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HP's Project Odyssey – Migrating Mission Critical to x86

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HP's Enterprise Servers, Storage and Networking (ESSN) Business Unit markets two lines of servers – Proliant servers (acquired from Compaq) and Integrity servers. Proliant servers are based on the Intel x86 Xeon processor and support Windows and Linux operating systems. Integrity servers are Itanium-based and support HP mission-critical operating systems – HP-UX, NonStop, and OpenVMS.

Both Proliant and Integrity servers are available either as blades for HP's BladeSystem or as rack-mounted servers. Integrity servers are also available as Superdome 2 blades. Within ESSN, the Business Critical Systems Division (BCS) focuses on delivering mission critical solutions to the market including Integrity, NonStop and scale-up x86 solutions (ProLiant DL980).

On November 22, 2011, HP announced[1] a major new initiative dubbed "Project Odyssey." It is intended to extend the mission-critical features of HP-UX from Itanium blades to Windows and Linux x86 blades. Project Odyssey raises many questions for those involved with HP's current highly available operating systems – HP-UX, NonStop, and OpenVMS. In this article, these concerns are explored.

Martin Fink, senior vice president and general manager of Business Critical Systems at HP, gladly offered his insights in a one-on-one interview. His comments, interspersed throughout the article, are significantly abridged but hopefully capture his intent.[2]

Project Odyssey

The motivation for Project Odyssey was expressed by Martin in HP's press release:

> "Clients have been asking us to expand the mission-critical experience that is delivered today with HP-UX on Integrity to an x86-based infrastructure. HP plans to transform the server landscape for mission-critical computing by using the flexibility of HP BladeSystem and bringing key HP technology innovations from Integrity and HP-UX to the x86 ecosystem. Unlike the competition, HP offers an open, integrated single-platform approach."
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> "Clients investing in a mission-critical Converged Infrastructure today with Integrity and HP-UX, if desired, can evolve to a mission-critical Linux/Windows environment in the future."

To meet this client request, HP plans to provide the best of HP-UX features for Linux and Windows.

[1] HP to Transform Server Market with Single Platform for Mission-critical Computing, *HP News Release*; November 22, 2011. http://www.hp.com/hpinfo/newsroom/press/2011/111122xb.html

[2] This paper was originally published in the January/February 2012 issue of The Connection.

As HP's press release stated, organizations need the availability and resilience of UNIX-based platforms but with the familiarity and cost-effectiveness of industry-standard platforms. By hardening Windows and Linux on HP x86 blades, Project Odyssey will allow organizations in the future to run their mission-critical applications on these operating systems using x86 blades. By using advanced technology across a common, modular HP BladeSystem architecture, an organization will be able to choose the best software and hardware environment that is aligned to its needs.

The effort to extend HP-UX innovations to mission-critical x86 blades in the c-Class blade enclosures is code-named "HydraLynx." Project Odyssey also will deliver blades with x86 processors to Superdome 2, allowing Integrity and x86 blades to be intermixed in the same enclosure. This effort is code-named "DragonHawk." HydraLynx and DragonHawk enhancements are expected to be available within the next two years.

By bringing select HP-UX innovations to mission-critical x86 blades, HP will enable clients running Windows or Linux to:

- increase Superdome 2 scalability with 32-socket DragonHawk symmetrical processing x86 systems that will scale to hundreds of cores.
- increase reliability and flexibility with two-, four-, and eight-socket HydraLynx scalable mission-critical x86 server blades in c-Class enclosures.
- increase availability of Linux applications with Serviceguard clusters.
- boost flexibility and availability of x86 systems with HP nPartitions (nPar) technology, which partitions workloads across electrically isolated resources.
- enhance business continuity with HP Analysis Engine for x86 embedded in firmware.
- boost reliability of x86 systems with fault-tolerant HP Crossbar Fabric.
- achieve higher levels of availability with HP Mission Critical Services.

What Does Project Odyssey Portend?

HP's Project Odyssey announcement raises as many questions as it answers. Industry pundits have had a field day analyzing the direction in which HP may be heading.

Why Project Odyssey?

Is Project Odyssey an attempt by HP to breathe life into a faltering Business Critical Systems Division, hurt by Oracle's decision to cease support for Itanium by 2018? The press supports this supposition based on what Meg Whitman, new Chairperson of HP, said[3] following the poor Q4 HP financial report[4] (BCS revenue dropped by 23% over the same period last year):

> "The BCS business is a declining business. It is a slow decline, but I don't think you're going to see an accelerating growth rate in that business. And so we just have to manage that as best we can and invest in R&D so we get to a new platform as fast as we possibly can that allows us to service the clients that need this kind of power."

Is the "new platform" a mission-critical industry-standard x86 platform? In HP's press release, Martin referred to "an open, integrated single platform." Is this a signal that the Xeon x86 chip family will eventually win out over Itanium?

> Martin: No! The "open, integrated single platform" is the HP BladeSystem. This is the "new platform" referenced by Meg Whitman. In one platform, all operating systems can be intermixed – Linux and Windows on x86 and HP-UX, NonStop, and OpenVMS on Itanium.

[3] HP to forge x86 Integrity and Superdome servers, *The Register*; November 22, 2011.
[4] HP's server, PC, and printer businesses stumble, *Channel Register*; November 22, 2011.

Customers may see HP putting x86 ahead of Itanium or Linux/Windows ahead of HP-UX. But HP points out that the intent of Project Odyssey is to create x86 (Xeon)-based Integrity and Superdome blade servers suitable for mission-critical computing. HP wants to make Windows and Linux more robust so that they can be used alongside or instead of HP-UX. If there is a hardened Linux, will there be a migration of HP-UX applications to Linux?

> Martin: Some companies will migrate because they see Linux as a cheaper and more versatile environment. Some will not migrate, especially ISVs who simply do not want to do yet another port of their applications. HP is providing a roadmap that will allow customers to make the right choice. There will be nothing to coerce or to entice customers into migrating or staying with their current operating systems.
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> I expect lots of mixed environments. Applications that customers are running today will remain on their current operating systems for a very long time. New applications running Windows or Linux will move to the Odyssey platform.

Lorraine Bartlett, HP Vice President of Worldwide Marketing Strategy, stated[3]:

> "We are absolutely committed to invest in HP-UX, OpenVMS, and NonStop operating systems and Itanium platforms. … We want to retain the best … and build up the rest. And that is Linux and Windows on Xeon."

Meanwhile, according to Kirk Bresniker, Vice President and Chief Technologist for the BCS Division, HP is working with Intel to get the features that HP needs into future Xeon processors. "We are systematically evaluating the arsenal of intellectual property for HP-UX and mapping that to x86 platforms."

In taking a step to harden Linux, HP is planning to donate to the Linux kernel community (kernel.org) some of the technology that makes the HP-UX and Superdome 2 platforms so reliable. However, are there characteristics of HP-UX that might not be migrated to Linux and that would encourage companies to want to stay on HP-UX?

> Martin: We are doing a detailed gap analysis now. Though we can't predict what the functionality gap will be, we expect to get pretty close to parity. It depends upon how much of the new capabilities are moved to the HP software layer and how much goes into the Linux kernel, which we are donating to kernel.org. It is not clear if kernel.org will resist any of the changes, but I don't think that this will be the case.

Is Project Odyssey the First Step in Abandoning Itanium?

One industry pundit[5] suggests that Martin Fink's reference to a "single platform" signals that the Intel Xeon chip family is going to win out in HP's near future, probably meaning the end of the Itanium developments from Intel after its next two processor rollouts become a reality.

However, Pauline Nist of Intel (how we at NonStop miss Pauline) wrote in an Intel blog:[6]

> "HP has finally responded to Oracle's salvo of last March regarding Itanium. … The plan includes delivering blades with Intel Xeon processors for the HP Superdome 2 enclosure … and the scalable c-Class blade enclosures while fortifying Windows and Linux environments with innovations from HP-UX within the next two years. … Intel remains equally committed to the Itanium and Xeon platforms, both of which represent our portfolio approach to bringing open standards-based computing to the mission-critical market segment."

[5] HP Relents, aims Unix sites at x86 futures, *3000 News Wire*; November 25, 2011.
[6] HP Responds with elegant Single Platform Evolution, *Intel Communities*; November 29, 2011.

Martin also indicated in his previous quotes that he expects Itanium applications will remain on Itanium for a very long time – long after he has retired.

Will HP-UX be Migrated to x86 Blades?

In Martin's statement, migration is not mentioned. He only mentions "bringing key HP technology innovations from Integrity and HP-UX to the x86 ecosystem."

Kate O'Neill, Product Marketing Manager for HP's Business Critical Systems Division, has said[7] that HP is not now planning to port HP-UX to x86-based servers. "No, that's not part of the news." Was the operative word "now" intentional?

> Martin: Kate is basically saying "Never say never." At this point, there are no plans; and I predict that it will never happen. The big problem is the software support and the ISV support for the 5,000 current HP-UX ISV applications. The better model is to bring the HP-UX capabilities to Linux rather than port HP-UX to x86.

What About NonStop and OpenVMS?

The only mention of NonStop and OpenVMS in HP's press release was the statement that HP's new roadmap includes ongoing innovations to Integrity servers and to the HP-UX, NonStop, and OpenVMS operating systems.

What is the Future of HP's Mission-Critical Proprietary Operating Systems?

HP-UX, NonStop, and OpenVMS are all proprietary operating systems owned and controlled by HP. They provide the utmost in system reliability and resiliency for mission-critical applications. If HP is successful in improving the industry-standard Windows and Linux operating systems to provide the same level of reliability, will its proprietary operating systems survive? If the demand for these operating systems decline, will Itanium survive?

> Martin: This is not an issue. Most planning cycles are five years or less. Changes like this take a long time. As long as you and I are around, we'll be supporting HP-UX on Itanium.

Summary

HP's move to a hardened Windows/Linux x86 environment is similar to IBM's strategy. IBM has been supporting Linux on its mainframe for over a decade. Recently, it added Windows support via new x86 processor blades for its zEnterprise Blade Center Extension.[8] IBM can now provide tight integration between zOS, Linux, and Windows applications in the same BladeCenter Extension.

> Martin: IBM's strategy is not at all like Project Odyssey. IBM's Linux is a proprietary Linux. Applications have to be recompiled to run on the mainframe. IBM's strategy is to extend the reach of the mainframe, and its proprietary Linux has not been all that successful. Project Odyssey is radically different because we do everything with one open platform.

IBM's proprietary operating system zOS has survived living alongside a hardened Linux. Hopefully this is an indication that the HP proprietary operating systems will survive alongside HP's hardened Linux and Windows.

If Project Odyssey is wildly successful, it may drive a huge competitive advantage for HP. However, if HP customers embrace the move to highly reliable standard operating systems, HP-UX may be the first to go

[7] HP Embarks On 'Odyssey' to Unify Mission-Critical x86, Itanium Platforms, *CRN*; November 29, 2011.
[8] IBM Integrates Windows Into Mainframes, *CRN*; November 11, 2011.

since migrating Unix applications to Linux is a reasonable task. But achieving the fault tolerance provided by NonStop systems and OpenVMS Split-Site Clusters is probably not in the cards. Sadly, if the reliability provided by hardened Linux and Windows systems is *good enough*, the market may see a declining need for *great*, continuously available systems. Let's hope that *great* triumphs over *good enough*!