



HP Extreme Scale Out (ExSO) Provides Data Center Drudgery Reduction

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Management Summary

Times of constraint are, by their nature, times to rethink old ways of doing things. Decades ago, time motion studies showed the leveraged value of taking cost out of repetitive actions. In enterprise data centers, taking time and complexity out of deployment is similarly important. Moreover, in scale-out data centers, where resiliency is based on software-supported fault tolerance, the payback and aggregate benefits of deployment finesse are huge, because replacing failed hardware (once a complex craft) is done more often. Addressing the efficiency of environmental systems, such as cooling, is a matter of good design. **Addressing efficient deployment is a matter of thinking through and optimizing repetitive processes – an engineering challenge.**

Times change the parameters of technology use. Mark Twain had a phone booth in his foyer to contain the shouting that was required by the technology of the time. Now, most of us don't even have landlines. Most of the changes in telephony (automation of operators, rotary dial to push buttons, mobile to wireless) have focused on reducing costs and increasing the flexibility of the system. The same is true in datacenters.

Technology is wonderful...once it is operational. HP has made some great strides in pre-loading software and easing the migration of applications to new hardware. Last year it introduced its *POD* (*Performance-Optimized Data Center*) offering, which comes as a 40' long unit that can be deployed under any roof on a concrete pad with access to electricity and water.

With their *Extreme Scale Out (ExSO)* offering, HP takes several interesting steps further in simplifying data center operations. This offering is targeted squarely at service providers (SaaS providers, outsourcers, capacity clouds, etc.) that use next-gen, componentized applications designed for scale-out. Some traditional enterprise applications, particularly those with lots of dependent parts, may not be good candidates for ExSO. Enterprises that use large-scale clusters for high performance may benefit from an ExSO approach.

Read on to explore the four new deployment optimizations that underlie ExSO operations.

Scale-Out's Relevance

Business models that lend themselves to scale-out technology use include any operations involving parallelized tasks. These tasks can be most effectively run at scale in an environment architected for opportunistic multi-tenancy. By contrast, traditional data centers are architected for planned (and, usually, designated) tenancy.

New inputs, from everything from sensors to home health monitors, are creating a blizzard of data points that must be processed to provide actionable information. To do so in a time frame that is optimal (often real-time), the parallelization achievable in a scale-out environment is the way to go.

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Therefore, scale-out has become a significant part of the technology landscape. That it is mimicked in social computing, such as *Facebook* and *Twitter*, only adds to its allure. It is the 99% perspiration that feeds the 1% inspiration. It supports the composition step that turns data into information of compelling value. It is a different deployment mode. Customization comes in the design, while deployment should be as foolproof as possible. Think of computer-generated graphics. In traditional modes of image creation (painting, etching, and the like), the illumination of the scene is built in from the beginning and carefully preserved as the scene is built up. In computer graphics, the scene is created independent of illumination. Instead, after creating the elements, you designate the location and quality of a light source and click. ExSO deployment is streamlined similarly.

EXSO's Target and Requirements

ExSO is targeted to support the requirements of very large (100,000+ sq ft, 10,000+ nodes) data centers where *cost/watt/square foot* is the ruling metric. The overwhelming need to conserve energy and serve as many users as possible guides the design of the offering. Resource virtualization increases its efficiency. ExSO is also supported by HP management elements such as *HP Data Center Environmental Edge*, which visualizes and monitors all environmental elements, and *HP Data Center Awareness Management*, which provides, as a service, continuous monitoring, and pro-active management.

The purchase of HP ExSO is an ongoing, long-term engagement. HP feels that, in the ExSO environment, a simple sale of equipment is insufficient for all parties. The integration needed to coordinate operations at this scale demands a well-planned sourcing of operations management. HP has a full raft of management elements, and will also design, operate or provide data center services as is appropriate.

ExSO Differentiators

Elements – skinless servers, rails and drawers

Skinless servers

Three options can be mix-and-matched to suit. One should note that they operate on shared power supplies and fans. They are less fault tolerant than a data center with traditional redundancies for no single point of failure. This reduces the cost and the energy consumed. The

Business Requirements for ExSO

- **Low CAPEX and OPEX**
- **Faster delivery and deployment** – A few weeks, not months. Due to the parallelized, scale-out nature of operations and the separation of tiers (presentation via browser), less time for testing is possible.
- **Global scalability** – For these operations, the customer base is global. The data center must be able to scale to meet global demand.
- **Global Availability** – For these operations, the location of the data center is a pragmatic decision. The additional servers (which often are delivered in the thousands) needed to keep operations up and running must be deliverable to any location.

fault tolerance is achieved, instead, in software through failure and clustering.

- **ProLiant SL 160z G6** – large-memory configuration for cache-intensive operations
- **ProLiant SL 170z G6** – large storage configuration for Web search and database applications
- **ProLiant SL2x 170z G6** – dual server for highperformance computing and Web front-ends

Chassis and Rails

- **ProLiant z6000** is a 2U chassis that slides into 10U bulk rails. The use of these rails, the shared power supplies and fans, and the reduction in the use of sheet metal per node is what takes the weight out. HP claims a 31% weight reductions from traditional pizza-box deployments. In many business environments, this may allow more options for locating data center expansion.
- **Joint cooling and power** for each rails unit requires fewer, bigger, more watt-effective fans. (Think of well-designed, open floor-plan houses). HP claims 28% fewer watts consumed, due to shared power and cooling.

HP Datacenter Environmental Edge

- **Uses wireless Sensors**
- **Includes Expansion Modules** for energy measurement and PUE (power usage effectiveness) tracking.

Deployment Logistics and Operations Support

Engagement Model

HP has retooled its engagement model to provide specialized ExSO teams of account managers and specialists. This approach supports what they call *engineer-to-engineer support*. This support is available from concept phase, through design and delivery, to operational support. HP harvests and leverages knowledge gleaned from other ExSO engagements.

Deployment Amenities

HP has re-crafted its supply chain to support a more direct engagement that, in turn, will get customers the new elements they need. Direct connections with the customer give the precision required in scale-out environments. This precision includes specific configurations and data encoding, delivery at specific times/days, and periodic *sweeps* of the data center to replace failed equipment. These drive down costs and increase effective support for these scale-out customers. It is a flow rather than a batch life-cycle. Operations monitoring allows needs to be anticipated. The needs are supported by and a parts exchange program that include pre-supply of parts to an on-site parts depot, based on operations history. The packaging that new hardware is delivered in is minimal, recyclable, and designed to be opened quickly.

Financing

HP offers flexible financing via global framework agreements and sale-leaseback schemes through HP Financial Services. It also has an extensive recycling program for proper hardware disposal.

Conclusion

HP's ExSO epitomizes what can be done with the commoditization of hardware. The servers that were once expensive pearls are now essential infrastructure. The treasure lies in what they, collectively, can accomplish. Everything else is just part of the overhead.

If you are looking to target your budget at a strategy that can appreciably alter the slope for your technology operational costs, consider HP ExSO.



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