CLABBY ANALYTICS

Opinion

Itanium: Slip/Sliding Away…

Introduction

Over a year ago *Clabby Analytics* wrote a report that stated:

> *"Now that Oracle and HP are direct competitors, why would Oracle want to continue to develop its software for Itanium-based platforms? (This scenario makes us wonder whether Oracle will be the next large ISV to discontinue building its products on Itanium?)".*
>
> *We also stated: "Oracle could withdraw support for Itanium, leaving HP Itanium customers totally in the lurch — forcing those customers to migrate from Itanium-based servers".*

Sadly, for Hewlett-Packard customers, this has indeed become the case. On March 22nd, 2011, Oracle announced that it would stop development of all of its software on the Itanium platform. Oracle will provide support for existing Oracle/Itanium customers on today's products — but customers looking to take advantage of future features and functions will be forced to switch platforms.
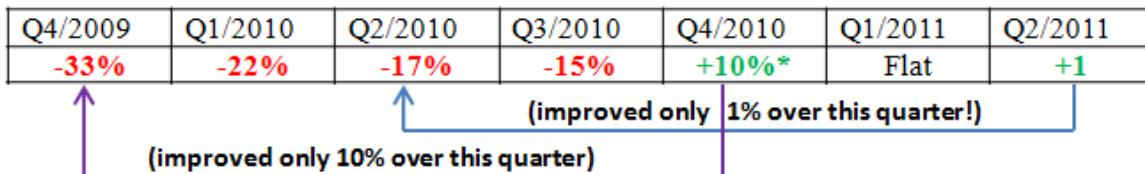
Adding more fuel to the flame, Oracle has since stated that Intel (the maker of Itanium) is focused on x86 architecture — and that there are plans to replace Itanium with x86 already in place (see http://www.rttnews.com/Content/QuickFacts.aspx?Id=1582305 for more on this story). Intel vehemently denies Oracle's contention (for Intel's side of the story, go to (http://arstechnica.com/business/news/2011/03/oracle-itanium-is-dead-intel-not-by-a-long-shot.ars).

> *Frankly, we believe Oracle's contention. We see too much overlap between Itanium and x86 architecture — and we believe that this overlap will cause Itanium to be merged with x86 over time. It should be noted that when Itanium was originally developed it was meant to become the industry's defacto standard for 64-bit computing. This did not become the case — instead x86 architecture has become that standard. So, we must ask: "why does Intel need to invest in and build two competing 64-bit architectures?"*

The Collapse of the Itanium Ecosystem — and a Troubled Sales History

Over the past seven quarters we have seen four quarters of revenue declines; a blip upwards when a new Itanium processor finally arrived; then flat sales — and now *a mere 1% improvement* (see Figure 1).

Figure 1 — The Last Seven Quarters

Q4/2009	Q1/2010	Q2/2010	Q3/2010	Q4/2010	Q1/2011	Q2/2011
-33%	-22%	-17%	-15%	+10%*	Flat	+1

(improved only 1% over this quarter!)

(improved only 10% over this quarter)

We think that it is important to note that the 1% improvement over Q2, 2010 does not yet show the full impact of Oracle's withdrawal of future applications/database products for Itanium (because Oracle's announcement came at the end of the quarter. Accordingly, we expect a big drop in Itanium-based servers in Q3, 2011.

Look even more closely and readers will note that HP's business critical systems revenue declined a whopping -33% in Q4 of 2009 — then improved 10% in Q4 2010 (thanks to the arrival of a new Intel Itanium microprocessor [Tukwila]) — so the net decline in revenue on a quarter-to-quarter comparison basis is really **-23%**. Also, compare HP's just announced +1% Q2, 2011 increase (just one quarter after announcing the new Itanium processors — we think there should have been a longer halo-effect from Tukwila) to Q2, 2010 and HP is still suffering from a net loss (down **-16%** when comparing the quarters).

We believe that this financial performance is an indicator that HP's business critical systems (HP's Itanium-based servers) are not going to pull out of their malaise. With the ever-collapsing Itanium ecosystem (Microsoft, Red Hat, and VMware have already abandoned Itanium — and Fujitsu has announced that its future servers will be based on x86 architecture), it is pretty clear to us that Itanium's days are numbered.

Given this situation, we're hard pressed to understand how knowledgeable information technology (IT) executive managers can justify further investment in Itanium.

Should You Fire Your CIO for Investing in Itanium?

As I (Joe Clabby) once told a reporter: "if my CIO brought me a recommendation to buy an Itanium-based server — I'd fire that CIO. Why? Because:

1. Itanium has a long history of being late to market while dropping functionality along the way. (Why would I want to bet my company's IT future on such a track record)?

2. My CIO failed to recognize that the server market is consolidating around three architectures. (See the next section for more on this point);

3. Failing to notice that the Itanium ecosystem is driving in reverse (Oracle, Red Hat, Microsoft, and Fujitsu defections);

4. Failing to consider that if Itanium fails, HP/UX — and all the value-add that it brings like HP's virtualization scheme — is essentially dead; and for

5. Failing to position my company for the next wave of computing — the business analytics (smarter computing) wave.

Of the above reasons, I think point #2 bothers me the most. CIOs should understand server market trends — and, by bringing me a recommendation to buy Itanium, my CIO would be showing me that he or she doesn't have a clue about what's going on in the server market. And, without an in-depth knowledge of these server market competitive dynamics, how can a CIO make intelligent purchase decisions?

What Your CIO Should Know: Understanding the Server Marketplace

From our perspective, the server market is in the midst of major consolidation and realignment. What is happening is that:

- x86, Power Systems, and System z are experiencing solid growth (System z reported a surge of 34% this past quarter — and Power Systems are 19%). Oracle's

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Sun SPARC lines are suffering — as are HP's Itanium lines. The market is clearly saying: "we want x86 for Windows and Linux applications; we want Power Systems as our Unix/RISC solution (for a wide range of applications including business analytics, scientific, and business applications); and System z for general purpose computing (and now, to act as a great big Linux consolidation server)";

- Oracle's SPARC sales are in decline — and its SPARC roadmap raises more questions than it answers. For instance: "what is the role that Fujitsu will play in future SPARC designs? (Fujitsu designs and manufactures the SPARC64 chip and co-designs and manufactures SPARC64 servers — but the company is now strategically committed to x86 multi-core architecture)". Or: "is Oracle planning to kill the current M-series chassis when it moves to its M4 processor?" Or: "are Oracle's performance projections based on comparisons to its own underperforming servers — or are they based on projections of where Intel and IBM will be in five years?" What our analysis indicates is that Oracle's SPARC64 M-series and its UltraSPARC-based T-series product lines will eventually merge. This will help eliminate confusion related to sorting out the differences between the multi-threading T-series and the single-threaded M-series — but we still have major reservations about the viability of this line in the long term. For our complete perspective on Oracle's SPARC line, please see: http://www.clabbyanalytics.com/uploads/SPARCfinal.pdf.

- Itanium is obviously in decline. It should also be noted that HP sells about 85% of all Itanium-based servers — and Figure 1 clearly demonstrates that Itanium sales are "troubled".

  If your CIO does not understand these market dynamics, or if he or she disagrees and is prepared to argue that Oracle/Sun and Itanium servers will have a long and fruitful life in the world of commercial computing, please have that CIO contact me at jclabby1@AOL.com. I'd love to understand his or her reasoning…

The Collapse of the Itanium Ecosystem
As stated in the *Introduction*, we would find a CIO's recommendation to purchase Itanium bothersome because it would indicate a lack of understanding of the server marketplace.

  A CIO would have to be wearing blinders to not see that the Itanium ecosystem is collapsing.

The key indicators of this collapse are de-commitments of important independent software vendors (ISVs) from Itanium architecture — and the de-commitment of a leading independent software vendor (IHV) from Itanium:

- As of March 22nd, 2011, Oracle has announced plans to discontinue the development of its applications and database on Itanium.

- As of version 6, Red Hat has withdrawn its RHEL (Linux) on Itanium.

- Microsoft has announced that it will no longer build Windows for Itanium.

- Fujitsu (a prominent member of the Itanium Solutions Alliance) has announced that its future products will be Xeon-based (see: http://enterprise.watch.impress.co.jp/docs/news/20100331_358101.html).

- VMware (the x86 market leader in virtualization software) long ago decided not to offer its virtualization stack on Itanium.

> *From my perspective, these "de-commits" are just the tip of the iceberg when it comes to the Itanium's ecosystem collapse. I think that Intel's new Xeon multi-cores will obviate the need for a separate Itanium architecture over time — and that many more independent software vendors will de-commit from Itanium. My reasons for coming to these conclusions are: when an operating system is pulled off of a hardware platform, then applications that run on that operating system usually no longer run on that platform. And, in Oracle's case, withdrawal from Itanium actually serves a competitive purpose for Oracle.* The Itanium Software Situation

Look Closely at ISV Support and the Operating System Situation
Is the Itanium ecosystem really collapsing? A closer look at the situation with Itanium software (this subsection) and Itanium hardware (next subsection) provides some clues as to the current health of the Itanium ecosystem.

To adjudge the health of the Itanium ecosystem, *Clabby Analytics* believes that IT buyers should look closely at:

- The level of ISV commitment to the Itanium platform (existing and new ISVs); and,

- Ongoing operating systems support.

Start by going to this article (http://www.itaniumsolutions.org/news/itanium_keeps_on_plugging) found on the Itanium Solutions Alliance (ISA) site. According to Joan Jacobs, the president of the ISA, that Itanium runs ten operating systems — and 14,000 applications. But given the recent departures of Red Hat and Microsoft, make that eight operating systems. And the withdrawal of Oracle drops dozens upon dozens of Oracle applications and database products from the ISA tally. And subtract a few hundred (or maybe a few thousand?) Microsoft applications from the list, too — if you can get the list.

When *Clabby Analytics* last looked at the application counting practices of the ISA, we noticed that the company was counting a single application many times across its various operating environments — and thus arrived at a high application count. So, for instance, an Oracle application could be counted many times if it ran on HP-UX, Linux, NonStop, OpenVMS, etc. And this practice is okay with us, as long as it doesn't lead to apples-to-oranges comparisons (a customer might think that HP-UX runs 14,000 applications — and then compare that number to another vendor's Unix-only implementation — essentially comparing apples-to-oranges [eight operating environments to one]).

> *It would sure be great if the Itanium Solutions Alliance would publish a list of how many applications run on each of its respective eight operating environments. By having access to this information, it would be easier to compare the strength of the software ecosystem on IBM's AIX (Unix) POWER-based servers versus HP-UX/Itanium-based servers. And that kind of information would, accordingly, make it easier to assess the comparative strength of each vendor's application ecosystem.*

Putting the applications numbers on each server type aside, CIOs should also understand that it costs ISVs money to develop and test applications that run on multiple operating environments. So, for many ISVs, the cost to develop and test applications must be offset by sales revenues achieved on a given platform. On the ISA site, an Intel spokesperson is

quoted as saying that only six percent of Itanium sales run Windows (based on an IDC Q3 2009 tracker report). If this spokesperson's comment is accurate, then it is easy to see why Microsoft would have pulled back its Windows development on Itanium (with only @6% of Itanium sales, it was probably becoming hard to justify the development and testing effort). And given Oracle's withdrawal, we wonder how many other ISVs are going to take a closer look at their development and testing efforts on Itanium now that the new Xeon multi-cores have arrived.

> *Note that Intel's Xeons have the potential to serve the midrange and high-end markets that Itanium serves. So ISVs may now be asking themselves "why continue to develop on Itanium?" The costs of development and testing are why we expect more ISV fallout over time on Itanium.*

Hardware
In addition to the software issues described above, *Clabby Analytics* believes that Itanium is broken from a hardware lifecycle perspective; and we also have some issues with HP's Itanium systems designs — and with the small margin of performance improvement given the three years it took to get Tukwila out the door..

From a lifecycle perspective, IT buyers should be aware of a concept that we call "supercomputer trickle-down". Over the years, vendors have often used supercomputing scale-up designs to push-the-envelope in memory management, in input/output subsystem handling, in storage design and management, power distribution and cooling, and more. Supercomputer design requires a lot of investment, so — to recover some of that investment — vendors that build these high-end designs then trickle-down high-end advances into their midrange systems — and then, ultimately, to their low-end systems.

Clabby Analytics contends that the Itanium "supercomputer trickle-down effect" at HP is broken when it comes to Itanium system designs. As an example, consider Itanium systems placements in the Top 500 supercomputer listings. In November, 2009, the first Itanium server that we could find in this listing occupied a position at #490. In November, 2010 (the last tally), we found *NO* HP Itanium-based servers in the Top500. By contrast, IBM's scale-up POWER-based servers held 38 positions in the Top500.

> *From our point-of-view, HP's lack of presence of Itanium-based servers illustrates the Itanium high-end "trickle-down" cycle is broken.*

To illustrate how this trickle-down effect affects Itanium systems designs, consider a visit to HP's Superdome2 site (the new Tukwila code-named server) at: http://h20341.www2.hp.com/integrity/w1/en/high-end/integrity-high-end-servers-superdome2.html. If you visit this site you will find only three Integrity Superdome2 servers that come in 8-, 16-, and 32-socket configurations. You will also find an HP statement that these servers have been "architected for 64-socket scalability; designed to scale from 8 to 256 cores and more*" — and the asterisk says "future release". We think that if HP had been investing in Itanium-based supercomputing designs more heavily with Superdome1 designs, it would have been able to take scale-up Superdome1 designs and modify them for the new Tukwila processors — thus making it possible to get its 256 core designs out the door by more quickly. And we think that the lack of 128 core and 256 core

scalability is directly attributable to HP's failure to invest in leadership Itanium-based servers in the supercomputer marketplace.

Finally, we have pointed out in the past that Intel has had trouble meeting its projected delivery deadlines for new Itanium chips — and Tukwila did not change this scenario. It took almost three years to get Tukwila out the door — and when it finally arrived it offered only a 13% performance improvement over the previous generation Itanium. Waiting long periods of time for marginal performance improvements does not impress us…

> *Trickle-down is one indicator that there is a discontinuity in Itanium systems design. But this discontinuity may be minor compared to discontinuity created by Intel's new class of Xeon multi-cores. Clabby Analytics expects that Xeon multi-cores will obviate the need for Itanium over time — first pushing Itanium out of the low-end and then subsuming Itanium in the midrange. If this happens, Itanium could just "fade-away" over time…*

Look to the Future: The "Smarter Planet" Movement
CEOs and CIOs need to understand that:

1. due to massive increases in CPU power (thanks to the market move to multi-core architecture after Moore's Law scaling of single CPUs topped-out), as well as

2. great improvements in memory management and I/O processing

 — advanced systems platforms are now able to execute a new class of analytics-driven applications (known as "smarter planet" applications" that run on "smarter systems").

As an example of these smarter planet applications, consider how this could be used by an electrical utility company. A smart electrical grid requires up-to-the-minute data to deliver electricity in real-time. New smart systems can be used to collect mountain of data that can be analyzed and used to help customers monitor their energy consumption and reduce usage during the expensive peak periods. To handle the volume of data and transactions generated by this workload, IBM is packaging turnkey "smart systems" environments (advanced, memory rich, high performance System x, Power Systems, and System z servers) as well as related infrastructure, database, management products, and analytics-oriented ISV applications that enable electric utilities capture and analyze vast amounts of data captured from instrumented devices — and present that data to customers.

But a change in systems architecture is not the only driver of smarter planet momentum. Customers who could not afford these kinds of applications in the past are now finding that they can now indeed afford systems that can perform advanced business analytics, to run business intelligence applications, to serve as data warehouses, and to help integrate and serve vast numbers of mobile devices, and so on.

Finally, note that ISVs are getting very aggressive about exploiting these new systems characteristics in order to drive software sales. But from *Clabby Analytics'* perspective, ISV's are rushing to build on x86 multi-cores, Power Systems, and System z — we don't see the same level of activity on Itanium systems.

> *CEOs and CIOs who haven't noticed this shift are missing a major change in the server market as affordable, powerful new server architectures and industry consolidation are driving a new class of applications. These new "smarter planet" applications are capable of processing vast amounts of data*

> *collected from various sources (especially instruments), analyzing that data, and providing new business insights to enterprises that massage that data. The systems that CEOs and CIOs evaluate for future use should be able to participate in this newly expanded data intensive/analytical systems marketplace.*
>
> *Given the gulf in performance between virtualized POWER-based systems and Itanium-based systems, and the level of increased business analytics ISV activity on POWER-based systems, Clabby Analytics is not convinced that Itanium-based servers will be performance-rich enough nor application-rich enough to participate in the data intensive "smarter planet" world of tomorrow.*

Summary Observations

For the past five years, *Clabby Analytics* has written extensively about the shortcomings of Itanium architecture, related systems designs, and marketing efforts. I have:

- Challenged the wisdom of HP's forced migration from PA-RISC to Itanium architecture (when HP discontinued its PA-RISC architecture, HP customers were forced to adopt Itanium-based servers to continue their HP/UX growth path);
- Slammed Itanium for dropping features (we especially didn't like it when Itanium dropped IA32 compatibility — eliminating the ability of Itanium customers to a run 32/64-bit hybrid environment at the chip level. The IT buying market corrected this error by purchasing hybrid 32-/64-bit processors from AMD and Intel [Xeon hybrids]);
- Poked fun at Itanium for missing release schedules (often by very large margins);
- Challenged Gartner for recommending that its customers consider moving off of mainframes to "more modern platforms" because of an impending (alleged, unproven) projected skills shortage of mainframe managers and administrators. (I'm assuming that Gartner included Itanium in its definition of "more modern platforms" given the company's participation with Itanium customers in mainframe migration road shows…).
- Laughed at the claims of the Itanium Solutions Alliance (ISA). We were especially entertained by claims on the ISA site that Itanium had a better business ecosystem for providing software and support services;
- And now, we are demonstrating that the Itanium ecosystem is collapsing.

> *Yet, despite all of these pointers and observations, several of you continued to buy Itanium-based servers — or worse, you migrated to Itanium-based servers from mainframes or other platforms. Well, now may be the time to reconsider the adoption of Itanium-based servers given what's going on in the Itanium ecosystem and in the server market in general.*

It should be clear, even to the most casual observer that the Itanium ecosystem is faltering:

- On the hardware side, this architecture suffers from supercomputer trickle-down disease (advanced technologies are not trickling down to Itanium from supercomputer installations with the same regularity that they are on other platforms because Itanium barely shows up in the Top500 list of supercomputers);
- A major Itanium IHV has also left the fold (Fujitsu);
- x86 multi-cores are positioned to directly compete with Itanium; and,

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- On the software side, two major operating systems vendors have recently de-committed from Itanium. And one major business application/database maker has also left. And we're wondering how long it will be before several more major ISVs do the same.

It should also be clear that changes in platform power and memory handling are enabling a new generation of "smarter planet" applications to be run on x86, POWER, and mainframe architectures. The midrange/high-end market is shifting — and Itanium does not appear to be positioned to ride through this shift.

Clabby Analytics
http://www.clabbyanalytics.com
Telephone: 001 (207) 846-6662

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