 9000; dedicated
Edge	Two independent transit providers at 100 Gb/s per circuit on physically diverse paths; eBGP with BFD; two redundant edge routers on A and B power; edge ACLs to the customer's rules, changes within one business day
DDoS protection	Volumetric layer 3 and 4 scrubbing from an established provider, activated through BGP within 5 minutes, at least 1 Tb/s
NAT and egress	Redundant HA pair, at least 10 million concurrent sessions, dedicated SNAT addresses (typically four)
Public service addresses	Dedicated addresses (typically eight); customer VIPs advertised over BGP; failover within 5 seconds; IPv6 dual stack
Customer IP space and ASN	The edge can advertise customer-owned prefixes and the customer's ASN; RPKI ROAs honored; BGP session authentication
Network telemetry	NetFlow v9 or IPFIX from both edge routers to the customer's collector

Burn-in before handover

HW-1	NCCL throughput with nccl-tests, with SHARP-accelerated collectives where supported
HW-2	Every InfiniBand or RoCE rail tested with ib_write_bw
HW-3	GPUDirect RDMA and storage smoke tests, including NVMe read and write
HW-4	NVLink and NVSwitch link count and bandwidth with nvbandwidth
HW-5	24-hour soak under a representative inference load at a sustained power cap

Results are delivered in an acceptance report.

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