



# Research Report

## What the **BLADE Network Technologies Acquisition** Does for **IBM and Its Customers**

### *Executive Summary*

Other information technology (IT) research and analysis firms seem to see IBM's pending acquisition of BLADE Network Technologies (BLADE) as a competitive response to Hewlett-Packard's acquisition of 3Com, and CISCO's entry into the blade server business. But there's much more to this deal than competitive dynamics...

*Clabby Analytics believes that data center virtualization is accelerating, and the demand for more I/O per server is on the rise. Additionally, networks are converging around a single Ethernet wiring plant. These industry changes are the true driving factors in this deal.*

In this *Research Report*, *Clabby Analytics* examines what the acquisition of BLADE could mean to IBM and its customers. We take a closer look at the DCB convergence that is taking place in the networking marketplace; we examine why virtualization logic at the network level makes sense; and we discuss what this acquisition may mean from a competitive positioning perspective. Finally, we conclude that now is an ideal time for IBM to reenter the networking business.

### *Why Is This Acquisition Really About the IT industry?*

Approximately every 10 years, the IT industry goes through major technology shifts. As we look at the current trends, it is clear that we are headed toward the next generation data center. Many forward-thinking companies have already begun this transformation.

- Virtualization is drastically improving server utilization rates, but is also increasing the demand for I/O bandwidth and lower latency. Thus the rapid growth of 10G Ethernet and the need for 40G/100G Ethernet around the corner.
- Management is another key focus as IT looks for ways to maximize availability while reducing costs. As the IT silos of networking, storage and server administrators blur due to the tighter integration of the technologies, the requirement for having storage and networks that are virtualization-aware is critical.
- The network industry is converging compute, storage and data networks around an Ethernet standard known as data center bridging (DCB) — also known as the converged enhanced Ethernet (CEE).

As this transformation takes place, the playing field for the future data center has opened. IT Vendors are jostling for position around network infrastructure:

- Cisco, the current networking leader, has entered the server market and has developed a new architecture with a new network OS;

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- HP has been taking networking share away from Cisco with ProCurve and has recently completed the purchase of 3COM to try to capture as much share of the future networking marketing for itself;
- While HP & Cisco are clearly taking for the vertically-integrated, single-vendor approach, IBM has been focused on leveraging networking partners BLADE, Cisco, Brocade & Juniper. IBM's purchase of BLADE is clearly to tighten the integration of servers and storage with networking, but is keeping open customers' freedom of choice for their core network.

### *The Role of Virtualization at the Network Level*

Servers run virtualization logic today — but storage and networks devices also need to be virtualization-aware. To create a true, dynamic data center, networks, storage and servers need to run virtualization logic — offering combined benefits when implemented together.

Readers should also be aware that IBM has a strong focus on an application deployment practice known as workload optimization (the idea of running applications and databases on the hardware platforms best suited to serve them). Many of these optimized workloads are expected to be virtualized and mobile (they will move from server to server in order to match the capacity needed to execute expeditiously and efficiently). This workload movement from server to server means that networks need to be “virtualization-aware”.

*From our perspective, it makes good sense that network switches be aware of virtual machine activities, locations, and rights/privileges — rather than just physical server connections. Hosting this logic and intelligence with a network switch or across a network fabric can reduce the virtualization handling workload on CPUs — and simplify the management of mobile workloads. This would free up CPUs to do what they do best: application and database processing — while also helping to lower management costs by simplifying the tracking of virtualized workloads across a network.*

It should be noted that BLADE was first to market with virtualization-aware networking products. These products will prove to be invaluable to IBM to move some virtualization logic into the network (hosted at the switch level) to improve the performance and management of virtualized workloads. VMready provides easy identification and automatic management of Virtual Machines' network policies as they move. VMready also tracks the mobility of virtual machines across the data center and automatically reconfigures the network in real-time as the virtual machines move. Consistent network policies are enforced regardless of a virtual machine's physical location, simplifying management and reducing operational expenses. VMready will, accordingly, enable IBM's customers to virtualize network resources as well as storage and servers, enabling workloads to be easily moved around without affecting security, performance or reliability.

*IBM, BLADE and Emulex co-developed IBM Virtual Fabric. This important technology carves up virtual pipes between the adapter and the switch, which provides maximum performance per virtual port while reducing complexity and cost. Virtual Fabric allows bandwidth and security policies to be controlled granularly for each virtual machine rather than for each physical server.*

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### *Is Ethernet Convergence a Major Driving Factor Behind This Deal?*

In the 1990s, IBM was in the networking business, and sold a wide array of network adapters, as well as hubs and even switches (does anybody remember “token ring”?). And, had it stayed in the networking business, the company would have spent the last 15 years building and supporting routers, switches, network interface cards — and all of the other commodity components needed to compete in the commodity networking market. Plus the company would have needed to support multiple network fabrics, including Fibre Channel, InfiniBand, and multiple Ethernet speeds.

By reentering the market now through the BLADE acquisition, IBM will not be saddled with having to support numerous network fabrics over varied wiring plants — it will only need to focus on one network type: converged Ethernet. Further, the BLADE acquisition brings with it considerable talent in the areas of network-based virtualization and cloud computing. And finally, BLADE has a large installed base — a base that will grow even faster when sold under IBM’s moniker.

*The bottom line is this: it makes good sense at this juncture in computing (the cloud era) for IBM to get back into the networking business. BLADE has a solid converged network strategy; it offers advanced switches and network virtualization products; and the company’s engineering expertise will help IBM promote cloud computing and business analytics.*

*Further, by focusing on converged Ethernet products as opposed to multi-fabric Fibre Channel, InfiniBand, and Ethernet solutions, IBM will not have to spend a ton of R&D money supporting multiple fabrics). This, combined with the high sales volumes (BLADE has already deployed over 9 million ports), should make this deal a big money maker for IBM.*

As for IBM’s customers, expect to see feature-rich, well-managed converged Ethernet products from IBM (and BLADE) as a result of this acquisition. Also expect better virtualization performance and simplified management as some virtualization functions move to the network switch level. And finally, expect BLADE engineers to help simplify the deployment of cloud and analytics applications — two major foci at IBM.

### *A Little Background Reading: Check Out Our In-Depth BLADE Report*

Readers should know that *Clabby Analytics* has covered both IBM and BLADE for several years now (15 years for IBM; and 3 years covering BLADE) — making us intimately familiar with both companies’ strategies. In fact, we speak regularly about IBM’s “smarter planet strategy” and associated dynamic infrastructure, smarter systems, and workload optimization sub-strategies.

It is also important to note that we recently completed an overview of strategic trends in the networking marketplace entitled “*Network Strategic Planning for Next Generation Data Centers*”. This report features BLADE and describes its sales and marketing plan as it relates to converged Ethernet and network virtualization. Accordingly, we suggest that readers visit [www.ClabbyAnalytics.com](http://www.ClabbyAnalytics.com) and download [http://www.clabbyanalytics.com/uploads/Blade\\_FINAL\\_060810.pdf](http://www.clabbyanalytics.com/uploads/Blade_FINAL_060810.pdf) for more on our perspective on BLADE’s strategy and general networking market trends).

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### *Toward Understanding the Network Convergence Trend*

As stated previously, the data center network market is converging around a single standard called Data Center Bridging (DCB). With DCB, IT buyers will be able to use a single network fabric for compute, storage and data — all over the same wiring plant. (To track Ethernet convergence standards activity, visit: <http://www.ieee802.org/1/pages/dcbbridges.html>).

Also worthy of note, DCB is not solely focused on simplifying networking with FCoE. It also benefits IP SANs, enabling NAS (file-based storage) and iSCSI to run over the same lossless network infrastructure, a key benefit that some IBM competitors (EMC, for example) have aggressively marketed. By combining storage and servers networks into a single fabric, the number of switches, cables and network cards is dramatically reduced, providing a savings in management costs as well as energy and cooling costs.

BLADE has offered DCB products for the IBM BladeCenter for over a year and, with a recent software upgrade to the RackSwitch G8124, offers DCB for rack-optimized System x servers.

### *Why Acquire BLADE?*

BLADE Network Technologies, founded in 2006, is a privately-held company headquartered in Santa Clara, California, with global presence. It is:

- A leading provider of data center Gigabit and 10G Ethernet networking solutions (50% market share in BLADE switches and over 9 million ports deployed);
- A market leader in converged Ethernet fabrics; and,
- An innovator in network virtualization and management software.

The company's products include: 1 and 10GbE switches for blade servers, top-of-rack switches (including DC-powered RackSwitch products for scale-out containerized computing), as well as virtualization and rack management infrastructure software. The BLADE switch family is lossless, low latency, low power, low cost and works with all leading x86-based virtualization products, including VMware, Microsoft's Hyper-V, Citrix Xen, Oracle VM and Red Hat KVM, without any modifications.

***Why is IBM acquiring BLADE? Because: 1) the company has been very aggressive in its pursuit of converged Ethernet for the data center; 2) because the company has been very aggressive in building products that manage virtualization at the network level; and, 3) because the company already has a solid, loyal installed base.***

It should also be noted that IBM and BLADE have an existing sales and development partnership around IBM iDataPlex and BladeCenter. iDataPlex is IBM's dense (84 servers in a 2m rack), energy efficient, scale-out rack server originally aimed at Web 2.0 and cloud computing applications. Recently, IBM enhanced iDataPlex with an Nvidia graphics processor, combining graphics processors with CPUs, and targeted to high-performance (HPC) scientific applications that run on these hybrid servers. BladeCenter, IBM's blade server platform, has been deployed with BLADE products in more than 50% of

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installations since 2003. IBM and BLADE have tens of thousands of joint client installations, including one retailer with over 16,000 switches.

### *Other Synergies: Virtualization Management*

*Clabby Analytics* believes IBM has a unique opportunity for BLADE's VMready product to be integrated into IBM's common information management database. Here's why:

- One of the big challenges for distributed systems managers and administrators — and especially blade administrators — is the constant provisioning/reconfiguring of systems to adjust for changing workloads. To provision and configure blades, blade administrators need to constantly assign and manage a myriad of MAC (Media Access Control — or Ethernet Hardware Access) addresses and World Wide Name (WWN) identifiers — a monumental task in large blade server environments. After basic hardware set-up, systems administrators are called upon to assign LAN connection addresses and then SAN connection addresses. And then repeat this procedure for every virtualized server that is being installed!
- Another challenge for systems managers and administrators is de-provisioning virtual machines. Clients run jobs — and then forget to close down the virtual machine resources that they have used to run those jobs — creating a situation known as “virtual server sprawl”.
- And still another problem when it comes to virtualization management is the management of multiple, disparate hypervisors (the software that manages virtualized operating environment interaction with underlying processors). How can a manager/administrator get a composite picture of underlying virtualized resources if each hypervisor (such as Hyper-V from Microsoft, or KVM from Red Hat, or VMware) is managed in a separate silo.

### *Solving These Problems at the Blade Level: Integrate VMready with IBM Systems Director and BladeCenter Open Fabric Manager*

In March, 2009, we wrote a report entitled “*IBM Systems Director and Tivoli Converge: The New IBM Systems Director 6.1*” in which we described how IBM has created a common information management database to house data elements that pertain to virtual machines and networks. These elements can be shared with IBM's Systems Director management environment (an environment that manages physical and virtual systems and storage) — as well as with IBM's advanced Tivoli management environment (an environment that manages provisioning and workload balancing all the way up to business process flows).

In June, 2010, *Clabby Analytics* released a report on an impressive, cross platform, cross operating environment virtualization management environment known as VMControl. (This report is available at <http://www.clabbyanalytics.com/uploads/VMControlReportFinalFinal.pdf>). In this report, we describe how IBM is building a management environment to manage virtual machines across its x86, Power Systems, and System z (mainframe) lines — and how IBM is working with Microsoft, Red Hat, and EMC's VMware to blend each company's hypervisor under a common management environment.

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*What we are hoping to see is that IBM places information captured by BLADE's VMready into its common information management database where it can be used to streamline the management of mobile virtualized workloads as those workloads travel across network switches. We are hopeful that it feeds information about virtualized workloads as they travel across a network to IBM's Systems Director VMControl and Tivoli management environments. And we're also hopeful it is integrated with IBM's BladeCenter Open Fabric Manager (described below) such that VMready can be used to simplify the management of mobile workloads within IBM BladeCenter and other System x environments.*

### *Open Fabric Manager*

In addition to integration with Tivoli and Systems Director, *Clabby Analytics* would like to see IBM very tightly integrate VMready IBM's BladeCenter Open Fabric Manager — a program that works independently or with IBM Systems Director that focuses specifically on managing virtual I/O addressing. At present, VMready and Blade Center Open Fabric Manager already share information — now we'd like to see VMready fully integrated (subsumed if you will) by BladeCenter Open Fabric Manager. (Note: BladeCenter Open Fabric Manager also works with Cisco's VFrame).

*IBM tools and utilities for automatically dispersing MAC and WWN addresses are located within IBM's BladeCenter Open Fabric Manager (OFM). Using the "advanced management module" with OFM BladeCenter systems managers/administrators can pre-configure a pool of addresses that can easily and automatically be assigned to new blades or re-provisioned blades. We believe that VMready will help systems managers and administrators more efficiently manage virtual resources in these pools — especially when workloads are mobile and assigned resources spread out across a network.*

### *Summary Observations*

*Clabby Analytics* does not see this acquisition, as some analysts have stated, as a competitive response to Hewlett-Packard's acquisition of 3Com; nor do we see it as a direct challenge to CISCO as CISCO tries to move into the systems business. We think this acquisition is primarily based on the need to use network technologies to more efficiently handle varied, virtualized "cloudified" workloads.

We also see this acquisition as a solid business decision. Low investment costs and high volumes should prove to make this deal very successful from a monetary perspective for IBM.

*In our opinion, the technologies, philosophies and people of the two companies mesh well, combining IBM's strength in systems and storage with BLADE'S industry leading data center networking expertise. Both IBM and BLADE's product sets are energy efficient, open and standards-based — supporting a range of platforms, operating systems and hypervisors. IBM will benefit from BLADE's "network-optimized" technologies that will enable IBM to support more demanding workloads. And we expect that BLADE will leverage IBM's reach, brand and name recognition.*

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