

Virtual Protocol Interconnect (VPI)

The Key to Solving Data Center Connectivity Challenges

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1.0 Introduction

Virtual Protocol Interconnect (VPI) enables I/O infrastructure flexibility and future-proofing for data centers and high-performance computing environments. VPI-enabled adapters facilitate any standard networking, clustering, storage, and management protocol to seamlessly operate over any converged network with the same software infrastructure.

1.1 Key Data Center Challenges

The demands on data center I/O connectivity continue to increase with the deployment of multi-core CPUs, virtualization, networked storage, clustered databases, and low-latency applications in financial services, health services, Web 2.0, and the commercial high performance computing sector. Multiple interconnect protocols and fabrics exist to provide the best-of-breed connectivity for certain applications, but the ideal solution is a flexible I/O adapter solution that can address all workloads. In addition, data centers are driving to replace multiple slower speed adapters with one higher speed adapter to save power, cost, cabling and complexity while not compromising lost functionality and performance.

1.2 The Right Solution

VPI adapters provide leading server and storage I/O performance with flexibility to support the myriad of communication protocols and network fabrics over a single device, without

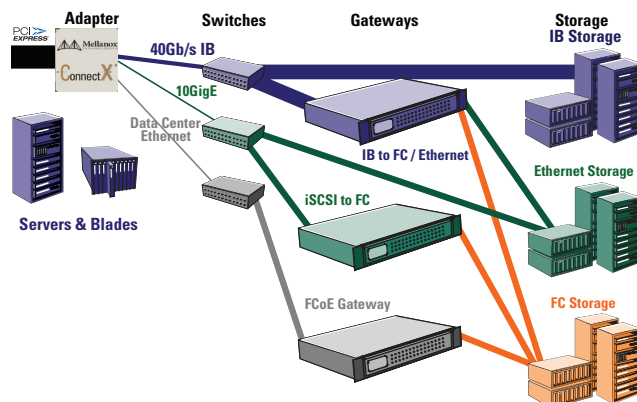


Figure 1: Connectivity to Storage

1.3 Ultimate Flexibility and Future Proofing

1.4 It's all Standards-Based

sacrificing functionality when consolidating I/O. For example, VPI-enabled adapters can support:

- Connectivity to 10, 20 and 40Gb/s InfiniBand switches, Ethernet switches, emerging Data Center Ethernet switches, InfiniBand to Ethernet and Fibre Channel Gateways, and Ethernet to Fibre Channel gateways
- Fibre Channel over Ethernet and Fibre Channel over InfiniBand
- A single firmware image for dual-port ConnectX[®] adapters that supports auto-sensing of the Layer 2 port protocols and independent access to different convergence networks per port, especially useful for bladed server and storage environments
- A unified application programming interface with access to communication protocols including: Networking (TCP, IP, UDP, sockets), Storage (NFS, CIFS, iSCSI, NFS-RDMA, SRP, iSER, Fibre Channel, Clustered Storage, FCoE and FCoIB), Clustering (MPI, DAPL, RDS, sockets), and Management (SNMP, SMI-S)
- Communication protocol acceleration engines including: networking, storage, clustering, virtualization and RDMA with enhanced quality of service

VPI also supports port auto-sensing of the fabric (InfiniBand, Ethernet or Data Center Ethernet) and configures the adapter in the appropriate mode easing deployments in both rack and blade environments. VPI essentially future-proofs data center infrastructure by providing the freedom to select any communication protocol over any converged networking technology connecting server and storage resources to best optimize application performance, system power and overall efficiency – all with the same adapter solution. We are simplifying I/O system design for server and storage OEMs and making it easier for IT managers to deploy infrastructure that supports existing and emerging protocols.

VPI is based on standard protocols and networking technologies, and disaggregates the Layer 2 network from the software communication protocols using networking, clustering, storage, virtualization and RDMA acceleration engines.

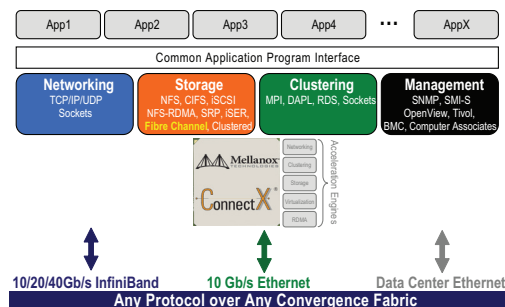


Figure 2: Virtual Protocol Interconnect

1.5 Available Now: ConnectX adapter ICs and cards with VPI capabilities are already shipping in volume to first tier server and storage OEMs. These dual-port adapters can be configured to support VPI by a simple firmware upgrade that is expected to be available later in the second quarter with general availability in the third quarter.

1.6 See What People Are Saying About VPI: “Mellanox is a proven, high-performance I/O silicon supplier, so leveraging their 10 Gigabit Ethernet controllers in Supermicro server products with leading performance-per-watt capabilities provides our channels with enhanced I/O functionality at an exceptional value,” said Charles Liang, president and CEO of Supermicro Computer, Inc. (NASDAQ: SMCI). “With the addition of ConnectX to our server lines, we are well-positioned to fulfill the growing market demand for 10 Gigabit Ethernet connectivity anticipated later this year and in 2009. ConnectX’s Virtual Protocol Interconnect™ support helps Supermicro flexibly address the demands for InfiniBand, Ethernet and Data Center Ethernet with the same hardware platforms.”



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