



TECHNOLOGY BRIEF

NETtrack Developer Center

Use Our NETtrack Developer Center to Reduce Your Risk and Speed Up Your Validation Process

The QLogic NETtrack Developer Center (NDC) provides businesses and NETtrack Alliance Partners with the infrastructure to test, profile, and certify their products without making significant investments in their own computing and testing resources. More specifically, the NDC offers an extensive array of High Performance Computing (HPC), storage, and converged networking resources and infrastructure that enables you to validate your solutions with QLogic products. Whether you are tuning your HPC application, validating your application with enhanced Ethernet and converged networking, or proving interoperability with QLogic products, the NDC provides your company access to the latest networking technologies.

No matter which technology, the NDC provides everything you need—an outstanding environment, industry leaders, and technology experts—to envision, architect, and demonstrate a proposed solution or to certify storage hardware or applications.

Overview

The QLogic NETtrack Developer Center (NDC) provides access to state-of-the-art technical resources to assist you in developing solutions around QLogic infrastructure. Within the NDC, you will find a highly experienced engineering team who is ready to assist with HPC, storage, and converged networking technologies. Whether you are a business looking for a cost-effective way to validate QLogic technology benefits or a NETtrack Alliance Partner looking to ensure compatibility, the NDC offers an integrated enterprise approach to testing and interoperability validation.

NDC Program Highlights

The NDC contains an extensive array of networking, server, and storage resources including:

- 180-plus servers, including the latest 64-bit multi-core CPU processing technology from AMD®, Intel®, and GPU technology from NVidia®
- All major/minor operating systems (OSs), including virtual OSs from Citrix®, Microsoft®, and VMware®
- Converged network environment supporting FCoE, iSCSI, and Fibre Channel storage over a 10GbE infrastructure, including FCoE and data center bridging (DCB) enhanced Ethernet switches
- Multiple HPC clusters (up to 768 cores, with the number of cores increasing with each new generation of processor technology)
- InfiniBand®-QDR interconnect (40 Gb/s)
- Storage area network (SAN), network-attached storage (NAS), and InfiniBand storage systems
- 60-plus combined terabytes of storage from Dell™ EqualLogic™, Dell Compellent®, EMC®, HDS, LSI®, NetApp®, and Xiotech®
- Variety of test suites and test tools
- Accessible via remote access or hosted visits
- Assigned support liaison

For more information on the NDC, please visit:

<http://www.qlogic.com/NETtrack/Pages/NETtrackDeveloperCenter.aspx/>

For Your Business... Proof of Concept Testing

The NDC offers companies a real-world solution implementation environment for testing and proof-of-concept of QLogic infrastructure. With a wide variety of equipment, this lab has the capability to prove how QLogic hardware is better suited to support companies' evolving business needs. In addition, by engaging with an innovative leader such as QLogic, you can architect and prove potential solutions to business challenges that will help ensure that your organization is taking full advantage of the latest technologies. Your local QLogic team and the NDC team are dedicated to helping you make your vision a reality and bridging the gap between productivity, evolving business requirements, and new technologies.

For Our NETtrack Alliance Partners... Certification Testing

The NDC is a key component of the QLogic NETtrack Alliance Program and is designed to provide NETtrack partners resources to validate interoperability with the latest QLogic technologies. Testing includes exploiting QLogic's feature set and capabilities to ensure they work as advertised with your products. When this is achieved, a certification is awarded and the product is included in the appropriate QLogic Interoperability Guides and Interoperability Web pages. These guides and Web pages are used by developers and consultants to ensure the certified components best suited for their needs are being used to design solutions.

Customer/Partner Quote

"HPC-enabled simulation results help our customers make the right product development design decisions while increasing the value of their investment."

Barbara Hutchings, Director of Partnerships, ANSYS, Inc.

For more information on the QLogic Interoperability Guides, please visit:

http://connect.qlogic.com/Interopguide_NEW/ui/Download_guide.aspx

For more information on the QLogic Interoperability Web pages, please visit:

<http://www.qlogic.com/Interoperability>

Converged Networking: Ethernet and FCoE

Introduction

QLogic's high-performance Intelligent Ethernet Adapters and Converged Network Adapters are available for testing within the NETrack Development Center. The Intelligent Ethernet Adapter product line provides TCP/IP protocol offload to reduce host CPU utilization and significantly improve the throughput of servers, appliances, and storage platforms. The Converged Network Adapters offer offloading of all Fibre Channel over Ethernet (FCoE), TCP/IP, and iSCSI protocol processing to ensure that CPU bandwidth is preserved for I/O intense applications and virtual machines. With three distinct solutions, there is sure to be one to fit every need:

- **1GbE Intelligent Ethernet Adapters** are targeted for the emerging enterprise and small medium business (SMB) market. In this market segment, 1GbE connectivity is sufficient for many applications, including local area network (LAN) and network attached storage (NAS).
- **10GbE Intelligent Ethernet Adapters** are targeted for the medium and large enterprise market, and to businesses who can no longer satisfy their LAN and NAS connectivity needs with 1GbE throughput and need to upgrade to 10GbE. Applications supported in this market include IP Content Delivery, Grid Computing, I/O Consolidation, and Aggregation.
- **Converged Network Adapters** target true I/O convergence and consolidate data networking of a NIC with storage networking of a Fibre Channel Adapter onto a single 10GbE adapter. This consolidation results in significant data center cost savings, while preserving existing investment in existing Fibre Channel storage and tools.

Within the NDC, you will find a comprehensive end-to-end converged networking product portfolio that includes Converged Network Adapters, top-of-rack core FCoE switches, DCB edge switches, as well as native FCoE, iSCSI, and Fibre Channel storage. With this portfolio you can architect your converged networking validation with QLogic's networking experts.

QLogic Converged Networking Advantages

Manageability

- Single-Pane-of-Glass management console for NIC, FCoE, and iSCSI functions is compatible with QLogic Fibre Channel Adapters
- Physical and virtual adapters managed from a single pane of glass

Flexibility

- ConvergeFlex™ supports concurrent, high performance offload for TCP/IP, FCoE, and iSCSI simultaneously over one wire
- VMflex™ creates up to four NIC functions per physical port, allocates guaranteed bandwidth to each virtual function, and is switch agnostic (NIC partitioning (NPAR))

Performance

- FlexOffload™ provides full FCoE, iSCSI, TCP/IP hardware offload protocol processing with the lowest CPU utilization in the industry
- Embedded switch allows VM-to-VM communication without an external switch

QLogic Converged Networking Benefits

- **Intelligent Ethernet Adapters**
 - Two performance offerings: 1GbE and 10GbE
 - Offload support of TCP/IP to free CPU
 - Performance scalability for consolidated server environments
 - NIC partitioning with quality of service management
 - Teaming (load balancing/failover)
 - Common drivers to reduce total cost of ownership (TCO)
- **Converged Networking Adapters**
 - Extensive Fibre Channel and Ethernet IP expertise
 - First-to-market with single chip Converged Network Adapters
 - Offloading of all FCoE protocol processing
 - Offloading of iSCSI protocol processing
 - NIC partitioning with quality of service management
 - Superior performance with low CPU overhead
 - Superior applications and virtualization efficiencies

Converged Networking Solutions Highlights

- **Intelligent Ethernet Adapters**
 - **Performance Optimized.** Offload support of TCP/IP tasks, significantly improving throughput of servers, server appliances, and storage platforms, all while reducing host CPU utilization.
 - **Various Application Support.** Single Driver Stack and Management Interface: Common driver architecture for all OS with integrated firmware helps simplify daily management and maintenance, and eases serviceability.
- **Converged Network Adapters**
 - **Experience.** Extensive Fibre Channel and Ethernet IP expertise was leveraged to be the first-to-market with single chip Converged Network Adapters.
 - **Mature Fibre Channel Driver Stack.** With over six million ports installed worldwide, QLogic's driver is field tested.

HPC Networking: InfiniBand

Introduction

The QLogic NDC provides businesses and NETtrack partners with a complete High Performance Computing infrastructure to test, profile, and certify their HPC applications. High-core count clusters using the industry's latest in processor technologies are paired with storage from all major vendors. This infrastructure provides businesses and NETtrack partners a testing environment that potentially exceeds their own, and allows them to test their applications' scaling and performance capabilities without making significant investments in their own computing and test resources.

Within the NDC, you will find QLogic's comprehensive end-to-end product portfolio that includes Multi-Protocol Fabric Directors, Edge Fabric Switches, Host Channel Adapters, and a complete software suite to install, operate, and maintain your high-performance interconnect fabric. This offering—combined with the industry's only Fabric Management tools—enables an administrator to install and boot a fabric in minutes.

QLogic HPC Advantages

High Capacity Multi-Protocol Directors

- 51.8Tb/s throughput in a single chassis
- InfiniBand QDR supported across full product portfolio
- Support for 40Gb/s node-to-node
- Up to 60Gb/s switch-to-switch bandpass
- Single wire support for InfiniBand, Ethernet, and Fibre Channel

Comprehensive Fabric Management

- Centralized configuration and fabric initialization
- Accelerated fabric deployment and verification
- Fabric health and performance monitoring
- Fabric-wide diagnostics and maintenance
- Centralized management of virtual fabric services

Multi-Protocol Gateways

- Virtual I/O Controller (VIC) functionality
- 10Gb Ethernet and 8Gb Fibre Channel
- Scale I/O and servers independently
- Pool and share I/O between servers
- Widest range of Host InfiniBand Adapters
- Widest choice of adapters
- End-to-end QDR capable
- PCI-X™ and PCIe®

Compatible Plus Software Stacks

- OpenFabrics/OFED
- Optional value-added capabilities
- Accelerated standard MPI stacks

QLogic InfiniBand Benefits

- Significantly improves application performance for faster time-to-solution
- Provides fabric and application scaling to thousands of CPUs
- Simplifies data center design and reduces operating costs
- Eliminates the need for separate physical server connections to storage and network resources
- Scales servers and I/O independently; pools and shares I/O between servers

InfiniBand Solution Highlights

- **Provides Fabric and Application Scaling to Thousands of CPUs**
QLogic high performance InfiniBand delivers extremely low latency and substantial 40Gb bandwidth, which translates into support for very large clusters of up to multi-thousands of nodes.
- **Reduce or Eliminate Costs**
By better leveraging cluster compute and storage resources, customers utilizing QLogic's high performance switching and virtual cluster fabric solutions can reduce the costs and complexities of deploying and operating design and simulation data centers.
- **More Efficient Operations**
QLogic solutions also enable the deployment of grid computing architectures that allow for the pooling of compute and storage resources across multiple user groups resulting in better overall IT infrastructure utilization, and lower overall cost of product design.

Storage Networking: Fibre Channel and iSCSI

Introduction

The QLogic NDC provides businesses and NETtrack partners with a comprehensive suite of storage networking resources including hardware, software, and test utilities. Use this extensive offering to validate that a proposed solution will work in a real-world setting, or to certify storage hardware or applications across the QLogic product portfolio. This infrastructure provides businesses and NETtrack partners a testing environment that potentially exceeds their own, and allows them to test without having to make significant investments in their own computing and test resources.

The storage networking test suite includes QLogic's end-to-end storage product portfolio of Fibre Channel Chassis Directors, Edge Fabric Switches, multi-protocol routers, and a large variety of server adapters for connecting Fibre Channel and iSCSI. QLogic's complete software suite rounds out the offering with a single management pane and wizards to install, manage, and maintain a SAN. Not only can the NDC accelerate time-to-market, this lab helps ensure that your IT environment operates safely and efficiently, regardless of your vendor mix.

QLogic Storage Networking Advantages

Adapters

- Superior performance in real-world environments that exceeds that of the competition
- QLogic 8Gb adapters offer the most comprehensive adapter virtualization solution in the industry

Switches

- Industry-unique 20Gb stacking ports that save money and increase performance
- QLogic's unique stacking ports allow up to 50 percent fewer switches in multi-switch SANs

Routers

- Any-to-any protocol for Fibre Channel, iSCSI, and FCoE
- Flexible architecture for future protocols expansion

QLogic Storage Networking Benefits

- Over 6.4 million ports shipped since 2001
- Majority market share in 8Gb SAN products
- Pervasive interoperability
- Blade Server Fibre Channel switch leader

Storage Solution Highlights

- **Fibre Channel Adapter**
 - Greater than 20 popular OS varieties supported, including the extra scalability of 64-bit and emerging virtual operating systems
 - Five generations of OEM qualifications and partner certifications offer industry-wide interoperability
 - Single Driver Stack and Management Interface: Common driver architecture for all OSs with integrated firmware helps simplify daily management and maintenance, and eases serviceability
- **Fibre Channel Switch**
 - Stacking functionality enables the addition of future switches without disrupting the fabric
 - Cost saving features such as 8Gb at 4Gb pricing, free 10Gb ISL expansion port, and no hidden feature fees
- **Intelligent Storage Router**
 - Provides a wide range of cost-effective infrastructure simplification and business continuity solutions



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