



Counter Opinion

Does Forrester's First Blade Assessment Miss the Mark?

Executive Summary

Forrester Research, a highly respected, independent research organization that provides business and technology guidance, has just published its first Wave report on blade computing. This report, entitled “*The Forrester Wave: Blade Server Systems, Q2 2009*” articulates 44 blade computer buying criteria — and then provides rankings based upon Forrester’s assessments. And, in Forrester’s opinion, Hewlett-Packard (HP) was ranked the leader in blade servers.

Clabby Analytics has been critiquing blades since 2002 — and emphatically disagrees with Forrester’s assessment. We think Forrester missed the mark when it declared HP blades superior to IBMs in the areas of systems design, component portfolio, and strategy:

- In ***systems design***, IBM blades and blade chassis are clearly superior in high availability and in density (IBM offers the densest blades in the industry). And, unlike HP, IBM offers five blade chassis designs, each one optimized for a typical customer usage scenario.
- In ***component portfolio*** (an evaluation of the breadth and depth of a given blade vendor’s product offerings), *Clabby Analytics* can easily argue that IBM’s portfolio is broader (we wonder if Forrester weighed the hundreds of products brought to IBM’s portfolio through the Blade.org ecosystem). We also contend that IBM’s blade management software is better than HP’s software — especially when it comes to managing Virtual I/O. And we have personally seen IBM’s x86 blades, storage blades, workstation blades, POWER-based blades, cell blades, plus field programmable gate array blades and other blades from IBM’s partner community — and, accordingly, also challenge HP’s “win” in this category.
- In ***strategy***, we’re hard-pressed to understand how HP’s one-size-fits-all single chassis design constitutes a better strategy than IBM’s multiple, optimized blade designs. *Clabby Analytics* does not believe that a single blade chassis design like HP’s can best meet all blade computing needs across all markets and all industries. *Clabby Analytics* believes that special designs are warranted to address application, ruggedization, power, and space needs; dense, high-speed computing needs; standard/small office needs; and so on.

We also think that Forrester’s evaluation criteria should have focused more on elements that information technology executives value in the blade space such as ***choice***, ***openness***, and ***cost***. If these factors had been weighed properly, IBM would have won in the choice category (IBM: 5 chassis; HP: 1); in the openness category (with its numerous, open switch choices as opposed to HP’s proprietary VirtualConnect switches); and in the cost category (given the huge cost differences incurred when deploying HP’s Virtual Connect). Should

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Forrester issue a follow-on Wave report at some future time, we would suggest that these buying criteria play a bigger role in Forrester's assessment model.

The remainder of this report will explore in detail the key, specific areas Forrester's assessment misses the mark and offer *Clabby Analytics*' counter-opinion.

Readers should be advised that Clabby Analytics' has published numerous opinions and advisories on blade computing and blade server vendors. These reports are available for free at www.ClabbyAnalytics.com.

Readers should also be advised that IBM is well-aware of our opinions, and asked us to review Forrester's Wave report and then provide some of our perspectives on that report in a Clabby Analytics Counter-Opinion. The remainder of this report does just that.

Finally, it should be noted that Clabby Analytics Counter-Opinion reports are designed to present "the other side of the argument. Please read this report, and Forrester's report, and decide for yourself which vendor's blade solution best suits your needs.

Section 1: Why Forrester Is Incorrect in Ranking HP Higher than IBM in System Design

From Clabby Analytics' perspective, IBM blade designs are better than HP's designs for three reasons:

- *High availability* — IBM has advantages in redundant connectors; in memory proximity to the CPU — resulting in memory cooking (see our report at http://www.clabbyanalytics.com/uploads/IBMBladeCenter_Rel_Avail_Evaluation.pdf); and IBM systems shut down more quickly than HP systems should a failure occur.
- *Density* — IBM has the most dense blade chassis in the industry (BladeCenter E is a 7u chassis environment); and,
- *Multiple, optimized chassis options* — IBM provides several chassis options to meet particular market needs (such as Telco requirements, power/space requirements, etc.).

Each of these points bears closer examination.

Subsection 1.1 —Reliability and Availability

From a reliability/availability perspective, IBM has major advantages over HP in blades:

1. IBM has etched a redundant power path on its blades such that if the first path fails, the second path is activated and the blade keeps on running. HP has only one such path.
2. HP "cooks" its memory (described in greater detail below); and,
3. IBM's blade solutions have fewer moving parts (moving parts create wear. Wear creates failures). Fewer moving parts means fewer opportunities for parts to fail.

A closer look at IBM blades shows that IBM has engineered redundant power and I/O connectors between its blades and its midplane (by etching additional paths on its boards). By contrast, HP has only single connectors. Should an IBM connector fail, it has an alter-

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nate power and I/O path — HP does not. Based on this, we’re surprised that HP blades were ranked higher in reliability/availability. For more details, please follow this URL: <http://www-03.ibm.com/systems/migratetoibm/systems/bladecenter/getthefacts/hp.html#q8>.

Memory cooking (running memory at temperatures beyond temperatures specified by the manufacturer) is yet another reason that makes HP blades less reliable than IBM blades. Not long ago, *Clabby Analytics* wrote a report after measuring the amount of heat/airflow that runs over HP memory components that reside on its blades. Using test equipment that measured how hot HP memory components running on its blades are, *Clabby Analytics* observed that HP memory was running “out-of-spec” as “HOT” and “EXCEED” — as evidenced by warnings that flashed on the screen when running measurement equipment (see Figure 1).

Figure 1 — Measuring the Heat on HP Memory Modules Within HP Blades

Channel	Description	Location	Actual	Rise	Adjusted	Limit	Delta	Warnings
0 (101) T	Ambient	inlet to the chassi	23.1	0.0	25.0	35	+0.0	
1 (102) T	Tcase1	CPU1	55.3	32.2	57.2	69	+0.3	
2 (103) T	Tcase2	CPU2	55.3	32.2	57.2	69	+0.3	
3 (104) T	AMB	DIMM1	82.2	59.1	84.1	105	+0.2	
4 (105) T	DRAM near AMB	DIMM1	77.3	54.1	79.1	92	+0.3	
5 (106) T	DRAM	DIMM1	76.5	53.4	78.4	95	+0.2	
6 (107) T	AMB	DIMM2	87.5	64.4	89.4	105	+0.3	
7 (108) T	DRAM near AMB	DIMM2	86.3	63.2	88.2	92	+0.2	HOT
8 (109) T	DRAM	DIMM2	86.1	62.9	87.9	95	+0.2	HOT
9 (110) T	AMB	DIMM3	94.3	71.2	96.2	105	+0.3	HOT
10 (111) T	DRAM near AMB	DIMM3	96.8	73.7	98.7	92	+0.2	EXCEED
11 (112) T	DRAM	DIMM3	94.8	71.7	96.7	95	+0.2	EXCEED
12 (113) T	AMB	DIMM4	93.8	70.6	95.6	105	+0.2	HOT
13 (114) T	DRAM near AMB	DIMM4	93.0	69.9	94.9	92	+0.2	EXCEED
14 (115) T	DRAM	DIMM4	93.5	70.3	95.3	95	+0.2	EXCEED

Source: *Clabby Analytics*

The net result of DIMM memory module cooking is that running memory out-of-spec stresses memory module components. Excessive heat can make these modules less reliable. For this glaring reason, we are befuddled by Forrester’s assessment that awards HP better marks in system design with such an obvious and impactful design flaw.

For more details about this test — and to understand why we think this occurs — please view “IBM BladeCenter Reliability/Availability Evaluation” available for free at: http://www.clabbyanalytics.com/uploads/IBMBladeCenter_Rel_Avail_Evaluation.pdf

Subsection 1.2 — Blade Density

One of the big reasons that IT buyers buy blades is because blades pack a lot of computing into a relatively small footprint (as compared to towers and racks). And IBM’s blade design is the densest in the industry at 7u (vs. HP’s 9u form factor).

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Consider this: IBM's BladeCenter E is a 7U chassis that can hold 14 enterprise blades. HP's chassis is 9U and holds 16 blades. Both at the chassis level as well as blades per U level, IBM is clearly more dense. A two-socket, enterprise blade in the BladeCenter E takes up 0.5U per blade. HP's densest enterprise solution takes up 0.56U. Extrapolate to a standard enterprise rack, with BladeCenter E, customer can fit 84 2-socket enterprise blades in a 42U rack. HP can only fit 64. IBM's advantage is 33%. Hence, from a dense design perspective, IBM's blade design is the undisputable systems design winner in this category.

Subsection 1.3 — Multiple Chassis Options

By awarding HP strategic superiority over IBM in blade design, Forrester is essentially arguing that HP's single chassis is superior to IBM's five optimized chassis designs. Can this be right? This is a fundamental flaw in Forrester's methodology. By doing this, they arbitrarily decided to look at one chassis per manufacturer, which put IBM, given their optimized chassis strategy, at a distinct disadvantage going into the evaluation.

IBM has a blade environment that has been designed for the standard office (like HP's design has). But IBM offers different chassis for:

- Space and power-constrained environments;
- Very dense high performance environments; and for
- Ruggedized telco environments.

To argue that a blade chassis designed for standard office is also the right blade for a ruggedized environment, or a power/space constrained environment, or a high-performance environment makes no sense to us.

Section 2: Why Forrester's Blade/Component Portfolio Assessment is Incorrect

Forrester's definition of a "blade/component portfolio" includes both hardware and software. Forrester appears to have made HP the top dog in this class for three reasons:

1. The breadth of HP's blade portfolio;
2. The perception that HP is superior to IBM in blade management; and,
3. Leadership in server/storage/specialty blade offerings.

Clabby Analytics contends that:

1. IBM's portfolio is extremely broad (if not broader than HP's portfolio);
2. IBM's "openness" in virtual I/O switching options should have been weighed when assessing portfolio depth and breadth;
3. IBM is better than HP in blade management (especially when it comes to managing virtualized I/O on blades, and linking to advanced virtualization, provisioning, workload management, and business process management services); and,
4. IBM has a rich set of server/storage/specialty blade offerings — unlike Forrester, we perceive no advantage for HP in this space.

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Subsection 2.1 — The “Breadth of Portfolio Award” Should Have Gone to IBM

What blade buyers need to understand about blades is that blade vendors not only build their own components, they rely heavily on others to broaden their own blade ecosystems. To this end, IBM and Intel founded the Blade.Org organization to expand blade hardware and software options beyond what each vendor can build respectively. HP is attempting to do the same sort of thing through its BladeConnect organization, but, as Forrester puts it: “[HP focuses] on its [own] blade system rather than the entire blade community”.

Hundreds of products have been developed for blades under the auspices of Blade.Org. A list of these products can be found at: http://www.blade.org/products_listbyname.cfm. As for Forrester's award to HP for a broader/more extensive portfolio, *Clabby Analytics* would like to see the extensive list from which Forrester worked as we had difficulty finding it on line...

Incidentally, *Clabby Analytics* Blade.Org report can be found at: http://www.clabbyanalytics.com/uploads/Blade.org_-_The_Snowball_Effect_Final_Final.pdf

Subsection 2.2 — Openness

HP builds its own VirtualConnect switch architecture (for details, see HP BladeSystem interconnects at: <http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html>).

IBM's switches come from a variety of switch vendors including BLADE Technologies and CISCO (see <http://www-03.ibm.com/systems/bladecenter/hardware/openfabric/ethernet.html> for more details).

Given that IBM's Open Fabric solutions are available from several different manufacturers, we'd argue that IBM's approach is less proprietary (and more “open”). We believe openness should have been part of Forrester's blade assessment criteria.

Subsection 2.3 The Blade Management Award Should Have Been Awarded to IBM

Is HP really superior to IBM in blade management? *Clabby Analytics* would argue “NO!”

- In a *Clabby Analytics* report published last year entitled: “*IBM Systems Director and Tivoli Converge: The New IBM Systems Director 6.1*” (available for free at http://www.clabbyanalytics.com/uploads/IBM_Systems_Director_Article_Final.pdf, *Clabby Analytics* stated in the above mentioned report that HP's Insight Manager is an example of outstanding systems/storage/network management environments. And IBM's Systems Director 6.1 [when linked with Tivoli] is one of the best management suites that *Clabby Analytics* has seen to date for managing physical and logical systems environments as well as for providing integrated provisioning, orchestration, and process flow functionality”.

HP's Insight Manager and IBM's Systems Director are all outstanding management products. Where we see IBM pull away from HP is in the way that IBM links its blades to Tivoli's advanced virtualization, provisioning, workload management, and process flow functionality. From an enterprise management/process flow perspective, we judge IBM's products to be richer and deeper than HP's. Accordingly, we give the “edge” to IBM in blade management.

- The way that each vendor handles Virtual I/O should play a huge role in any blade management assessment. In another *Clabby Analytics* report entitled: “*Why You Need to Pay Attention to How Your Vendor Handles I/O Address Virtualization*” at

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<http://www.clabbyanalytics.com/uploads/PayattentiontovirtualIOfinalrevisionupdatefinal.pdf>, *Clabby Analytics* argues that *HP's approach to virtual I/O management is inferior to that of IBM*. In that report you will find out what virtual I/O is; why it is important when managing a large population of blades; and how the architectural approaches that HP and IBM use differ from one and other.

Also, with respect to virtual I/O, Forrester's report lauded HP's VirtualConnect with the heading "HP pioneered and leads with its VirtualConnect solution". *Clabby Analytics* notes that if pioneering counts for something, then maybe IBM should have been declared the winner in this category because *IBM pioneered and invented blade architecture*. Further, *Clabby Analytics* notes that Forrester says that HP "leads with its VirtualConnect solution". As far as we can see, HP's Virtual Connect system leads in only one category: High Price.

HP's 1 GB Ethernet switch costs \$5,699. IBM's costs \$1,399. HP's 10 GB Ethernet switch costs \$12,199. IBM's costs \$11,199. HP's Fibre Channel switch cost \$9,499. IBM's costs \$4,999. These are huge differences in hardware prices. Part of the reason that HP's switches are so much more expensive is that HP bundles its I/O address management with its hardware. IBM charges separately for its I/O address management and failover capability (an additional \$1,500 to \$3,500 per chassis). But note, HP's VirtualConnect Enterprise Manager adds \$7,000 per chassis. At the end of the day, it appears to us that it is going to cost a lot more to do virtual I/O management using HP's hardware-centric approach when compared to IBM's software-based/open switch approach.

Subsection 2.4 — Leadership in Server/Storage/Specialty Blades Should Have Gone to IBM

Having seen IBM's leading-edge solid-state storage blades; having met IBM scientists and engineers who are building cell blades; having personally talked to an IBM partner who builds field programmable gate array (FPGA) blades (see our Nallatech report at: http://www.clabbyanalytics.com/uploads/Nallatech_Final.pdf — and having seen IBM x86 and POWER blades demonstrated — we're hard pressed to understand how Forrester determined that HP was the leader in this category.

Section 3 — Why the Strategic Assessment Award Should Have Gone to IBM

The notion that HP has a better blade strategy than IBM does not sit well with *Clabby Analytics* for the following reasons:

- From philosophical and practical perspectives, *Clabby Analytics* does not believe that a single blade chassis design like HP's can best meet all blade computing needs across all markets and all industries. *Clabby Analytics* believes that special designs are warranted to address application, ruggedization, power, and space needs; dense, high-speed computing needs; standard/small office needs; and so on.
- Blade architecture is not ideal for every computing need. But because of the limited success of HP's Itanium-based servers, we see HP increasingly falling back on blades (primarily by migrating their installed Proliant server customer base to blades) as the solution to *all* computing problems (For more on this perspective, please read <http://www.clabbyanalytics.com/uploads/BladeEverything--Final1.pdf>. To *Clabby Analytics*, HP's blade-everywhere strategy is faulty thinking — not strategic superiority.

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IBM's x86 strategy, on the other hand, is to offer choice and products that meet specific workloads and customer environments (this is the same as IBM's overall server strategy). In fact, IBM has four unique x86 platforms (standard rack and tower, BladeCenter, iDataPlex, and eX4 SMP racks).

Summary Observations

First, *Clabby Analytics* would like to commend Forrester Research for even attempting to build a comprehensive model for evaluating blade product and service offerings. Forrester's report puts in place an evaluation model that is sorely needed by information technology buyers who are struggling to sort out the difference between the leading vendor's blade offerings and directions.

For many IT buyers, the Forrester report will be well worth its \$1,740 price tag. After reading this report you will realize that not all blade environments are the same — and you will see that there are distinct differences in product design and deployment, strategic directions and innovation, in customer support and satisfaction; and in the ecosystem that supports each respective vendor's blades. Still, the report does have some shortcomings — most notably:

- Several of Forrester's assessments miss the mark — particularly by giving HP the edge in systems design, component portfolio, and strategy;
- Forrester conducted its analysis on a single chassis from each vendor. Ostensibly this may seem fair, but consider this: if a vendor has only one chassis to market and another vendor has five chassis to market (each designed to serve different segments of the market), then shouldn't the vendor that has only one chassis be penalized (for having fewer offerings) rather than be rewarded with a leadership award?
- Forrester's model needs to weigh choice, openness and cost more heavily. These are key buying criteria — and Forrester seems to have overlooked these criteria when picking HP as its blade leader.

If There Is a Follow-on Report

The title of Forrester's report "*The Forrester Wave: Blade Server Systems, Q2 2009*" suggests that Forrester may issue subsequent status reports over time. *Clabby Analytics* is hopeful that, if Forrester does update its report in the future, the research analysts who produce that report consider some of the counter opinions in this document when assessing HP and IBM system design, components, and strategic superiority.

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August, 2009

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