



Dotouch XPRO HPC™

High Performance Computing Network Test Solution



More Flexible



Higher Performance



More Functional Features



Lower TCO & Higher ROI



■ Product Positioning

platform designed for AI large model training, high-performance computing (HPC), and computing power cluster networks. Deeply integrating hardware simulation, protocol analysis, and collective communication algorithms, it provides comprehensive lifecycle testing capabilities—from single-node to ultra-large-scale clusters—for mainstream computing network technologies such as InfiniBand, ROCEv2, and lossless Ethernet. In terms of computing power network testing, the platform fully supports core capabilities such as GPU NCCL collective communication simulation, RDMA protocol testing, and lossless Ethernet (PFC/ECN) verification. Its key feature is that users can customize communication modes, message sizes, traffic models, and network impairment scenarios, freely editing and

■ Application

- InfiniBand/ROCEv2 network deployment, performance validation, and optimization for intelligent computing centers/supercomputing centers
- Efficiency Testing of Collective Communication at the Thousand-GPU Scale for AI Large Model Training Clusters
- Lossless Ethernet and ROCEv2 Compatibility Verification for Switches Targeting Communication Equipment Vendors
- Cross-data center computing power extension and collaborative training testing for

■ Typical test Scenario

- InfiniBand switches and network interface cards
- ROCEv2 Lossless Ethernet Device
- GPU Cluster NCCL Collective Communication Performance
- Computing Power Center Network Architecture (Leaf-Spine-SuperSpine)
- Cross-data center wide-area RDMA transport link
- Inter-satellite laser link for computing power constellation connectivity

■ Product Features

unication protocols on a single platform, including InfiniBand, ROCEv2, and lossless Ethernet (PFC/ECN).

- Customize and flexibly construct expected test scenarios, supporting arbitrary editing of GPU communication modes, message sizes, and traffic models.
- Simple and flexible deployment options, supporting deployment on x86 general-purpose servers, as well as VMware/KVM/OpenStack/public cloud/private cloud environments.
- Supports 100GE/200GE/400GE network interfaces, enables NIC mode switching (InfiniBand/Ethernet), and allows mixed insertion and use of different interface types.
- Simple configuration, supports comprehensive test result statistics and report generation, and enables user-level simulation log output.

■ Core Competency

abling collective communication simulation without

lucina user procurement costs:

Supported Features	Feature Description
Element/Node Simulation Capability	· Supports simulating network traffic for up to 24 computing servers on a single instrument; · Supports up to 24 200GE ports or 12 400GE ports per chassis ; · Supports inter-chassis cascading expansion to build large-scale testing clusters
Protocol simulation capability	· Supports InfiniBand protocol simulation (FDR/EDR/HDR/NDR); · Supports ROCEv2 protocol simulation, an RDMA technology based on UDP/IP encapsulation · Supports PFC (Priority Flow Control) and ECN (Explicit Congestion Notification) policy libraries; · Supports independent flow control configuration for 8 priority queues
Collective Communication Simulation	· Supports NCCL standard collective communication primitives: AllReduce, Broadcast, Reduce, Gather, Scatter, AllGather, AllToAll, Ring-Reduce; · Supports topology algorithms such as Ring, Tree, and Double Binary Tree ; · Supports parameterized testing with adjustable message size, communication interval, and surge cycle.
Traffic modeling capability	· Supports configuring message size (1B–16MB) based on GPU training task characteristics; · Supports communication data types: character, integer, and floating-point · Supports setting GPU training wait duration to simulate surge traffic; · Supports continuous traffic and custom burst traffic (burst packet length, interval period, rate threshold)
Delay measurement	· Supports unidirectional forwarding delay measurement with 100-nanosecond precision; · Supports high-precision unidirectional forwarding delay measurement across network interfaces and chassis; · Achieves nanosecond-level time synchronization using the IEEE 1588v2 PTP protocol; · Delay measurement is performed via sampling method
Signaling/traffic tracking	· Supports nanosecond-level timestamp capture and tagging; · Supports high-speed data buffering up to 100GB; · Supports line-rate packet capture and continuous storage; · Supports PCAP file export and in-depth offline analysis
Data Analysis and Reporting	· Visualize key metrics such as packet rate, throughput, packet loss rate, latency, and ECN/PFC trigger frequency; · Support log output; · Support test report generation and export (PDF & CSV)

Supported Features	Feature Description
Visual operation	· Web-based UI with visual operation interface, no additional client installation required; · Drag-and-drop computing cluster topology networking; · Users can customize network topologies and communication flows between any nodes
Automated Testing	· Open API interface based on HTTP Restful, enabling efficient integration with automated factories; · Supports AI large model-based automated testing and natural language generation of test scripts
System Management	· Supports B/S management architecture, accessible via mainstream browsers such as Chrome; · Supports Chinese interface, aligned with domestic user habits ; · Supports project switching, creation, editing, retrieval, and deletion

■ Dedicated capabilities of the computing power network

Supported Features	Feature Description
Computing Power Cluster Topology Simulation	· Supports simulation of three-tier Clos architecture (Leaf-Spine-SuperSpine); · Supports various topologies including star, dual-ring, and binary tree · Enables visual identification and precise localization of failed nodes, abnormal traffic, and parameter errors
Cross-data center testing	· Supports simulating 20ms inter-datacenter propagation latency; · Supports lossless transmission testing for wide-area RDMA · Supports cross-domain NCCL collective communication optimization validation
Integrated Computing and Network Simulation	· Integrates SimAI to build a full closed-loop process of "simulation topology generation - traffic construction - test execution - result analysis"; · Supports simultaneous testing of computing efficiency and communication efficiency · Simulation accuracy error <2%
High-volume traffic capture and analysis	· Supports 400G bandwidth bypass statistics and analysis; · Supports millisecond-level burst traffic statistics · Supports high-bandwidth line-rate forwarding packet capture; · Supports protocol parsing, traffic statistics, session tracking, and anomaly detection

ECN/PFC Special Testing	· Supports counting the number of packets with ECN marking received on each network interface; · Supports counting the number of CNP control traffic packets sent/received on each network interface; · Supports counting the number of PFC pause frames received and the duration of pause time on each network interface; · Supports counting the number of out-of-order packets on each network interface
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■ Core Performance Specifications

Supported Features	Feature Description
Maximum number of simulation nodes	A single instrument can simulate up to 24 computing servers.
Maximum communication bandwidth	A single instrument can simulate a computing power communication bandwidth of up to 4.8 Tbps
Port density	A single chassis supports 24×200GE or 12×400GE ports
Scalability	Supports cross-chassis cascading with linear bandwidth scaling
Delay measurement accuracy	100-nanosecond-level unidirectional forwarding delay measurement
Time synchronization accuracy	≤100ns (across boards/cabinets)
Support Protocol	InfiniBand / ROCEv2 / PFC / ECN / NCCL
Collective communication patterns	AllReduce, Broadcast, Reduce, Gather, Scatter, AllGather, AllToAll, Ring-Reduce
Message size range	1B - 16MB
Traffic model	Sustained traffic, burst traffic, surge traffic

■ Software Deployment

Configuration item	System Requirements
Deployment method	· Supports bare metal deployment on x86 servers; · Supports deployment on mainstream virtualization platforms such as VMware ESXi, Linux KVM, and OpenStack; · Supports deployment on public and private clouds; · Form factor 1: Pure software; Form factor 2: Integrated hardware and software
Operating System	· Standard Linux distribution
CPU	· ≥ 20 cores (core 0 reserved for system use, the rest for XPRO HPC software); recommended ≥ 48 threads for performance testing scenarios
Memory	· Minimum 4GB (including system memory usage); recommended ≥ 128 GB
Hardware interface	· Standard PCIe network card ports serve as test ports, natively compatible with NVIDIA BlueField-3 DPU; · Supports mixed insertion and use of 100GE/200GE/400GE Ethernet interface network cards; replacement and adjustment allowed within authorized scope
DPDK	· Supports DPDK driver binding
Browser	· Mainstream browsers such as Chrome (B/S management architecture)
Authorization Method	· USB key activation / software license authorization; · Supports license migration, allowing replacement or upgrade in case of hardware failure or insufficient performance

■ Order Item

Order Item	Product form	Instructions
XproHPC-4.8T	Hardware All-in-One / X86 Server Software Deployment	Supports 12x400GE ports
XproHPC-3.2T	Hardware All-in-One / X86 Server Software Deployment	Supports 8x 400GE ports
XproHPC-2.4T	Hardware All-in-One / X86 Server Software Deployment	Supports 6x400GE ports
XproHPC-1.6T	Hardware All-in-One / X86 Server Software Deployment	Supports 4x 400GE ports
XproHPC-800G	Hardware All-in-One / X86 Server Software Deployment	Supports 4x200GE or 2x400GE ports
XproHPC-400G	Hardware All-in-One / X86 Server Software Deployment	Supports 2x200GE ports or 4x100G ports

■ Contact Us

Beijing Headquarters Address: Room 1606, Building 2, Guotou Fortune Plaza, No. 9

Guang'an Road, Fengtai District, Beijing

Wuhan R&D Center Address: Room 501-1, Building A3, Financial Port, Guanggu Avenue,
East Lake High-tech Zone, Wuhan

South China Marketing Center: Room 1811, Building B, Fengxing Plaza, No. 242 Tianhe
Road, Tianhe District, Guangzhou City, Guangdong Province

East China Marketing Center: Room R355, 14th Floor, No. 800 Shangcheng Road, Pudong
New Area, Shanghai

Southwest Marketing Center: No. 123 Heping Road, Huayang Subdistrict, Tianfu New Area,