

HPE Slingshot interconnect 400



What's new

- HPE Slingshot interconnect 400 switches provide 51.2 Tbps of bi-directional bandwidth with 64 ports each capable of 400 Gbps
- The new network interface card provides a single port of 400 Gbps connectivity to PCIe Gen5-based host systems for HPE ProLiant Compute XD/DL servers and HPE Cray SC EX/GX supercomputers.
- The new cables support the demanding signaling speed used in 400 Gbps links. Copper cables as well as active optical cables and transceivers for longer reach connectivity are available.
- The new HPE Slingshot transport link aggregation group (LAG) feature allows both Ethernet and Slingshot traffic to flow across fabrics enabling multi-fabric connectivity.
- Support for fat tree network topologies in addition to three-hop Dragonfly all-to-all topologies.
- The introduction of ACL tables enables multi-tenant security and workload isolation for both HPC/AI clusters built on HPE ProLiant Compute XD or DL rack servers and

Overview

Is your traditional high performance computing (HPC) / artificial intelligence (AI) cluster interconnect slowing your modeling and simulation (MOD/SIM) and AI applications down?

HPE Slingshot interconnect 400 is a modern high-performance interconnect for HPC/AI clusters. It delivers industry leading performance, bandwidth, congestion control, and low latency for MOD/SIM and AI applications. Doubling the feeds and speeds of HPE Slingshot 200, it is the 9th generation interconnect architecture of HPE Cray targeting 400G endpoint deployments. It enables unified HPC/AI clusters with over 260,000 endpoints delivering better application performance than InfiniBand, but with Ethernet economics!

Features

Delivered Performance Under Load with Low, Uniform Latency and High Bandwidth

The latest HPE Slingshot switches provide 25.6 Tbps of bandwidth with 64 ports each capable of up to 400 Gbps to deliver high bandwidth and low latency, overcoming traditional Ethernet approaches to buffering and error handling that create queueing latency and hinder low-latency RDMA applications.

Congestion management addresses the challenges of short-lived, small packet flows typical in HPC applications. Each switch detects congestion, identifies its causes, provides real-time feedback to its peers, and limits the injection rate from the congestion source until congestion clears.

Fine-grained adaptive routing, based on the ability of HPE Slingshot to track real-time information on load across each switch-to-switch path, dynamically re-routes traffic to balance loads (rather than sticking only to a predetermined path) to improve network performance and bandwidth utilization.

The HPE Slingshot interconnect 400 supports highly configurable quality of service (QoS) that provides the ability to control how network bandwidth is allocated to different classes of traffic and applications.

Engineered for Scale With High Efficiency

The high-radix 64-port HPE Slingshot switches enable low-diameter topologies that reduce the quantity of HPC network equipment, cabling, and lower power and cooling costs, while scaling up to 250,000 endpoints with fewer than three switch-to-switch hops.

The Dragonfly topology delivers cost-effective performance. HPC clusters using HPE Slingshot typically require substantially fewer optical cables without compromising performance. This reduces the cost and power required for an HPC interconnect solution.

The fine-grained adaptive routing and congestion management technologies of HPE Slingshot in silicon enable achieving sustained bandwidth at high utilization on demanding HPC applications without overprovisioning the network.

HPE Slingshot supports fat tree topology

Standard Ethernet Support

HPE Slingshot switches connect to the campus network using Ethernet, the standard for connectivity to data, without requiring gateway nodes. Very high scale connectivity can be achieved by aggregating multiple links from several HPE Slingshot switches to qualified edge routing switches.

HPE Slingshot NICs run standard IPv4 and IPv6 software using native software stacks, without encapsulation, alongside demanding high-performance RDMA that scales to large supercomputing scaled systems.

HPE Slingshot interconnect 400 is offered with select third-party Ethernet RoCE NICs or the HPE Slingshot NIC that deliver up to 400 Gbps connectivity using HPE Slingshot switches with very high performance RDMA and extensive hardware acceleration for MPI and HPE Slingshot SHMEM-based software.

Designed and Delivered as an End-to-End Solution

HPE Slingshot interconnect 400 is offered embedded into direct liquid cooled HPE Cray Supercomputing EX4000 or GX5000 supercomputers as well as for standard deployment with HPE ProLiant Compute XD or DL rack servers in standard enterprise racks.

HPE delivers full end-to-end solutions that reduce the complexity of procuring and operating HPC and AI infrastructures. HPE Performance Cluster Manager software and HPE Cray Supercomputing Programming Environment software take advantage of HPE Slingshot performance and management features.

HPE delivers HPE Slingshot interconnect 400 with full factory-integration for HPE Cray supercomputers and offers optional factory-integration services for HPC/AI clusters built on HPE ProLiant Compute XD or DL rack servers.

Technical specifications	HPE Slingshot interconnect 400
Technology	Ethernet
Protocol supported	400G Ethernet 200G Ethernet 100G Ethernet
Port configurations	QSFP-DD QSFP
Media types	Direct-attach cables, Transceivers and optical fiber

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- Accelerate AI, from pilot to production

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[For additional technical information, available models and options, please reference the QuickSpecs](#)

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