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Enterprise Servers, Storage and Business Continuity

QLogic Spawns a New Generation of CNAs and a New Level of Flexibility

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Announcement

On October 7, 2010, QLogic Corp. announced a new product line under the *3GCNA* banner: the 8200 Series of 10GbE Converged Network Adapters (CNAs), its 8200 Series converged LAN-on-Motherboard (cLOM) counterpart, as well as the 3200 Series of 10GbE network adapters. These products deliver a new level of convergence as well as flexibility, and represent a new class of 3rd-generation CNAs.

Highlights

Products

QLogic has again exploited its advanced know-how in ASIC technology to create a new chip that comprises the heart of these new products.

The 3200 Series of 10GbE network adapters has two ports supporting bidirectional data rates of 10Gbps and works with all Ethernet switches. It supports multiple connectivity options: optical SR/LR, active/passive copper, as well as 10GBASE-T (RJ45). The 3200 Series offers hardware offloading for the full TCP/IP protocol.

The 8200 Series of 10GbE CNAs supports everything the 3200 does, plus FCoE and iSCSI. It is compatible with all iSCSI and FCoE storage devices. All these protocols, i.e., Ethernet-TCP/IP, iSCSI, and FCoE, can be used *concurrently* without the need for down-time or reconfiguration. The 8200 Series has hardware offloading support for iSCSI and FCoE protocol processing, in addition to TCP/IP.

The 8200 Series cLOM is offered to OEMs so they can include QLogic's 8200 technology into their products' motherboard. It features the same capabilities as the CNA version, but has a special upgrade feature called *FlexLOM*: Initially, the cLOM can be paired with four 1GbE physical ports; installation of an upgrade module turns off two of these ports and replaces them with a pair of 10GbE ports.

Common to all 8200/3200 products is the consolidated configuration software and the advanced virtualization features (see below).

Advanced Features

ConvergeFlex

The most remarkable feature of QLogic's new 8200 Series is the ability to support data networking as well as the storage networking protocols iSCSI and FCoE concurrently, i.e., on the same hardware at the same time with no need to reboot the server to change protocols. This feature allows data center managers to dynamically adjust the storage

network workload, and enables extremely flexible configuration options. Before, a heterogeneous storage network (e.g., imagine legacy systems, or VMs attached to SANs of different technologies) required separate adapters or at least a reboot. With ConvergeFlex, just one adapter can bridge these disparate technologies all the time.

VMFlex

All products covered by the announcement offer the ability to split up one physical port into a maximum of four virtualized ports. It is then possible to provision bandwidth between these ports, which allows for flexible configurations and fine-grained control of Quality-of-Service (QoS) among different virtual machines (VMs). Unlike competing solutions, this feature works using an embedded switch, and is therefore not dependent on a specific external-switch support. In fact, it works with all makes of switches on the market today. Extensive support for most major hypervisors and virtualization standards (SR-IOV, NPAR, NIV (VNtag) VEPA/VEB) is also provided.

SecureFlex

QLogic's network adapters encrypt data transparently in-flight using standard protocols like IPsec and FC-SP. This means that the data is secure from being spied upon while in transit through the fabric. In particular, no vendor-specific support is required on the storage-device end, and whatever storage-device encryption solution is employed to secure the data at rest can be applied additionally and is completely independent of SecureFlex.

FlexOffload

All products feature hardware-based offloading engines for the transport/storage protocols they support. QLogic claims that this results in the lowest CPU utilization in the industry, with only 9% on average. Such low CPU utilization is an increasingly important requirement of OEMs as it greatly benefits virtualized environments.

QConvergeConsole

Along with the new generation of hardware, QLogic supplies new configuration software, the QConvergeConsole. It allows the user to manage all aspects of the network, including all protocols (TCP/IP, iSCSI, FCoE), in a unified manner from a single window pane, accessible through a web browser.

Discussion

Flexibility

The keyword for this new release is *flexibility*. With the total convergence of the 8200 Series, users can easily make use of a heterogeneous storage network and dynamically adapt to changing workload requirements. This can be useful in virtualized environments, where different VMs attach to disparate storage network technologies. It also helps in seamlessly bridging legacy storage networks with new additions of different technology, and thus, provides investment protection. Looking ahead, being able to support and integrate these different technologies avoids technology lock-in: Users know that

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whatever storage network technology might be purchased in the future, it will easily integrate with the current infrastructure using the existing QLogic network adapters. Since one adapter can provide all this functionality, less space for expansion cards is required. As a result, power consumption is reduced. Alternatively, in a 'fully-loaded' configuration, a more extensive network topology is supported.

For the cLOM, users can flexibly deploy 4x1GbE now, and then upgrade to 2x10GbE when their requirements change. In this way, they can purchase exactly the technology they require at a given time, knowing that their investment is protected should these requirements change.

At the same time, by using QLogic's products, vendor lock-in can be avoided. All of QLogic's advanced features work with all industry-standard switches, including VMFlex for virtual port provisioning and VM-to-VM communication. Transport encryption using SecureFlex is perfectly interoperable and independent of any vendor-specific solutions. Neither is the user required to deploy only one vendor's network technology throughout the network endpoints to ensure proper encryption/decryption, nor does it hinder additional encryption options provided by the storage device. In short: QLogic's technology does not force the purchase of vendor-specific complementary hardware to make use of all features. Users are free to choose whatever hardware is most suitable for their requirements, meaning they can make better decisions and potentially save money along the way.

Virtualization

Virtualization support is another important aspect of these new products. As mentioned previously, VMFlex allows for a very fine-grained control of the virtualized networking resources, adding security by encapsulating (the communication of) VMs from each other while providing QoS among the VMs; SecureFlex adds yet another layer of security. This second feature can be a powerful selling proposition for a Cloud Storage Provider (CSP), in addition to the storage network flexibility touched upon in the previous section. Finally, it is important to keep in mind that a major advantage of virtualization is the better use of existing CPU resources. Hence, when CPU utilization was a minor consideration before, it now directly affects the bottom line: The larger a server's CPU utilization is, the fewer VMs can be hosted. QLogic's FlexOffload technology relieves the CPU from protocol processing duties, and thus, significantly reduces CPU load. As a result, more VMs can be hosted per CPU; alternatively, smaller CPU resources can be procured, and/or energy and cooling requirements are reduced. Both alternatives make good business sense– for the commercial cloud provider, as well as for the average data center operator.

Software

With most of the attention usually reserved for new hardware releases, the accompanying software often is neglected. However, it is important to note that management software is essential in operating a network, and the primary way users interact with the network once it is deployed. In addition, while data centers are constantly growing more complex and larger in capacity (e.g., storage sizes grow 50-60% p.a.), the size of the staff that maintains them tends to stay roughly the same. As a result, staff gets stretched thin,

which is a significant operational risk. One way to counteract this effect is to make software that is powerful enough to handle the complex environments in today's data centers, while at the same time being intuitive and easy to master. QLogic is working towards this goal. Its QConvergenceConsole provides a unified consistent interface to manage all aspects/protocols of the network. Users do not need to learn a new interface for each aspect of the network, nor do they have to switch back and forth between applications to get a task done. The result is a more efficient use of staff time, which is crucial at a time where qualified network administrators are a rare and precious resource.

QLogic Corporation

QLogic is a leading supplier of high-performance networking solutions for Ethernet, Fibre Channel, FCoE, iSCSI, and InfiniBand. It is the only manufacturer that offers products in all of these markets. According to market research firm Dell'Oro Group, QLogic is the leading provider of converged network adapters, with a market share of 58%. In the market for 10Gb Ethernet adapters, its share of 16% is second only to IT-giant Intel's 22%. QLogic supplies 10GbE and FCoE technology to the majority of large vendors, including Cisco, Dell, EMC[2], Hitachi, HP, IBM, NetApp, and Oracle.

QLogic has wide-ranging experience with a large number of high-end networking technologies. It also possesses extensive know-how in using ASIC technology to create highly-integrated products that provide high performance with low energy requirements.

Summary

Flexibility is a virtue in itself. It means having options, not having to commit to one technology or one vendor, being able to make the right decisions now and in the future, and, last but not least, ease of mind.
On this measure alone, QLogic's new 3GCNA products are unmatched. It has never been this easy to seamlessly integrate and use different storage network technologies at the same time. Customers who need to support legacy systems or want to provide different storage network options can easily do so at reduced space and energy requirements. One aspect of this flexibility is the extensive virtualization support, which is increasingly important in today's data centers. Virtual ports can be carved up and bandwidth provisioned very flexibly, without the need to purchase special switches. At the same time, the hardware-offloading features reduce CPU utilization and free up CPU resources to be used (more flexibly, one might say) for things other than driving I/O. QLogic has wisely recognized that it is important to provide these additional capabilities without burdening administrators with higher complexity, and supplies a unified management console to configure and control all aspects of the network.

QLogic consistently pushes the envelope in CNA technology. While some are still offering 1st-generation discrete solutions, it is already supplying the second generation of its highly-integrated (single-chip) ASIC-based CNAs (which therefore are 3rd-generation CNAs). This technology leadership combined with its experience in an unmatched breadth of networking technologies means that QLogic itself has a unique capability to flexibly react to changing technology or customer demands. It is safe to say that QLogic remains a premier supplier of high-end interconnect technology–now and in the future.

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