

How does HP Stack up against the Competition

Hi! My name is Gary Thome and I am here to tell you about the new HP BladeSystem c-class and why we at HP believe it is the best blades platform on the planet.

HP and IBM represent over $\frac{3}{4}$ of the ww revenue market share (IDC, Q4/05). Expectations were high when Dell made their second attempt in the market with the PowerEdge 1855 (back in 2004) -but their market share seems to have stalled at about 11%. After exiting the market, SUN is expected to re-enter the blades market this summer.

So let's jump in and talk about why our new BladeSystem c-class rocks! First we'll start with IBM.

Blades is what we call a game of inches.

IBM's new BladeCenter H chassis is a 9U chassis, while the new HP BladeSystem c-class is 10U. While these may make them sound similar, the reality is that IBM asks customers to make many compromises to squeeze down from 10U to 9U. Compared to what HP offers at 10U, IBM customers give up:

- 2 more servers
- 32 Hot-plug drives (IBM only offers 28 non-hot-plug drives)
- 72 DIMM sockets
- 18 mezzanine expansion cards
- 16 BBWC options
- 3 Tb/s I/O bandwidth
- Storage blade options
- LCD-based configuration and diagnostics

This no doubt is a lot to give up just to squeeze down one rack unit smaller.

And what's more HP BladeSystem c-class also delivers key new technologies.

Only HP's Virtual Connect Architecture can help customers

- Up to 98% uplink cable reduction without adding switches to manage
 - Pre-provision server connections to LAN and SAN
 - Simplify and speed up Add/move/change servers

IBM simply has nothing similar to offer

HP's Thermal Logic

- energy efficient blade servers
- Power and thermals instrumented for every blade
- Redundant, hot-swap scalable power and cooling

IBM simply doesn't match.

HP's Insight Control

- Simpler way to get BladeSystem up and running with integrated wizards accessible via web-based GUI or LCD
- Tools to save time and give greater control of the infrastructure over the life of your servers: deployment, patch, maintenance, tuning, and upgrades

Here is IBM's HS20 blade server. Back at the dawn of this Millenium, IBM decided to borrow the form factor of an Infiniband switch for their blade servers. We believe this forced some compromises, which have become more apparent over the years. Let's take a closer look:

This is a 2 processor blade. You can see that the processors are in the front, which pre-heats the air for components behind it.

This was probably not so big of a deal 5 years ago when processors were fewer watts than they are today. But this becomes more of a concern as processors draw more power.

Drive are in the rear. This means that they receive pre-heated air. This is unfortunate since drives are mechanical devices and more prone to failure.

This also means that drives cannot be hot-pluggable. Our experience is that most customers prefer hot-plug drives, which allows the drives to be replaced without shutting down the server first.

Next note that IBM has only 4 DIMM sockets. We believe this was fine for 32-bit single core processors. But of course times have changed, and modern state of the art processors are 64-bit dual core, which means they need more memory. We believe that 4 DIMM sockets is inadequate for many applications.

Also, note that these DIMMs are physically smaller than the more typical 1.2" DIMMs. IBM had to use a new form factor for the DIMMs they use in some of their blade servers, since the industry standard DIMMs used in virtually all other servers simply don't fit in this form factor.

Finally note that the HS20 only has one slot on the motherboard for I/O expansion

Now let me draw your attention to the new HP ProLiant BL460c blade server. This server is truly designed from the ground up for the needs of enterprise computing.

This too is a 2 processor server. The processors are at the front of the server

The 2 disk drives are also located at the front of the server, which means they get the cool air from the outside and also means they are hot-plug, the way they should be.

Because we know customers want to improve performance and protect their data, HP includes an integrated SmartArray controller and also offers a battery-backed write-cache option.

Because we were designing for modern 64-bit dual-core processors, we have included 8 DIMM sockets, twice as many as IBM.

The BL460c includes 2 multi-function NICs integrated on the motherboard. Each NIC includes TCP offload, iSCSI, and RDMA support.

The BL460c has 2 slots for additional I/O expansion. This is similar to a typical 1U rack mount server, and double what IBM offers.

HP also offers full-height blades that have even greater expandability than this. HP has worked hard to make sure that the blade servers for the new BladeSystem c-class include all the right levels of features and expandability that demanding enterprises require.

There is a clear divergence in design philosophy between HP and IBM. IBM chose to stick with that Infiniband switch form factor from several years ago. HP has chosen a new form factor optimized for the technologies for the next 5+ years. HP also continues to enhance the current p-class BladeSystem.

IBM likes to talk about backwards compatibility with their new BladeCenter H chassis. You might get the impression that this is the most important feature. But it is important to note that backwards compatibility also generally means that you don't get access to the capabilities of the new servers or enclosures unless both new servers and enclosures are used. Let's look at an example.

Current blades customers who would like to upgrade to an Infiniband 4X fabric.

HP will ask customers to move to the new c-class BladeSystem. Fortunately, c-class plugs into the same data center power, same management consoles, and uses the same standard components as p-class Bladesystem.

IBM claims backwards compatibility. Yet to move to an Infiniband 4X fabric, IBM requires customer to upgrade the server, the enclosure, and the switches. In other words, everything. Is this backwards compatibility?

What's more, IBM's announced Infiniband offering, is a 10Gb/s offering. HP is also offering an Infiniband solution, but ours is 20Gb/s; twice that of IBM. It pays to look to the future, not the past.

When it comes to diagnosing problems, most servers aid you with a few blinky lights. IBM's BladeCenter is no exception.

With the new HP BladeSystem c-class, we have provided an integrated LCD display. Using words and pictures, and even animations, we help customers troubleshoot problems without needing to consult a manual, without needing to figure out what a particular blinking pattern means. And this means less time to troubleshoot, less time to get your servers running again. You might say a picture is worth a thousand LEDs.

HP BladeSystem has specifications for pluggable components such as mezzanine cards and switches, and includes components from many popular independent hardware vendors. And unlike IBM's blade.org, HP's Solution Builder program connects the leading IHVs, ISVs, VARs and System Integrators to deliver tested and working solution stacks to customers.

We think that HP BladeSystem c-class offers many advantages.

Now let's move onto Dell. Dell has come and gone from the blades market once and introduced a second blades product in 2004. As you can see from these pictures, Dell's current blades is very similar to the design that Fujitsu brought to market before Dell.

While it appears Dell leveraged the design, it is not identical to the Fujitsu blades. Dell has shown their penchant for squeezing cost out of the design. For instance Dell lacks the handles on the chassis found on the Fujitsu blade enclosure that make the chassis easier to install in a rack.

While this may save a few pennies or dollars on cost, we at HP recognize that customer's biggest expenses are not the cost of the servers, but the cost to manage them. This is why HP products are also designed to help customers reduce operational costs. And this is where we feel HP significantly differentiates.

And this brings us to another difficulty we believe customers will have with Dell. Because Dell appears to be using a leveraged design, it lacks many of the common design elements used on their rack mount servers.

A simple example is the DRAC/MC found on the Dell blades. It is not as similar to the DRAC found on rack-mount servers as the names might imply. The DRAC/MC lacks some important features such as graphical remote console, virtual media, and ActiveDirectory authentication.

Inconsistencies such as these can add to the cost associated with adding Dell blades to an environment.

Here at HP we feel strongly in delivering a consistent experience with our standard technologies

The HP ProLiant blades retain a remarkable consistency with other ProLiant rackmount servers.

For instance the BL460c shares

- The same hot-plug drives
- The same iLO management
- The same SmartArray controllers

With other ProLiant rackmount servers, such as the DL360 and DL380

Besides just commonality, HP also delivers more capability in BladeSystem. This means more features in less space.

Let's compare HP and Dell for a rack full of servers. We'll use the HP ProLiant BL460c vs. the Dell PowerEdge 1855.

The HP BladeSystem offers:

4 more servers

More than a terabyte of additional RAM capacity

68 more mezzanine slots

17.8Tb/s more I/O bandwidth

And with remote rack visualization, you can see at a glance where a blade server is physically located in a rack

Dell needs

Up to 6 times more ethernet uplink cables

Up to 24 more ethernet and fibre channel switches to be managed

Dell has a very modest offering in the blades server space: exactly 1 server.

HP is offering 2 blade form factors with c-class, with servers based on XEON, Opteron, and Itanium. We support Windows, Linux, and UNIX. We are also bringing to market a storage blade. So we have the right computing power for your application, regardless of what application you need.

Couple this broad portfolio of blades with HP innovations:

Thermal Logic, Virtual Connect, and Insight Control

And you have a platform that offers more.

We believe that the BladeSystem c-class is in a class of its own. The best-run IT infrastructure out of the box.

Thank you for your time and I hope this has been informative for you. Happy Blading!