Migrating SAP Applications on Sun SPARC servers to HP BladeSystem Matrix

Implications and Best Practices

Technical white paper

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Overview

Today's challenging economic environment has made "data center transformation" a priority for enterprises, regardless of size. A global study conducted for HP by Hansa|GCR revealed that 84% of the organizations surveyed, driven by demands for lower costs and reduced business risks, were planning a data center transformation (DCT) project within the next 12 months.[1]

An IT cost-reduction program that is poorly planned and executed can be disastrous, as it sacrifices business performance, employee productivity, and global security and yields only short-term gains. Inherent within DCT is the creation of business value. This does not mean only achieving cost savings, but it also clearly aligns the IT organization with business needs and priorities as these moves forward. Information Week 500 indicates that the Top 100 companies spend only 40% of their budget on innovations and the remaining 60% on ongoing maintenance.[2] Since HP's own DCT, this ratio has been reversed; with 70% now spent on innovation and only 30% on maintenance (HP 2010).

This white paper discusses the modernization of SAP® ERP landscapes in legacy Sun-based server environments. Modernizing a SAP environment by upgrading to SAP ECC 6.0, and migrating from older Sun SPARC platforms to a standards-based, consolidated, and virtualized HP BladeSystem Matrix infrastructure, offers a powerful way to lower costs. Moving to a converged infrastructure can also improve the IT department's ability to meet difficult Service Level Agreements (SLAs). This infrastructure helps to eliminate data sprawl caused by unneeded and redundant data, and transforms IT technology silos into shared pools of resources. Converged infrastructures also manage and automate operations for all application and infrastructure components.

Building on the acquisitions of Compaq and RLX Technologies, and on the strength of the ProLiant range in the x86 market, HP has been a blade market leader throughout the past decade. Since the 2006 introduction of its latest chassis generation, HP has steadily asserted market leadership, and now sells more blade servers than the rest of the market combined. In 2011, HP once again is recognized as the leaders of blade server market.[3]

HP has years of experience with low-risk platform migrations in SAP environments that allow you to take advantage of the total cost of ownership (TCO) superiority of new standards-based servers.

Most organizations realize that modernization is necessary, but many are reluctant to act in the near term. In this paper, we take a hard look at why "putting off" a standards-based modernization could be a costly mistake. Current economic conditions offer challenges, but opportunities will also emerge. Modernizing can realistically yield significant cost savings. For example, HP data (2010) indicate savings of up to 50% in total IT operational spending, and up to 60% energy savings through data center modernization.

A data center transformation may seem like a daunting and complex undertaking, but HP and its partners have helped hundreds of customers migrate affordably and easily. These firms leveraged HP's step-by-step implementation processes, together with specialized tools for SAP and Oracle migration, for a quick and effective modernization. This paper also shows how the migration process can simultaneously preserve critical application and operating environment investments. We examine how a data center modernization and transformation initiative can reduce complexity without degrading IT capabilities, SLAs, or information security.

[1] Hansa|GCR, "HP Data Center Transformation: Key Implementation Drivers," November 2008
[2] HP Data Center Transformation Strategies and Solutions – Business white paper, P/N 4AA1-6781ENW, April 2010
[3] HP Mission Critical Computing Blog http://h30507.www3.hp.com/t5/Mission-Critical-Computing-Blog/Gartner-s-Magic-Quadrant-results-At-a-glance-Summary/ba-p/87205

Business landscape and challenges

Many of today's enterprise application ecosystems are large, costly, and aging. End-of-life hardware platforms and software applications fuel the need for more computing power, while space reductions and "green" initiatives demand greater efficiency from processors and smaller footprints for servers. They can be difficult to maintain, improve, and expand because there is a general lack of understanding of the system. Legacy operating environments may also have vulnerabilities due to lack of security patches being available. Data center space is decreasing, along with capital and operational budgets. Application support and licensing costs remain substantial, and may increase. Forwarding-looking organizations are investigating innovative ways to reduce equipment and operations expenses while improving business agility.

For organizations currently running pre-6.0 versions of SAP on legacy Sun SPARC servers, the pressing question of when and how to upgrade looms large. Should they move to SAP release 6.0? What are the advantages and disadvantages of Scaling out with many small blade servers versus scaling up with a large, partitioned system?

There is one certainty. Organizations no longer have the luxury of "putting off" the inevitable. Data Center Transformations and ERP modernization cannot be delayed.

SUN and Oracle Merge

In April, 2009, Oracle announced that it would be acquiring Sun Microsystems.

In 2009, Oracle stressed that given the 140,000 joint HP and Sun customers, Sun had no more important platform than HP Integrity and Intel® Itanium® processors. In 2010, Oracle reiterated Oracle's commitment to certifying their applications on the HP Integrity servers.

In March, 2011, an Oracle press release stated, "Oracle will discontinue development on the Itanium."[4]

SAP released SAPNOTE 1575 609:

"Based on the current information that is available, no urgent action has been identified for SAP customers on Oracle with HP-UX. In the last year, we have released Oracle Version 11.2 for SAP products (see Note 1398634). Oracle Standard Support will be provided for Version 11.2, up to the end of January 2015. From January 2015 until January 2018, Extended Support is provided by Oracle. The Sustaining Support Phase, which has no time restrictions, then follows. Therefore, based on Oracle Version 11.2, full support for HP-UX in the SAP environment is guaranteed for many years. If Oracle changes this planned HP-UX road map in the long term, and no longer provides Version 12g on HP-UX, SAP customers can perform an operating system migration or a database migration at any time, in order to switch to a platform configuration that is supported in the long term."

The bottom line: While the Oracle/Sun strategy has changed, offering fewer options for customers, HP and SAP are still on firm ground on the Itanium platform, offering customers options that offer superior solutions and lower TCOs.

[4] Oracle Press Release: http://www.oracle.com/us/corporate/press/346696; March 22, 2011

SPARC End-of-Life

End-of-life announcements have placed customers with older UltraSPARC IV/IV+-based servers in a difficult position. Not only are these servers at end-of-life, but they also have high support, power, cooling, and floor space costs. The IT managers facing this dilemma have a choice: either reduce services or modernize their server infrastructure and upgrade SAP software.

Upgrading the server environment is only the first step. Implementing the most cost-efficient infrastructure requires consolidation and virtualization of workloads. Unfortunately, consolidating on current SPARC-based servers comes at a premium. Sun's newer SPARC64 VII-based M-Class and UltraSPARC T2 Plus-based T-Class servers lag behind servers based on Intel® Xeon® processors in terms of price/performance and they demand unique virtualization tools from the rest of the Linux® and Windows® data center.

Delivery-focused infrastructure

Today, with the bulk of IT spending focused on application delivery, virtualization capabilities have become crucial. Standards-based servers now support leading virtualization technologies from VMware, Microsoft®, and others. Data centers have frequently maintained disparate server islands for individual workloads. For instance, a data center using SPARC servers and Solaris to run enterprise applications, databases, or portal applications may select Windows servers for e-mail and collaborative team applications, and Linux servers for Internet workloads. Even with consolidated event management, this data center configuration can be a complex mix to orchestrate. An advanced, converged solution, such as HP's BladeSystem Matrix, can lead to superior economics, application-based cost tracking, and dynamic capacity management through a self-service, unified management interface.

Staying with underpowered, inefficiently managed, less available, and costlier SPARC-based servers reinforces a lack of flexibility that shackles data center management. This leaves an organization vulnerable to loss of revenue and market share to its competitors that are transforming data centers and modernizing infrastructures.

Physical environment—Moving to blades

Standard rack configurations are typically used by UltraSPARC III and IV/IV+ servers, but continuing investment in the rack server form factor will not help data centers in achieving the reductions in cost, floor space, and heating/cooling that they now require:

- Each server has a unique set of network addresses for storage and communications. There are frequently hundreds of cables required to support a single rack. Replacing a server can be a labor-intensive and error-prone process.
- Moving or altering a rack server requires a series of changes at the physical level. The application must be moved to an operating server, and then back again once the old server has been repaired or replaced.
- Rack servers decay quickly in relative price/performance, and are often retired in three years or less. For data centers with tens or hundreds of servers, this makes server upgrades and replacements a continuous, expensive job.
- In this environment, provisioning new applications or rolling out a new business services requires considerable effort and further adds to complexity. Replacing outdated servers or upgrading or patching applications and operating systems becomes an extreme challenge, even when operating at robust staffing levels.
- Maintenance costs and error-based outages can degrade data center service levels.

- Power and cooling requirements overload the capacity of the data center. Re-engineering the data center or building a new one requires tremendous capital outlay and substantial service-level disruption.

Most legacy rack servers support a single workload, and are usually sized for peak demand. In the industry, it is common knowledge that dedicated UNIX® servers provisioned in this way are often less than 25% utilized. A typical data center can have hundreds of idle processors, all consuming floor space, power, and cooling. HP is aware that the move to a consolidated, virtualized blade server environment, where resources can be quickly and efficiently shuffled between workloads, can generate enormous cost savings.

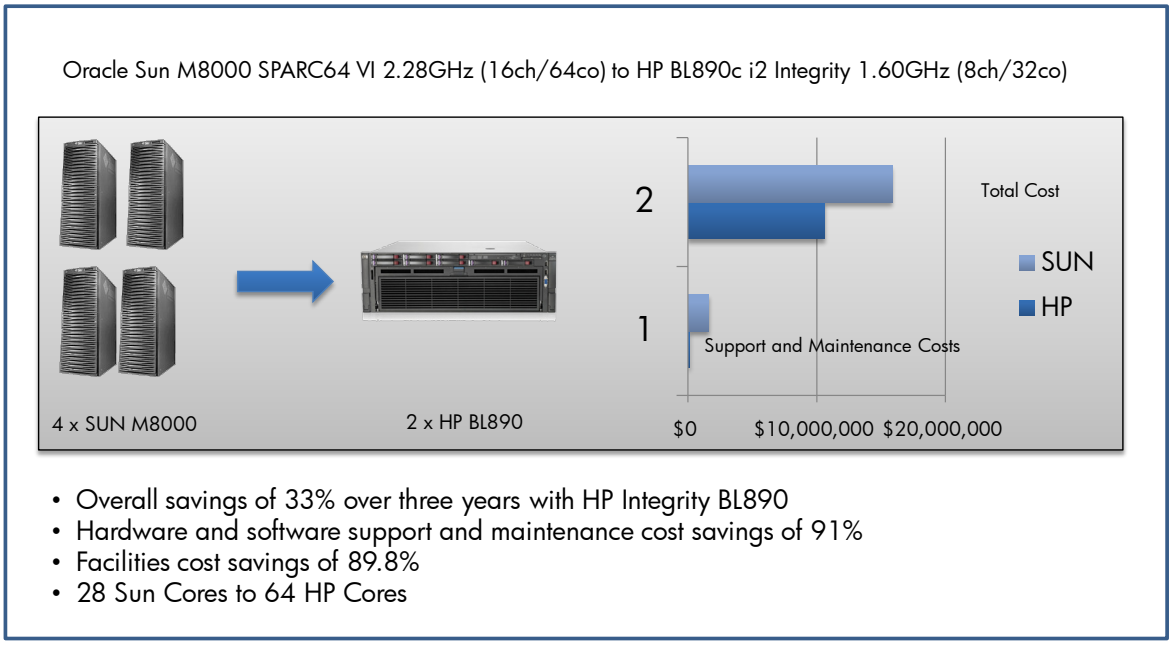
Business implications

For SAP customers who are considering SPARC server replacement, HP recommends focusing on three primary strategic factors:

- Simplification and consolidation of IT infrastructures for optimal efficiency
- Acceleration of new service development and deployment
- Reduction in infrastructure costs to improve margins and to free up resources for innovation

The following sections examine how these factors are affected, both qualitatively and quantitatively, by moving from an SAP/legacy Sun environment to a modern HP BladeSystem Matrix infrastructure running SAP ECC 6.0. A typical TCO result for replacing Sun Solaris servers is shown in Figure 1.

Figure 1: Consolidation of SAP/SPARC Environment



No pain, big gain

Looking at total cost of ownership, the new standards-based servers generate tremendous savings over older, dedicated application servers such as Sun SPARC, based on the following:

- Server and core count reductions
- Consolidation and virtualization
- Software licensing savings
- Integrated and simplified management

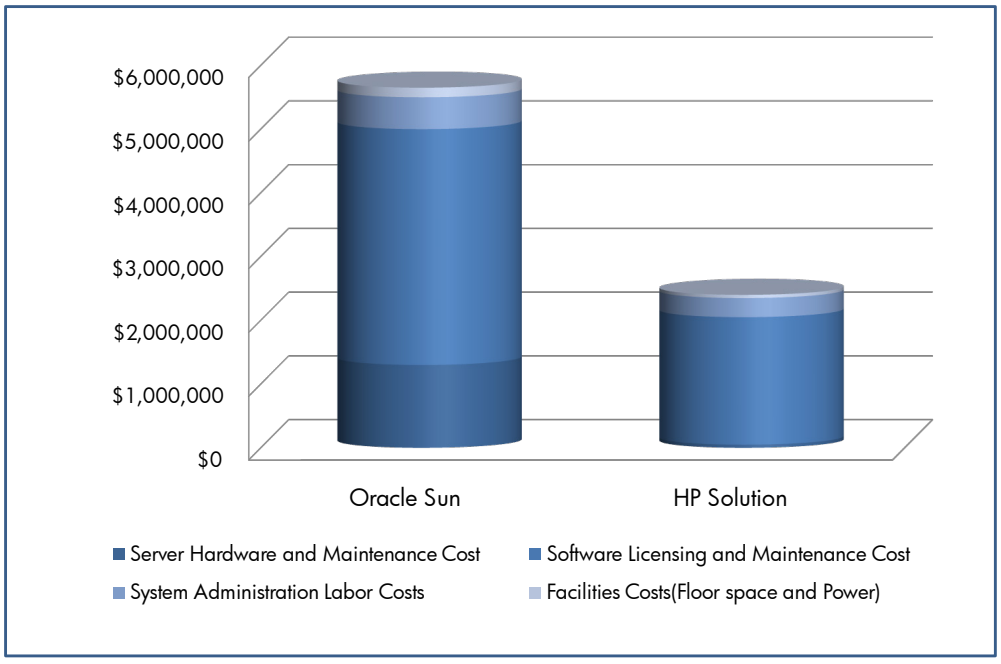
Solaris/SPARC server systems, like HP-UX on PA-RISC, AS/400, and AIX/POWER systems, are often replaced with Intel-based servers running HP-UX, Linux, Windows, and Solaris. With much higher per-core performance and pervasive virtualization, these servers can be used more efficiently (average utilization rates at 50% or higher) and software license costs can be reduced.

To help customers obtain a consistent view of total cost of ownership, HP works closely with Alinean (www.alinean.com). HP leverages Alinean's standardized TCO models to provide customers with high-level and detailed cost analyses. These help business management make sound migration decisions. HP makes a simplified TCO analysis available at www.hp.com/go/tcochallenge. Table 1 shows some typical cost savings.

Table 1: Example Cost Savings

SPARC server	HP server	Total Core reduction	3-year server cost comparison	% Cost Difference
4 x Sun M8000 SPARC 64 VI 2.28 GHZ Total Cores: 128	2 x HP BL890c i2 Integrity 1.60GHz (8ch/32co) Total Cores: 64	64	SUN - $15,857,500 HP - $10,613,600 SUN: $5,243,900 more than HP	33.1%

Figure 2: Three Year Cumulative TCO Results



Source: www.alinean.com

HP's ProLiant blade servers are based on the Intel Xeon processor 5600. As future processors become available, the network and I/O bandwidth of the BladeSystem chassis ensures that upgrades to the newest, most powerful CPUs can be performed without disturbing the network and storage infrastructure.

For high-availability, business-critical applications, HP's Integrity blade servers, such as the BL890c, based on Intel Itanium processors, are a sound choice. Running Linux or HP-UX, Integrity is commonly used in split-tier architectures. For instance, for maximum security and reliability, the Oracle database and core SAP instance would run on Integrity, while the applications modules could run on ProLiant or Integrity.

One can see from the analysis here that IT decision-makers should perform TCO analysis to remove doubt about the short-term benefits of moving to a standards-based infrastructure.

Migrating to a Microsoft SQL Server

For firms willing to look beyond Oracle to support their SAP landscape, moving to a Microsoft SQL Server can yield great savings. Wipro Technologies, a global technology services provider, gathered data from 68 companies that were running SAP on a variety of platforms. Wipro found that migrating an SAP/ERP environment to a Microsoft SQL Server can yield an internal rate of return of 74% (for medium SAP implementations) to 137% (for large SAP implementations), while at the same time increasing system performance. IT labor costs drop by nearly 25%, because fewer personnel are required to manage the SQL Server environment. The Microsoft SQL Server is licensed per-processor, which provides substantial savings relative to per-core licensing. Overall, Wipro found that payback can occur within nine months, with possible ongoing annual savings of 30% to 37%.[5]

[5] Wipro, "Microsoft SQL Server Migration Pays Big Dividends for SAP/ERP Customers," February 2008

Deploying a SQL Server on Integrity blade servers provides a near-optimal low cost, high availability database solution that can scale easily. Alinean found that Integrity's reliability, availability, and serviceability advantages can reduce downtime costs by as much as 95%.[6]

The Microsoft SQL Server provides even greater benefits for firms already using Microsoft products in their environment for e-mail or directory services. By placing SAP in the same management environment, IT professionals can leverage administration requirements across the enterprise.

Power and cooling

Savings in power and cooling costs derived from modernization can be dramatic. With today's high-density data centers and focus on cost savings, metering power is extremely important. Older dedicated rack servers offer a poor combination of low computer utilization and high power consumption. The experience of British Telecom's BT Vision provides a striking example. When BT replaced its Sun Fire V210 servers with HP ProLiant blades, it reduced its equipment costs of 80% and tripled its capacity, while maintaining the same power and cooling budget.

"We currently have half a million users on the platform. We are within our space and power, and our financial budget as well. None of this would have been possible without the HP BladeSystem" Philip Buckley-Mellor, IT system designer at BT Vision. Table 2 illustrates the relative capabilities of Sun and HP blade solutions.

Table 2: Blade chassis management

	Sun	HP
Power and cooling	No chassis-level controls	Advanced Thermal Logic manages both
Lights out management	Inconsistent tool set	Integrated lights out management
Flexibility	Full height only	One-half and full-height options
Compute density	Sun 6048 – 48 blade slots in one chassis Sun 6000 – 10 in 10u	c7000 chassis – 16 in 10u c3000 chassis – 8 in 6u

Management

An HP BladeSystem Matrix environment can be managed with a fraction of the effort of a standard data center. The HP Matrix Orchestration Environment provides a unified management interface to rapidly design, deploy, and optimize the application infrastructure. This powerful combination dramatically simplifies complex infrastructure tasks such as disaster recovery, capacity planning, consolidation, and provisioning. HP believes that companies can save nearly 80% in operational costs and realize payback in as little as eight months, with a potential three-year return on investment (ROI) of more than 300%.

Through the self-service portal design, BladeSystem Matrix provides an approach to provisioning that dynamically assigns resources to meet the needs of the business—in minutes versus weeks or months. Resources are assigned to requests as needed and are then returned to the pool once the service requirements are completed, which optimizes utilization of the infrastructure.

Administrators can link logical servers to network and storage resources without relying on hard-coded network addresses. HP data shows that customers deploying virtual machines and HP Virtual Connect 10 reduce their infrastructure costs by up to 60%, and reduce power costs by up to 56%.

[6] Alinean, "Microsoft SQL Server on HP Integrity Servers: Lowering Total Cost of Ownership (TCO) through Server Consolidation," April 2007

Table 3: Server blade virtualization

	Sun	HP
Virtualized network connects	Yes	Yes
Virtualized storage connects	6000 chassis only	Yes
Chassis management	No blade-specific management service	Integrated power, cooling, provisioning

Simplified provisioning

Development and acceptance testing require rigor in deployment processes. This type of testing is often iterative and complex, and injects error-prone changes into the infrastructure. The BladeSystem Matrix augments standard testing and deployment procedures by providing standard templates and virtualized resource management. IT administrators then apply these templates for rapid deployment of consistent configurations.

Result: Tremendous cost savings and flexibility

For Sun customers looking to transform, modernize, and better secure their IT environments, the answer lies in eliminating dependencies on proprietary products in favor of adopting Intel standards-based servers. IT professionals can stay with Solaris or move to Linux, Windows, or HP-UX. Through modernization and standardization on BladeSystem Matrix, former Sun customers can obtain several key benefits:

- Consolidate applications to reduce costs and improve TCO
- Cut infrastructure costs through standards-based servers with virtualization
- Consolidate independent islands of data to virtualized storage array networks (SANs)
- Reduce IT staffing costs by unifying application, server, and storage management

Modernization planning

When migrating to a modern SAP environment, the most prevalent concerns involve cost, risks, and time. HP provides a focused set of assessments that can answer these questions long before major investments occur. This approach reflects HP's experience with migrations and the breadth of resource. With one of the industry's broadest portfolios of servers, storage, services, and software, HP is helping SAP customers worldwide to move to standards-based infrastructures. Firms that make the move enjoy improved performance, reduced costs, and peace of mind knowing that their business-critical SAP applications are running on safe, long-term platforms.

After completing hundreds of migration projects, HP has identified the following 10 key steps to ensure a smooth migration:

HP migration process framework

1. Understand business drivers
2. Identify "critical path" IT requirements
3. Develop a solid TCO analysis and business case
4. Jointly scope objectives
5. Map to supporting architectures, application suites, and services
6. Create a comprehensive migration plan
7. Demonstrate capability on a project subset
8. Transition remainder of applications and data
9. Complete acceptance testing
10. Execute cut-over, operations management, and ongoing support

As firms keep pace with changing business conditions, overriding strategic business goals will shape their migrations, especially as firms seek to accelerate new service development and deployment and to reduce infrastructure costs for improving margins and freeing up resources for innovation.

With objectives defined, organizations can identify critical IT requirements and develop a business case by considering the following:

- What service levels do we anticipate in the future?
- Will we need to bring new services on line?
- Does it make sense to consolidate, and if so, by how much?
- How much will we reduce costs, both short and long term?
- How quickly do we reach an ROI payback?

After the drivers, cost-benefit analysis, and general approach have been defined, the in-depth transition studies that span all areas of impact should be conducted.

In migrating SAP landscapes from legacy SPARC to a BladeSystem Matrix environment, HP has identified several factors of key relevance to the sizing and configuration process. The remainder of this section focuses on these factors, including stack assessment, use of SAP reference architectures and HP Solution Blocks, platform selection (ProLiant and Integrity), workload consolidation and virtualization, and business-critical computing.

Stack assessment

Full application availability, post-migration, is ensured by an initial stack assessment, which provides an inventory of applications to be used in the BladeSystem Matrix environment following the migration. These include all elements of the SAP installation, upgrades, and patches. For areas such as data integration, additional applications may require mapping to equivalents in the new environment.

HP's broad experience across all industry-leading technologies helps ensure that information gathered can be applied efficiently. One of the first and most important steps is clear identification of the size and structure of the target database and the amount of effort needed to migrate the legacy database.

HP works closely with customers and software vendors to ensure that all required applications are available on the selected operating system and targeted blade server—HP Integrity or HP ProLiant—and to determine service levels, required resources, and cost implications.

Data gathering—Preparing for migration

Infrastructure

- Server specifications, applications, and workload profiles
- Storage switch and device details, average and peak loads
- Software inventory for backup, availability, management, and more

Development environment

- Develop, compile, and build management tools
- Establish quality and defect-tracking processes and tools
- Identify custom application inventory and profiles

Runtime environment

- Enterprise applications
- Database
- Business intelligence and reporting
- Custom applications

SAP reference architecture

Taking full advantage of HP's SAP reference architecture is an important part of a successful migration. Infrastructure provisioning can be time-consuming and resource draining. Each time a business unit, application owner, or development team requests resources, a lengthy process begins. IT experts must capture system requirements, design the solution, and then identify the resources that are available or that require procurement.

HP's Insight Orchestration (HP IO) provides a streamlined alternative, enabling an IT organization to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources ranging from a single virtual machine to complex multi-tier environments with physical and virtual servers and storage systems can be rapidly provisioned.

HP has created reference architecture for the SAP environment, which is focused on the use of HP Insight Orchestration for provisioning an SAP application server for a given infrastructure in a repeatable fashion. The SAP reference architecture is further described in the white papers "HP Insight Dynamics – VSE in an SAP environment – provisioning the SAP Infrastructure with HP Insight Orchestration," and "HP Insight Dynamics – VSE in an SAP environment – designing and configuring the HP Insight Orchestration template." See the links listed in the "For more information" section.

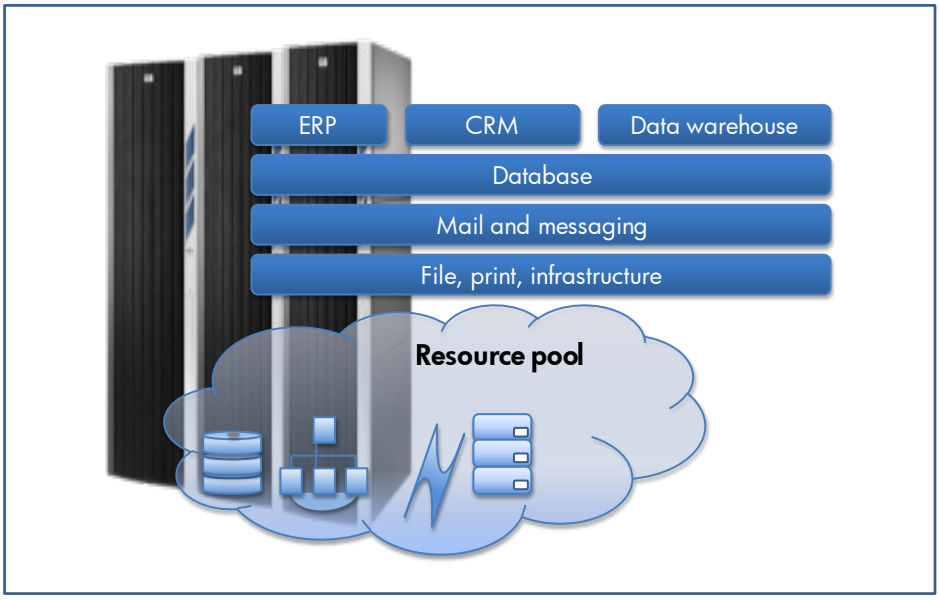
Used in conjunction with applicable reference architectures, HP BladeSystem Solution Blocks simplify ordering, configuring, and customizing of complex applications, including SAP ECC 6.0. Solution Blocks are combinations of HP server and storage blades, interconnect technology, and software applications that help accelerate deployment in application projects. For instance, SAP Solution Blocks in the Integrity line start with a solution that supports up to 450 users. Configurations increase from this point, and include clustered systems and high-availability options supporting well over 2,000 users.

BladeSystem Matrix configuration

The proper configuration of a modernized blade infrastructure to serve as a long-term, optimized infrastructure for SAP will allow an organization to operate effectively and efficiently now, and will provide an inherent ability to grow and meet performance requirements for years to come. An optimal server infrastructure should provide the following:

- **Long life and scalability:** Servers should support multiple generations and classes of processors, with a several-year lifespan between each major refresh.
- **Strong performance for different kinds of workloads:** Servers that support multiple workloads—transaction (OLTP), ad-hoc queries, high-performance computing, end-of-period batch, and reporting—improve business flexibility. HP workload management software helps maximize utilization to boost ROI.
- **A wide range of processor and server choices:** HP offers Intel Xeon processor-based ProLiant servers and Intel Itanium processor-based Integrity servers. Both server lines are offered as blade, rack, or standalone servers, in configurations from 4 cores to 128 cores per server node.
- "**Single pane of glass" operations management:** Simplified, unified management across server environments yields large operational cost savings and staff efficiency, as with HP's Systems Insight Manager (HP SIM).
- **Multiple operating systems, maximum server flexibility:** Deployment of servers that can support multiple operating systems, including UNIX environments, such as Solaris or HP-UX, as well as Windows and Linux, maximizes server flexibility. Servers should be able to mix operating system workloads on single systems and rapidly shift them in response to business demands.
- **Workload consolidation and virtualization:** Virtualization and consolidation enable resource sharing, thereby improving server utilization while reducing overall server count. The end result is lower administration and data center costs. Mapping business requirements (e.g., performance and availability) to appropriate logical or physical servers as demand changes, based on previously defined business priorities, simplifies workload management.
- **Accelerated application deployment:** Accelerated application deployment empowers IT to create templates for effortless deployment of replicated applications and provision of complete applications that address servers, storage, and networking in a unified manner.
- **Streamlined server replacement:** Replacing servers or moving workloads to spare servers quickly, without complex planning or delays, streamlines server replacement.
- **Reduced operational costs:** Wherever possible, administrative tools should automate management and reduce administrative effort; for instance, linking business needs such as transaction speed directly to specific elements at the server, storage, or network level.

Figure 3: HP BladeSystem Matrix



The HP BladeSystem Matrix is designed to meet the needs outlined above. Specific business requirements can be met using either ProLiant blade servers or Integrity blade servers and a choice of Linux, Windows, Solaris, and HP-UX operating systems. ProLiant blades are designed for leadership price/performance and reliability, while Integrity blades are designed for business-critical applications.

BladeSystem Matrix delivers an infrastructure that is efficient and designed for the long term. Matrix supports the high availability and scalability required by Oracle or SQL Server and lowers provisioning costs through HP Virtual Connect. Matrix includes affordable failover and disaster recovery for all applications. A standard configuration will deliver the following critical advantages:

- 10-year-life server infrastructure
- Smaller footprint in the data center
- Simplified data center management
- Higher ROI/TCO via proven metrics
- A unified management solution and lower cost through Systems Insight Manager (HP SIM)
- Reduction in power and cooling costs by 20% to 30%
- Lower costs for operating system and database licensing

By simplifying through standardization, BladeSystem Matrix provides one pool of infrastructure that can be carved up to suit the needs of many workloads, addressing up to 90% of all workloads within one environment. The Matrix environment can scale elegantly (up to 1,000 nodes in a domain), making it ideal for scale-out or replicated applications. Virtualization is enabled across product lines and managed through an integrated command center, HP Insight Dynamics – VSE. In addition to continued development of HP's own virtualization capabilities, HP works with vendors such as VMware to ensure support for virtualized workloads.

ProLiant

For many business workloads, service levels can be easily met with ProLiant blades. Taking this approach enables cost savings that can balance the investments for mission-critical HP Integrity servers. HP ProLiant servers lead the industry in units sold, and have done so for many years.

ProLiant server blades are designed for mainstream computing and should be chosen when performance, price/performance, and low operational cost become dominant factors in server selection. Based on Intel Xeon processors, ProLiant servers handle both native 32-bit and 64-bit processing—providing the maximum amount of performance at the lowest price points. ProLiant servers are often implemented as front-end and network edge servers, in the application tier, as well as for back-end database servers at a fraction of the cost incurred for legacy Sun SPARC systems. The ProLiant server line is a natural fit for medium-sized SAP application landscapes. The latest server blades, which feature two 5500 series Intel Xeon processors with Intel Turbo Boost Technology and 4 cores per processor, are also suitable for larger businesses with more demanding workloads.

ProLiant servers are certified with Linux, Solaris, and Windows. Multiple releases of Linux are supported, including SUSE, Red Hat, and Oracle Unbreakable Linux. HP offers a wide range of Solaris-certified ProLiant servers—more than 40—making migration simple. In fact, HP offers more Solaris-certified x86 servers than Sun. HP provides standard and premium one- and three-year Solaris subscriptions and technical support for Solaris running on ProLiant server platforms. Integration of Solaris 10 and HP Insight Software on ProLiant servers delivers usability and management enhancements to reduce customer operational costs.

Integrity

Integrity server blades bring unparalleled reliability and availability to host demanding, mission-critical applications. Integrity is generally a better fit for customers whose workload benefits from more robust reliability features or where a possible future requirement exists for greater levels of scalability.

Integrity blades provide a business-critical, enterprise-class platform designed to support real-world performance for a broad range of IT workloads. Integrity servers support SAP on HP-UX, Windows (64-bit), and Linux. Standards-based Integrity servers enable a dynamically scalable, intelligently virtualized, and continuously available business technology infrastructure.

Integrity servers are primarily implemented as back-end database and application-tier servers. High-performance Intel Itanium processors and very large memory capabilities make the Integrity line of servers well suited for complex technical and commercial workloads, including very large OLTP databases, Business Intelligence, and ERP.

Integrity, especially with HP-UX, offers extensive high-availability features to enhance data integrity, improve application availability, and reduce planned maintenance time. This combination provides failure detection, correction, and isolation beyond what is available on x86 systems.

Key features include the following:

- The Cache Safe Technology of the Intel Itanium processor delivers mainframe class availability, eliminating cache errors.
- Dynamic Processor Resiliency can detect a failing CPU and take it offline.
- Integrity's double chip spare represents a 3x improvement in isolating memory.

Integrity is well suited for consolidation scenarios, which can drive improved operational and hardware efficiencies. Integrity offers a powerful virtualization engine for application consolidation, especially in IT organizations that utilize HP-UX and OpenVMS operating environments.

As the optimal solution for high-availability applications, Integrity is deployed by many organizations in "split-tier" configurations. In this situation, SAP application modules are installed on ProLiant blades, with business-critical databases and SAP central instances deployed on Integrity servers.

Workload consolidation and virtualization

By cutting data center costs through virtualization and consolidation, moving from SPARC to industry-standard HP servers can provide significant benefits beyond faster processors and denser form factors. Leveraging the efficiencies of the new infrastructure can quickly pay back one-time porting costs.

Blade servers provide excellent price/performance, and today, a single blade can replace one or more mid-range servers. Virtualization and consolidation enable multiple workloads to share a single physical server, enabling resource sharing. This improves server utilization while reducing server and core count. HP data indicate that hardware support costs, compared to existing servers, consistently drop by a factor of 10 or more.

A single ProLiant or Integrity blade server can create a pool of multiple virtual servers or machines, each with its own "guest" operating system instance—with different operating system versions, applications, and users. Each virtual machine hosts its own applications in a fully isolated environment, and can grow or shrink depending on business priorities. The physical resources of a Matrix server blade are shared among the virtual machines it hosts, based on demand and entitlement.

HP servers are designed to support multiple applications and operating systems within a single server. Insight Dynamics – VSE analyzes and optimizes the infrastructure by managing physical and virtual resources in a similar fashion. Administrators can provision individual servers with several operating system instances and applications and can modify these system instances in response to business requirement changes.

Benefits offered by this level of virtualization include the following:

- **Address changing business priorities:** Administrators can assign specific system resources (CPU, memory, etc.) to different application components and database processes if they are running on the same OS instance. This allows critical processes automatic access to dedicated resources, based on business requirements.
- **Moving applications:** On HP Integrity servers, HP Workload Manager and Global Workload Manager allow resources to be distributed among HP servers, virtual machines, and individual server blades, and between blade enclosures.
- **Small or transient workloads:** Use of HP servers with virtual machines is an attractive consolidation solution for testing and development environments. Coupled with virtualized workload management, this greatly reduces provisioning costs associated with development environments.
- **Redundancy and high availability:** HP Serviceguard delivers failover and application management between blade enclosures, within data centers, or between distributed data centers. Serviceguard supports HP Integrity servers with HP-UX, and other solutions include Oracle RAC, Windows Server 2008 failover clustering, and Solaris clusters. HP Serviceguard Extension for SAP expands Serviceguard's powerful failover capabilities to SAP environments. Backed by world-class support from both HP and SAP, Serviceguard Extension for SAP is fully tested, approved, and endorsed by SAP to minimize implementation risks. Customers can also integrate SAP with HP Serviceguard Solutions for disaster tolerance.

Products such as VMware, Xen, and Solaris xVM virtualization also provide solutions for HP ProLiant platforms. IT professionals should consult their HP infrastructure specialist when evaluating options.

Executing the migration

HP provides guidance and best practices for migration through HP's Migration Center (MC). MC provides assessments, proof of concepts, and program management to help in the transition from Sun to HP. HP can also support core migration tasks through EDS and HP Technology Services. HP provides a rich set of migration services and resources, such as hosting, including interim services during migrations, application modernization, and infrastructure refresh and consolidation.

HP engineering has created tools to simplify and streamline the porting process, reducing risk, time, and cost. HP makes sure that code portability won't stand in the way of organizations looking for the most cost-efficient platform. HP offers code-scanning tools for Solaris to Linux and HP-UX and porting kits to automate code updates.

BladeSystem Matrix and SAP templates

HP provides pre-loaded deployment templates on BladeSystem Matrix for SAP, which allows organizations to deploy complete enterprise applications based on template-driven processes. This radically simple yet complete approach cuts provisioning time and errors, while improving business service levels. Templates integrate provisioning across servers, storage, networking, and availability. Customers can leverage HP-created deployment templates for popular applications such as SAP, Oracle, and Exchange or build their own.

This means simplified migration for organizations moving from legacy SPARC environments. In combination with HP planning and migration services, customers can easily deploy equivalent applications on HP infrastructure with minimal effort and vastly reduced operational costs.

Database migration

HP's Smooth Transition Kit provides for pain-free Oracle database migrations. The HPSTM portfolio of tools, methods, and services has been successfully applied with SAP customers for more than 1,000 heterogeneous Oracle DB migrations from one hardware and operating system combination to a different one.

Arising out of HP's extensive experience porting SAP and Oracle from RISC environments, such as Tru64/Alpha, to standards-based environments, HPSTM has been confirmed to provide substantial reductions in risk, time, and costs. HPSTM surpasses virtually any other tools or processes available from other vendors.

Summary

IT professionals and executives have vaulted "data center transformation" to a top priority position within enterprises large and small. Many agree that lower costs and reduced business risks are the two primary drivers, and concur that a DCT could be detrimental to an organization that fails to follow a balanced approach. There can be risk when IT is mandated to reduce costs and complexities while actually improving business services and SLAs.

Modernizing an SAP environment by upgrading to SAP ECC or 6.0 and migrating from older Sun platforms to virtualized BladeSystem infrastructures offers one of the best means available to lower costs while improving IT services and business performance. Delaying this decision, in light of immediate cost savings and strong longer-term TCO outcomes, could be a costly mistake.

HP and its partners have helped hundreds of customers migrate seamlessly, affordably, and easily. These firms have taken advantage of HP's extensive experience, proven step-by-step processes, and specialized tools for SAP and Oracle database migration.

Adopting a standards-based infrastructure from HP and Intel for SAP environments, as well as migration from Oracle to Microsoft SQL Server, can allow organizations to modernize, reduce costs, and improve IT and business performance. HP and its partners offer a wide selection of tools and services to support those organizations that have chosen to undertake a data center transformation via modernization. Migrating to a standards-based infrastructure enables IT professionals to consolidate workloads and simplify administration, while delivering a platform for growth and innovation. Contact your HP account manager or authorized reseller to arrange for a migration assessment and TCO analysis.

HP resources

HP has worldwide resources to assist customers in migrating applications and data as part of adopting standards-based infrastructure. Services cover the complete stack, from servers and storage to application porting. Refer to the section below under "For more information" for links to specific services. HP also offers in-depth training on HP tools, operating systems, and infrastructure technologies such as the following:

- **Infrastructure consolidation services:** HP has specific services to help customers create a virtualization strategy, develop a design, and then move from a distributed to a virtualized, consolidated environment.
- **Application upgrades:** Through the network of HP Solution Centers, HP offers proof of concept, design, and upgrade/migration services for Oracle applications, SAP applications, and other major software vendors.
- **Application porting:** HP offers a variety of services to port applications to HP target platforms such as Solaris on ProLiant, Linux environments on ProLiant or Integrity, and HP-UX on Integrity. HP can provide assessments, proof of concepts, or assistance or take on the entire porting assignment.
- **Data management and migration:** Storage and database services from HP enable migration of data, consolidation of data storage, and adoption of SAN or disaster recovery configurations. HP has broad experience with Oracle and other commercial database products. HP offers a full set of tools and best practices to accomplish data migration and minimize disruption or downtime.

For more information

HP hardware

HP servers: http://www.hp.com/go/servers

Linux and HP servers: http://www.hp.com/go/linux

Sun Solaris on HP ProLiant: http://www.hp.com/go/solaris

HP solution blocks: http://h18004.www1.hp.com/products/blades/solutions/solution-blocks.html

HP software

HP-UX 11i v3: http://www.hp.com/go/hpux11iv3

Matrix Operating Environment for HP-UX: http://www.hp.com/go/vse

HP Matrix OE Reference Architectures: http://www.hp.com/go/vsera

HP Serviceguard: http://www.hp.com/go/Serviceguard

HP Systems Insight Manager: http://www.hp.com/go/sim

Solaris to HP-UX Porting Kit: http://www.hp.com/go/shpk

Solaris to Linux Porting Kit: http://www.hp.com/go/slpk

Solaris Transition Kit: http://www.hp.com/go/stk

Whitepapers

HP Matrix Operating – VSE Reference Architecture

For SAP: http://www.hp.com/go/vsera -> SAP

For Oracle: http://www.hp.com/go/vsera -> Oracle

For BEA: http://www.hp.com/go/vsera -> BEA WebLogic Server

For IBM WebSphere: http://www.hp.com/go/vsera -> IBM WebShpere Application Server

For SAS: http://www.hp.com/go/vsera -> SAS

HP services

Data center virtualization: http://h20219.www2.hp.com/services/cache/583797-0-0-225-121.html?jumpid=reg_R1002_USEN

Sun to HP Migration: http://www.hp.com/go/sun2hp

Solaris support: http://www.hp.com/services/solaris

Solaris subscriptions: http://h18004.www1.hp.com/products/servers/software/solaris-subscriptions/index.html

HP partnerships

HP and Microsoft Alliance: http://www.hp.com/go/microsoft

HP and Oracle Alliance: http://www.hp.com/go/oracle

HP and SAP Alliance: http://www.hp.com/go/sap

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