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Changing the Paradigm of the Enterprise Server — HP Meets the Increasing Demands of Business Data

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Management Summary

Some of us may be worrying about global warming, but all of us (at least in the Eastern U.S.) are more worried about digging out from the worst winter in recent memory. However, we cannot say that we weren't forewarned. A week before each storm arrived, meteorologists throughout the region told us what to expect. Some of us paid attention and prepared beforehand so that we would not have to go out in the snow; others did not, and were caught up in traffic gridlock. Some public officials listened and told workers to stay home; others did not, and were faced with thousands of school children braving treacherous roads or simply stuck on school buses (or worse, still in school). The information, however, to avoid such disasters (or at least inconveniences) was available. Weather patterns had been analyzed from a growing volume of meteorological data. *We knew what was coming before it happened!* Wouldn't it be wonderful if we could be as prepared in the enterprise data center?

Not only should we, but, in fact, we can. The same type of information that enables your local weather person to tell you how to prepare for the day is now available to the enterprise in order to tell you what business decisions will need to be made beforehand. **The biggest problem, however, is ensuring that the enterprise has *the right information at the right time in the right hands to make the right decisions.*** To increase the speed of business, the enterprise data center needs an infrastructure with the highest performance and fastest access to mission-critical data available to process that data. Mission- and business-critical applications need to have that information at the right time in order for the decision makers to take preemptive action and beat the competition to the marketplace. To do this, the data center needs to have and offer sufficient processing power to be able to analyze existing business conditions and extrapolate that data to the future. In addition, the data center staff needs the capability to consolidate and virtualize the data center to have everything in the right place at the right time. The IT infrastructure must enable the decision makers with the data to act and, of course, this must be done within budgetary guidelines. What does it take to be able to accomplish this?

One company that is paying attention to this problem is HP. With the recent announcement of *Generation 8* of their *ProLiant* family, and more specifically the *ProLiant DL580 Generation 8*, HP is addressing these critical issues. Its goal is to improve data center efficiency and lower the total cost of ownership (TCO) of the IT infrastructure, including acquisition cost, energy, floor space, software licensing, administrative costs, support, etc. To learn more about HP and the DL580 Gen8, please read on.

Enterprise Data Center Requirements

The demands on the data center in 2014 appear to be placing an even greater importance to the rapid access of critical data. The data center staff is being stretched and stressed to improve mission- and business-critical application performance in order to enable better business decisions.

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This always has been the case; however, the question of how to do that and remain within the IT budget guidelines remains the biggest challenge.

The demands being placed upon the data center staff by a constantly evolving IT infrastructure are increasing daily because of the transitions to cloud computing, Big Data, and mobile access to applications. A faster response from the environment is required in order to have the right information available when it is required, even if it is outside the glass walls of the data center.

The need for more dynamic scale-up solutions is being driven by an increase in the number of users and quantity of data being amassed for their real-time use, because the user of an application expects rapid response, regardless of the number of other users accessing the application. The data center, on the other hand, needs to offer a way to scale up the infrastructure to meet the demands of the users for the application and the data. The need for a better or timelier access to the data being delivered to the CxO requires more performance, better efficiency, and higher reliability, at a time when there is a widespread rapid increase in the number of users and the collection points for new data, as well as much more data being stored. These growth factors make the accurate analysis of data in a timely manner increasingly difficult.

It is hard to imagine a successful enterprise not having superior (faster and more cost efficient) IT infrastructure than its competitors. Being less than a leader will relegate the business results to the mediocrity of being "in the middle of the pack" when it comes to delivering mission- and business critical applications. If you want your enterprise to be "ahead of the pack", then you need to address the critical applications running within today's IT environment and, more importantly, the server architecture upon which data is being analyzed and decisions are being made. If today's architecture is not delivering the performance and efficiency that your enterprise requires for its success, then you may need to change the server paradigm in your data center today.

Here are four important questions that the data center staff needs to answer.

- *Can today's enterprise infrastructure in your data center support the business processing applications being deployed for real-time interaction and transaction processing, driven by real-time analytics on real-time data?*
- *Can today's infrastructure deliver the decision support that enables the rapid analysis of real-time data through a series of complex queries?*
- *Can the IT architecture within your data center deliver the performance, efficiency, and reliability that you need in order to consolidate applications onto a single platform with the lowest possible I/O latency needed to access critical data rapidly?*
- *Can your server provide the security that your enterprise and its users require in order to protect the valuable assets within the data center?*

One company that has been paying attention to the demands being placed upon today's server environment is HP. With the recent announcement of the *ProLiant DL580 Gen8*, the newest member of the eighth generation of ProLiant servers, HP has extended the capability of ProLiant to deliver the right amount of compute power, for the right workload, at the right time, all while remaining within enterprise budgetary guidelines.

HP ProLiant Generation 8

Not every data center is an enterprise level data center. There are SMBs and mid-sized data centers as well as enterprise class. But, every data center believes that it needs, and deserves, the enterprise-class features previously reserved for those enterprises deploying their mission-critical applications with the biggest budgets. HP can provide every data center with the right server for their workload requirements, whether within the walls of a brick-and-mortar data center or somewhere out there in the cloud.

HP does this by providing a choice of servers that have two-sockets, four-sockets, and eight-sockets, and more. HP enables the data center staff to deploy its servers in a variety of formats, including blade, desktop, rack-mounted, and tower, for both scale-out and scale-up environments. In fact, HP now is delivering its eighth generation of their ProLiant servers. This generation now includes features previously found only in the most expensive enterprise-class platforms. These features offer the highest performance available[1], secure

[1] According to HP.

Exhibit 1 — ProLiant Gen8 Innovations

- **Intelligent Provisioning** - Simplifies server startup to save time (Staff)
- **Intelligent Infrastructure** – Provides better monitoring and control of data center energy efficiency
- **Active Health Monitoring** – Provides less downtime with faster time to problem resolution
- **Insight Remote Support** – Provides 24x7 remote monitoring, automated cases and faster time to problem resolution
- **Smart Update Manager (SUM) –** Provides an integrated hardware and software discovery engine that finds the installed hardware and current versions of firmware and software in use on nodes you identify. HP SUM installs updates in the correct order and ensures that all dependencies are met before deploying an update.

***Source**: HP*

encryption, 12Gb SAS drive support, HP *OneView*, and increased reliability.

In order to meet the current complex IT requirements, including cloud-based applications, security, Big Data, and mobility in a virtualized environment, HP introduced their Generation 8 servers based on Intel's *Xeon Processor E5-2400 v2*[2], (neé *Ivy Bridge*). This family of servers has increased both CPU performance and quantity of VMs supported by the family of Gen8 servers also deliver innovative management features to minimize manual processes while improving data center agility to meet changing IT requirements.

Last year, HP refreshed Intel's Ivy Bridge technology with the *Xeon Processor E5-2600 v2*, updating *ProLiant DL*, *ProLiant ML*, and *ProLiant BL Gen8* servers, as well as the *ProLiant SL* family. ProLiant Gen8 innovations enable the enterprise to reduce data center operating expenses, including power and cooling, while increasing administrator productivity. See Exhibit 1, above.

Now, HP has taken their refresh strategy one-step further with the announcement of the *DL580 Gen8 Server*, based upon *Intel Xeon E7-4800/8800 v2* processors. The DL 580 Gen8 is a four-socket, enterprise-class server delivering even more performance, solid reliability, and affordable consolidation and management efficiencies than the previous Generation 7 HP servers.

HP ProLiant DL580 Gen8

The HP's ProLiant DL580 Gen8 Server is an enterprise-grade four-socket platform offering outstanding performance, scalability, and solid reliability, with superior RAS features, consolidation and manageability efficiencies along with HP OneView for operational efficiency.[3] (See Exhibit 2 at the top of the next page.) The DL580 Gen8 has been designed to support the requirements of mission-critical applications, business intelligence, data warehouse, and database applications with the superior performance of the Intel Xeon E7 v2 CPUs in a variety of configurations, from 6-core to 15-core, with each CPU consuming as little as 105W, with up to 37.5MB of L-3 cache.

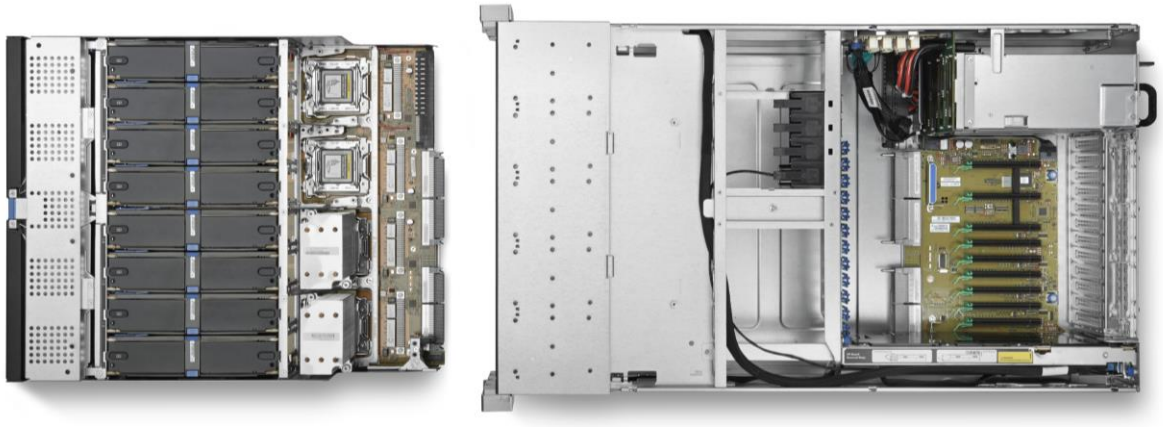
The DL580 Gen8 can be configured to support up to 3TB[4] of HP *SmartMemory* with up to 96 DIMMs using either DDR3 Registered DIMMs or LRDIMM (Load Reduced) DIMMs, but not both. DRAM quality and reliability are more important than ever. Industry trends, such as virtualization, cloud computing, the use of large database applications and high-performance computing, all have increased the need for higher capacity memory with greater reliability and uptime. HP SmartMemory is unique technology introduced for ProLiant Gen8 Servers that unlocks certain features available only with HP Qualified Server memory. HP SmartMemory enables ProLiant Gen8 systems to reliably identify and verify whether installed memory has passed the rigorous HP qualification and testing processes. Furthermore, *HP Active Health System*, an HP

[2] See **The Clipper Group Navigator** entitled *Who Says that Infrastructure Doesn't Matter? Not HP!* dated February 17 2014, and available at http://www.clipper.com/research/TCG2014002.pdf.

[3] More on OneView on the next page.

[4] Up to 6 TB post initial release with up to 64GB DIMMs.

Exhibit 2 — Internal Top View of ProLiant DL580



***Source**: HP*

ProLiant Gen8 innovation, works with HP SmartMemory to monitor for errors and alert the customer to replace a DIMM if a certain error threshold is crossed, thereby reducing unplanned downtime.

The DL580 Gen8 also has greater I/O bandwidth than the Gen7 servers, with up to nine full-length/full-height PCIe 3.0 slots, in support of even more I/O for consolidation and virtualization than was previously available. In fact, the additional memory enables the data center staff to configure significantly more VMs per application. In support of this configurability, HP has included ten SFF HDD/SSD drive bays, supporting up to 12TB as standard, with 12Gbps SAS controllers and SSDs providing critical data center applications with increased storage performance.

In fact, the new DL580 can provide up to 30 times faster transaction processing (as a result of in-memory technology) at a 45% lower total cost of ownership (TCO) than with the *ProLiant DL580 Gen7*.[5] The lower TCO is achieved via reduced hardware costs, lower space requirements, energy conservation, and reduced software licensing costs, as well as lower hardware support costs and administration.

Generation 8 of the ProLiant family offers increased reliability over Generation 7, including four redundant hot-swap power supplies and fans. In fact, the DL580 has 30% greater memory and processor reliability with *HP Advanced Error Recovery*, which enables enterprise applications to recover from uncorrectable errors found in the CPU, cache, and memory during execution. In addition, improved security and data protection features provide the enterprise with even more system resiliency.

- *HP Advanced Error Recovery* – a feature that enables the system firmware to work with recovery-aware OS, hypervisor, and application to recover from fatal errors in processor core structures, cache, and memory.
- *HP Memory Quarantine* – to identify memory regions containing uncorrectable errors by using a patrol scrubber and isolating the bad memory locations, before it affects the application.
- *HP Advanced Error Containment* – a feature that provides advanced PCIe error containment capability to prevent corrupted data propagation.

In addition, online updates help to provide Gen8 with 93% less downtime than Generation 7[6]. *HP Proactive Care* services enable a 95% first-time fix rate and *HP Serviceguard for Linux* offers a four-second server failover.

HP OneView

HP OneView delivers operational efficiency across the enterprise with the first software defined infrastructure management. It is a programmable platform, designed from the group up for ease of use, and delivers powerful automation through converged infrastructure templates and a complete API.. OneView enables a

[5] Based on HP's internal testing comparing 20 DL580G7servers to 11 DL580 Gen8 servers using the Alinean TCO tool.

[6] With HP validated and certified firmware and driver compatibility using HP SUM 5.0) versus HP SUM 4.2.

66 times faster infrastructure deployment, freeing the administrative staff for other responsibilities, enabling a 40% reduction in staff time.[7]

In addition, HP designed OneView to integrate with *VMware vCenter*, automating *vSphere* management. As a result the data center staff can manage compute, storage, and networking from vCenter. HP OneView delivers provisioning speeds 12 times faster than previous generations of HP management tools. This integration enables the data center staff to troubleshoot the network more rapidly than competitive tools by helping administrators understand how networked resources are connected and how faults in one area may impact downstream devices.[8]

Conclusion

Knowing what happened last year, or even last month, gives an enterprise 20/20 hindsight – and – most likely – the leftovers from the marketplace; not exactly where you want to be. Knowing what is going to happen next month, or even tomorrow, can give the enterprise the advantage they need to be successful.

Gathering the information to do just that, however, requires a fast and efficient IT infrastructure. You need a system that can amass volumes of data, and you need a high performance processor complex to be able to analyze that data in a timely fashion, getting the information to the right people at the right time. The most successful enterprise will be the one with the fastest and most efficient IT infrastructure. If you want your enterprise to be "the one", then you probably need to change the server paradigm in your data center today.

A good place to initiate that change is with HP and Generation 8 of their ProLiant family, specifically, the HP ProLiant DL580 Gen8. The DL580 Gen8 may be the right server for your enterprise right now. Check into it.

[7] Based on data provided by HP from one of its beta customers. With HP OneView, the beta customer built 12 sites in one night and a new call center deployment in one night versus the previous methods where they could build only two sites at a time and it took 11 days to deploy the two sites.

[8] According to HP.

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