HP Virtual Server Environment (VSE) Reference Architecture Program

Including VSE V4.0 Update

Session 1841

Andy Schneider

ESS SW Product Management, HP

June 18, 2008

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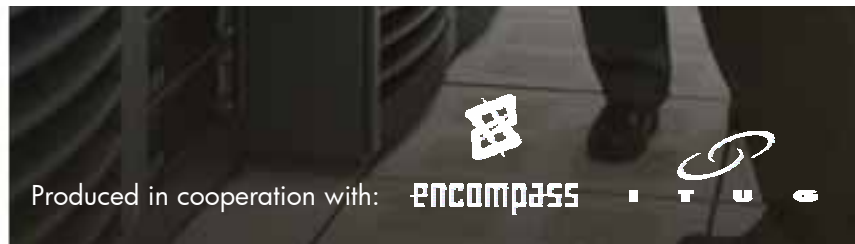
HP Technology Forum & Expo 2008

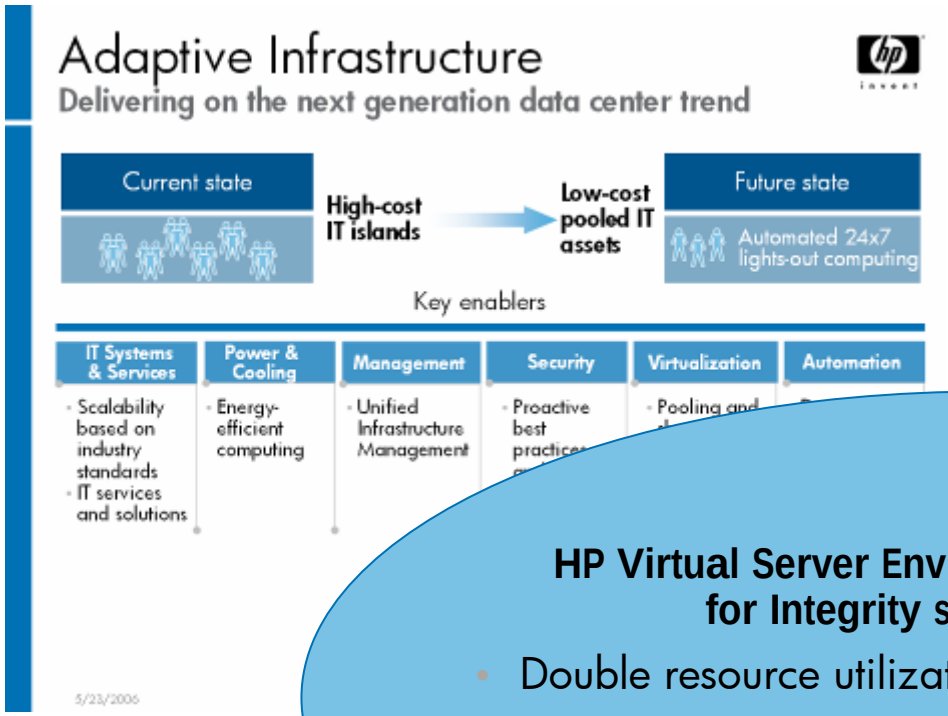


Agenda

- HP VSE V4.0 Program Update
- HP VSE Reference Architecture Program
  - Updates to existing white papers
  - Integration with Insight Dynamics – VSE Program
- Solutions – sample design points
  - Oracle
  - SAP
  - BEA
  - SAS
- Solutions in action – examples
- TCO benefits – example

HP Virtual Server Environment

Building the Adaptive Infrastructure future today

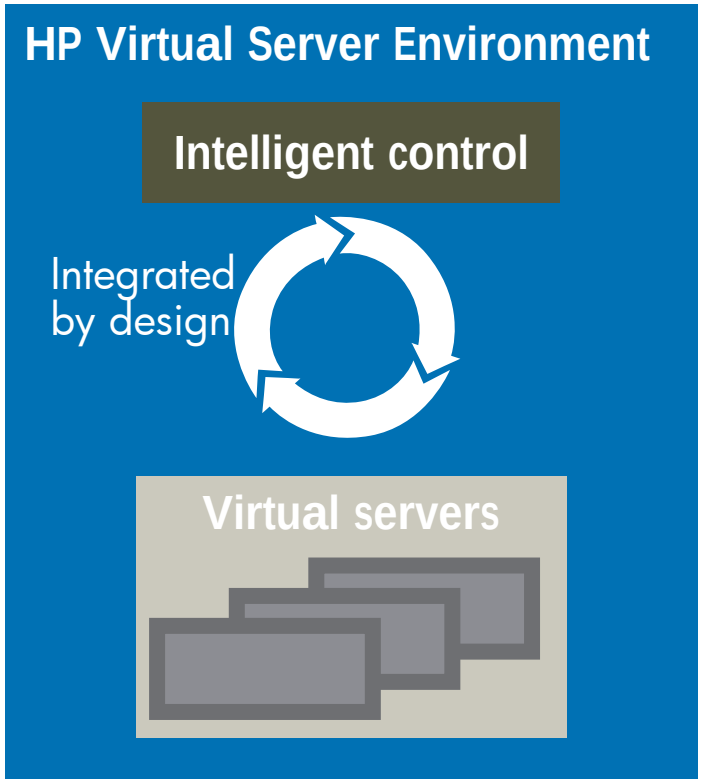


HP Virtual Server Environment (VSE) for Integrity servers

- Double resource utilization
- Flex resources in real time
- Keep your services up and running

Optimize server utilization in real time

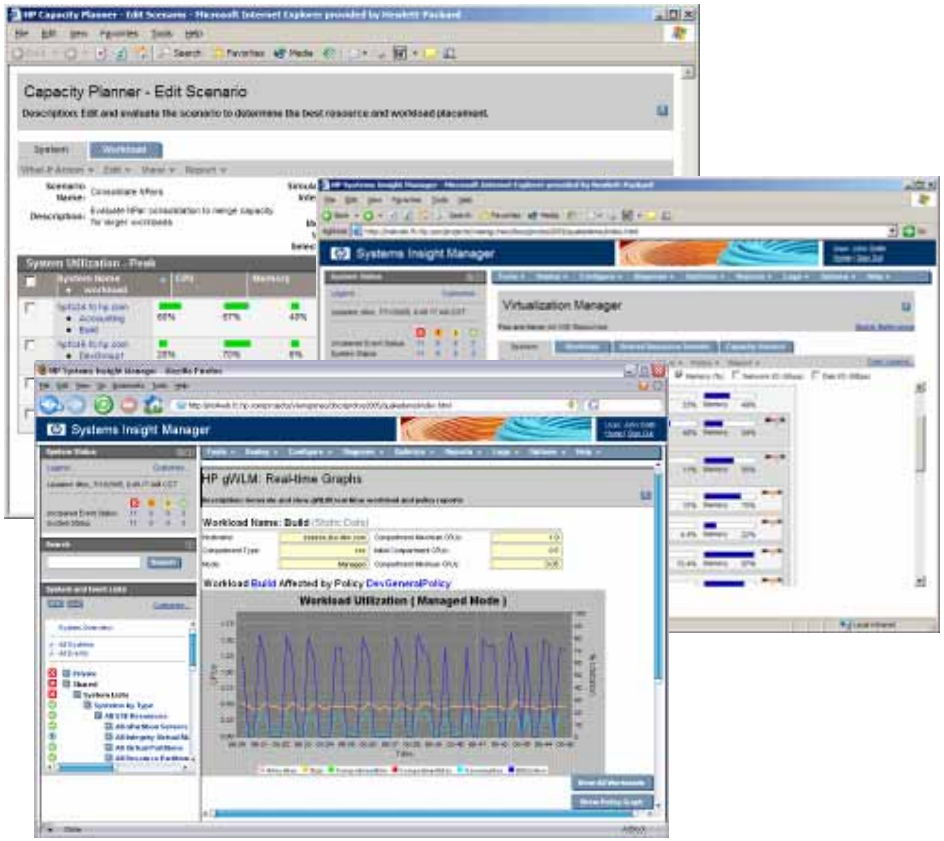
HP Virtual Server Environment for HP Integrity



- Double resource utilization
  - Reduce costs and pay only for what you use
- Flex resources in real time
  - Increase speed of IT change
- Keep your services up and running
  - Improve quality of service

Integrated HP VSE management tools for planning, managing, and automating virtual servers

Building on HP Systems Insight Manager



- **Planning**
  HP Capacity Advisor
  Industry's first intuitive, integrated tool for ongoing capacity planning simulating placement of application workloads
- **Configuration**
  HP Virtualization Manager
  Reducing complexity with comprehensive, integrated configuration and management of all VSE elements
- **Automation**
  HP Global Workload Manager
  Automatically aligning server resources with business needs

http://www.hp.com/go/vse

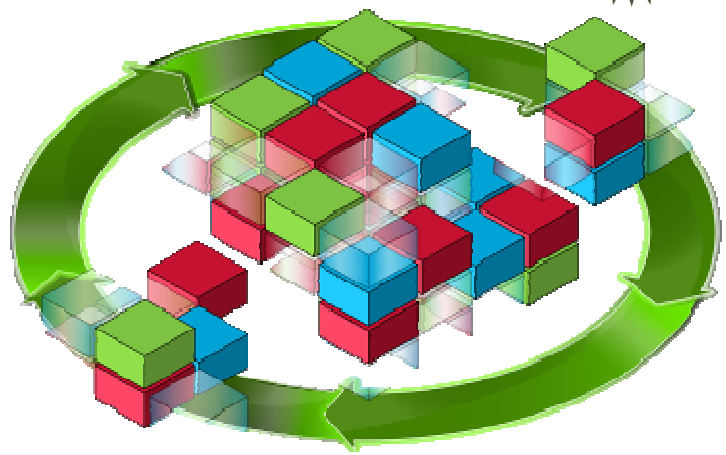
Note: HP Capacity Advisor and Virtualization Manager for HP Integrity and HP ProLiant servers, HP Global Workload Manager for HP Integrity servers.

New HP Insight Dynamics – VSE

Continuously analyze and optimize your infrastructure

- Bring the flexibility of virtualization to physical servers
- Real-time capacity planning for servers and power
- Control physical and virtual resources in the same way

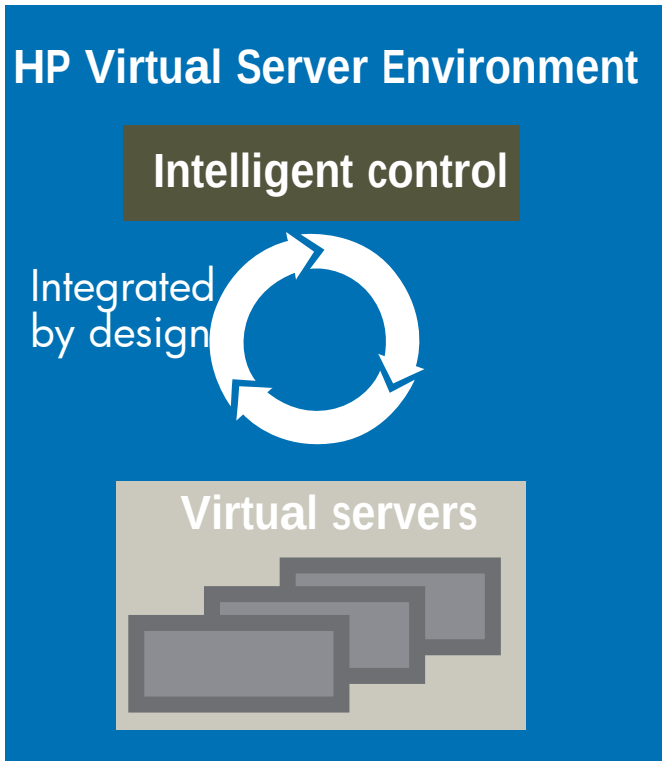
New



Addressing key data center issues: cost, speed, quality and energy

Building on the value of HP Systems Insight Manager, Insight Control and Virtual Server Environment

HP VSE delivers new HP Insight Dynamics – VSE functionality for Integrity



Added to current VSE Suite products at no additional cost

- **New:** Simulate large consolidations with new Smart Solver technology for Capacity Advisor
  - Real-time capacity planning including power
- **New:** Manage VSE for Integrity servers from same Windows-based management server used for ProLiant
  - Control physical and virtual resources in the same way
- **New:** Use Predictive Controls to anticipate workload needs with gWLM
  - Allocate system resources before they're required
- **Coming in future:** "Logical server" profiles that can be easily provisioned and moved for Integrity
  - Bring the flexibility of virtualization to physical servers

HP Systems Insight Manager Windows Central Management Server

New

One common console

Windows CMS on ProLiant

Insight Essentials

HP Systems Insight Manager

Can Manage

New:
all Integrity tools are supported from Windows CMS

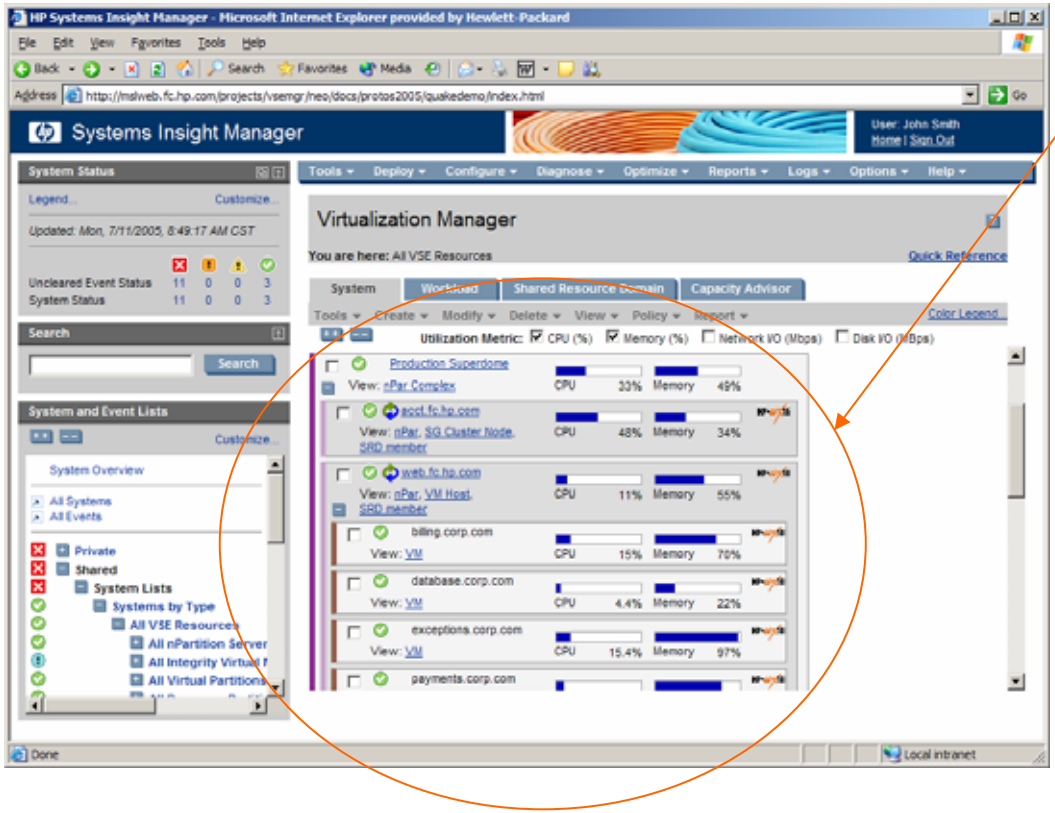
- ProLiant ML/DL
- ProLiant Blades
- Integrity Servers
- Integrity Blades

HP-UX 11i · HP VSE · vmware · Microsoft · CITRIX

Note: HP 9000 servers are also supported.

HP Virtualization Manager Visualization of all VSE technologies

New



- Discovery, visualization, and configuration of virtual resources/workloads and their utilization
  - HP Integrity servers
    - nPars (and standalone servers)
    - Virtual Partitions
    - Integrity Virtual Machines
    - gWLM groups
    - Resource Partitions
    - Serviceguard clusters
    - Groups of virtual resources (Shared Resource Domains)
- Single click drill down capability

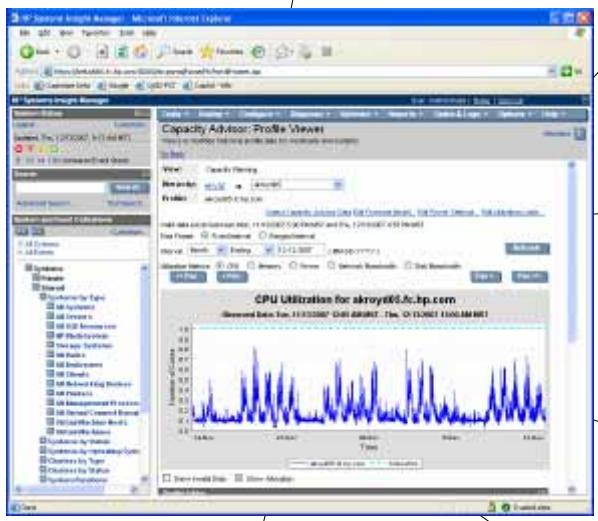
Support for HP-UX 11i, Windows and Linux on HP Integrity, and HP-UX 11i on HP 9000

New: Support for HP ProLiant servers

HP Capacity Advisor
Capacity planning functionality overview

New

- Eliminate guesswork and months of tedious capacity planning and research
- Make better decisions faster, matching your business priorities



Measure utilization for CPU, memory, network, disk & power

Collects more than a thousand data points per server per day

New Smart Solver technology for consolidation or re-balancing

New 5-Star rating system for best-fit placement

Create inventories and reports

Data collected remains onsite

Most advanced real-time capacity planning tool based on unique HP labs technology

New

HP Consolidation Pack for Integrity

- Limited-time-use, cost-effective license for HP Capacity Advisor
- Supports consolidation of older systems into new HP Integrity servers
- Collects detailed server utilization data across several key metrics for a period of up to 6 months after license activation
- Full power of Capacity Advisor including 'Smart Solver' technology to analyze and optimize server capacity and power
- Packaged in a convenient pack of 100 server licenses

HP Global Workload Manager

New Positioning

The most comprehensive, automated workload management tool for small and large environments.

- Centralized IT or "Line of Business" projects
- *From Single to Large number of servers*
- Central Management Station driven
- Standardized policies across multiple workloads or create specialized policies for each workload
- HP-UX 11i, Windows*, Linux*, OpenVMS environments
- Optimal HP Integrity Virtual Machine management

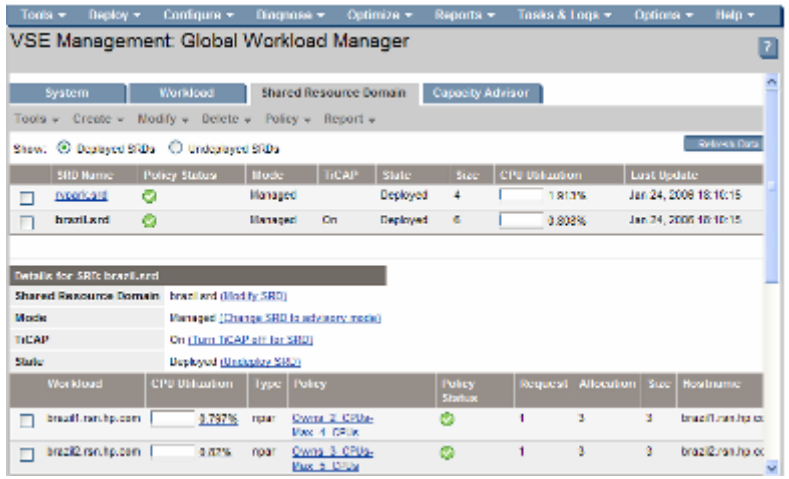
* Only for Integrity Virtual Machines running Windows or Linux

HP Global Workload Manager (gWLM)

New

New for Q2'08:

- Predictive controls
  - Allows gWLM to recognize demand pattern to preserve service levels in a more pro-active way
- GiCAP integration
  - Allows for sharing of resources across/between different complexes
- Time-Based Policies
  - Allows for "time of day/week/month" based policy management
- Windows ProLiant CMS support

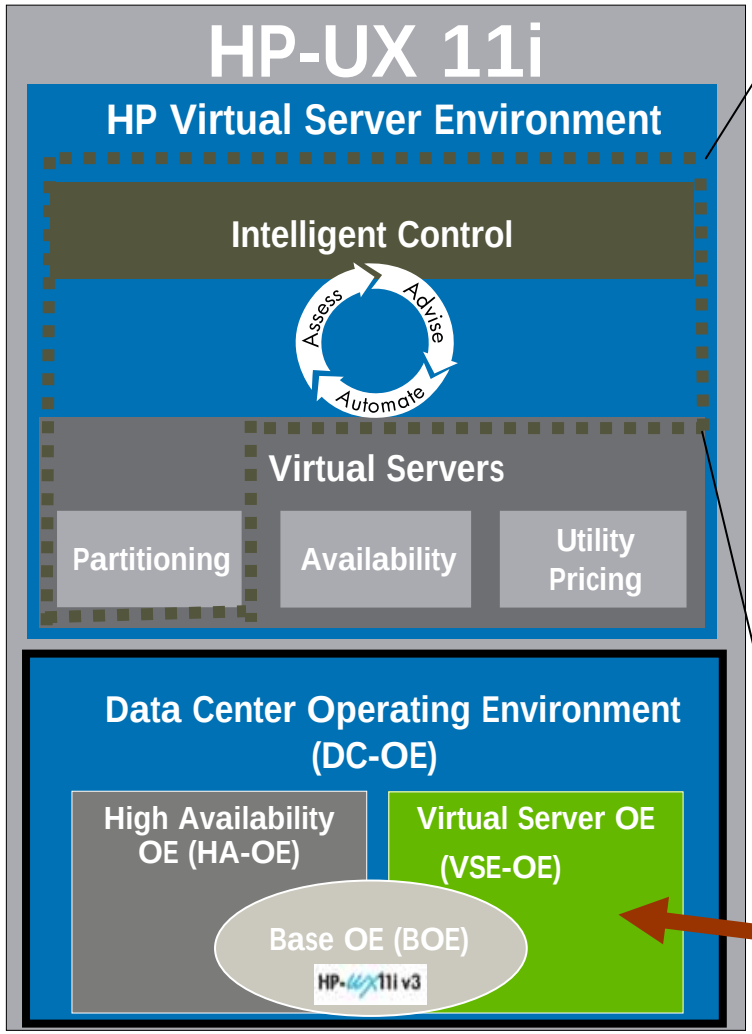


Allocate resources among multiple workloads to increase server utilization while meeting service levels

HP VSE Suite: Easy to order, deploy, and manage

New

HP Virtual Server Environment (VSE) Suite for Integrity servers



HP VSE Suite for Integrity servers

for HP Integrity and HP 9000 servers

- All VSE partitioning offerings and management software plus VSE reference architectures - all in one package:
  - HP Capacity Advisor
  - HP Virtualization Manager
  - Choose HP-UX gWLM or WLM
  - Choose vPars or Integrity Virtual Machines (Integrity servers only)
  - HP VSE reference architectures
- Less expensive than stand-alone products

NOTE: The HP VSE Suite is also included as a component of the VSE-OE Operating Environment for HP-UX 11i v3. For more information on the HP-UX OE's, go to www.hp.com/go/hpux[illegible]

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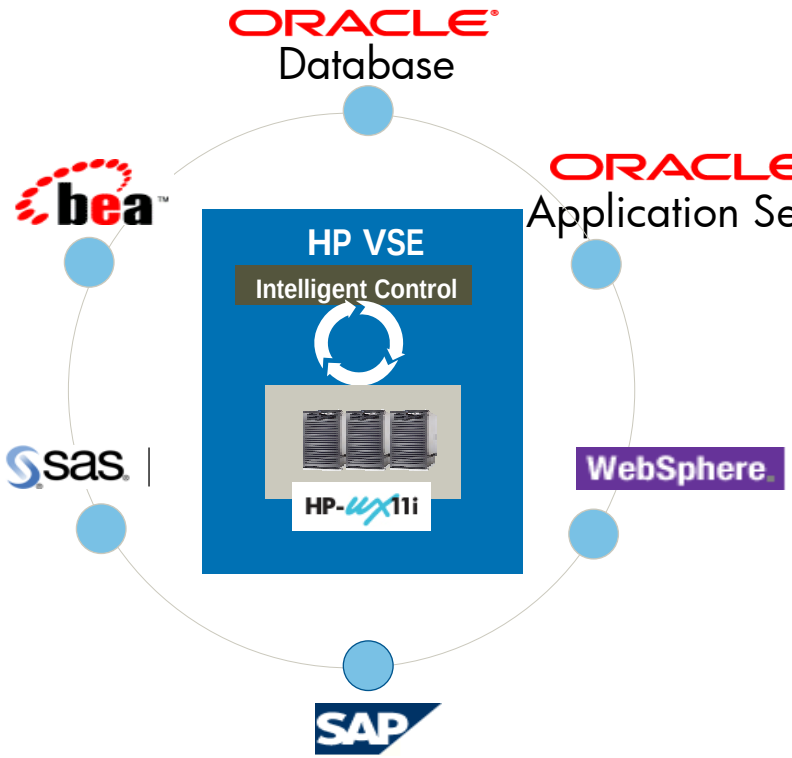
Building solutions with HP VSE

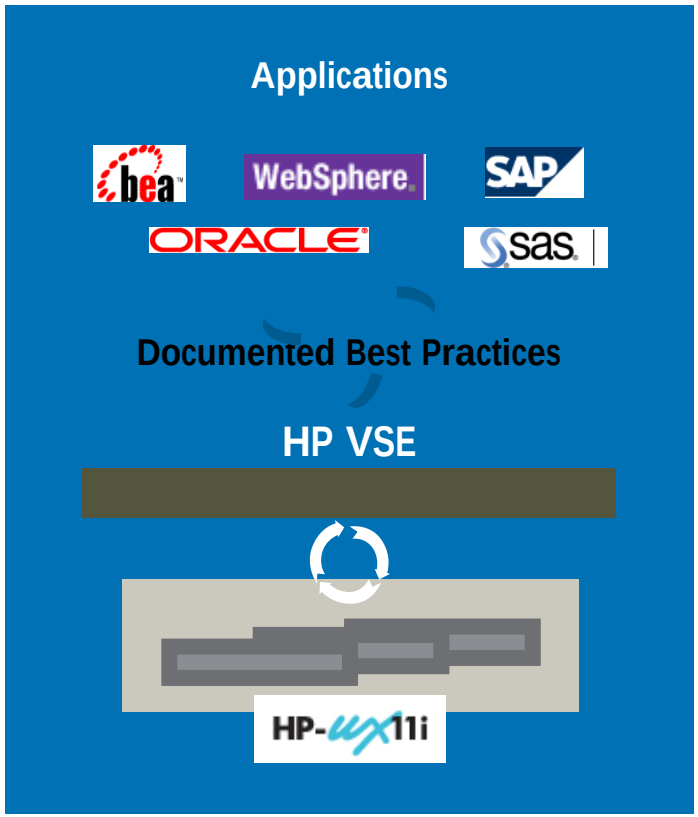
Simplifying deployment



- Built-in automation for all applications
  - –Requires no integration
- Customizable automation for specialized environments
  - –Toolkits for popular applications
- Best practices to simplify design and deployment
  - –Reference architectures for key applications

Modular building blocks for range of solutions – from line of business to shared IT

HP Virtual Server Environment Reference Architectures for HP-UX 11i



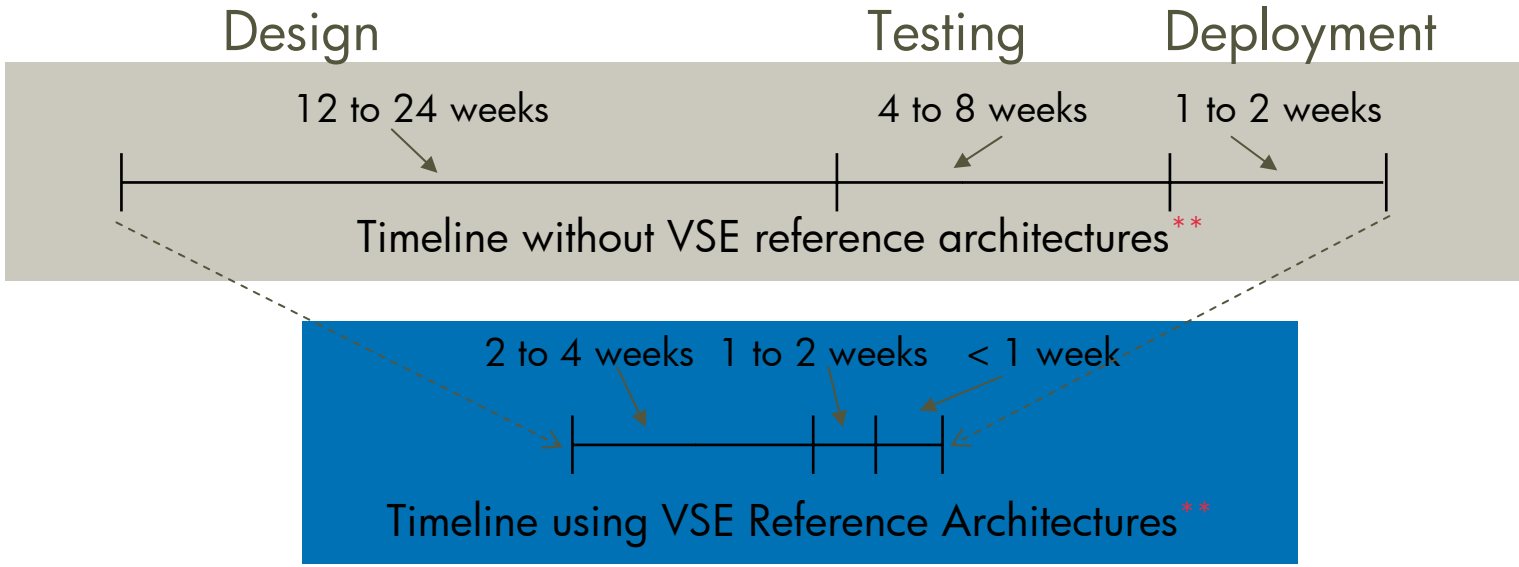
http://www.hp.com/go/vsera

Documented best practices that reduce solution deployment time

- Deploy VSE in less than half the time
- Customizable to suit your environment
- Based on proven, real-world IT deployments
- Includes servers and server blades for Integrity

HP VSE Reference Architectures for HP-UX 11i

Documented best practices that reduce solution deployment time



Optimize design time:

- Proven designs to apply as is or customize rapidly

Speed up testing time:

- Valid configurations that minimize testing

Cut down deployment time:

- Standardized solutions for easy roll out to multiple servers

** → specific time ranges are illustrative examples, actual times will vary depending on specific environment

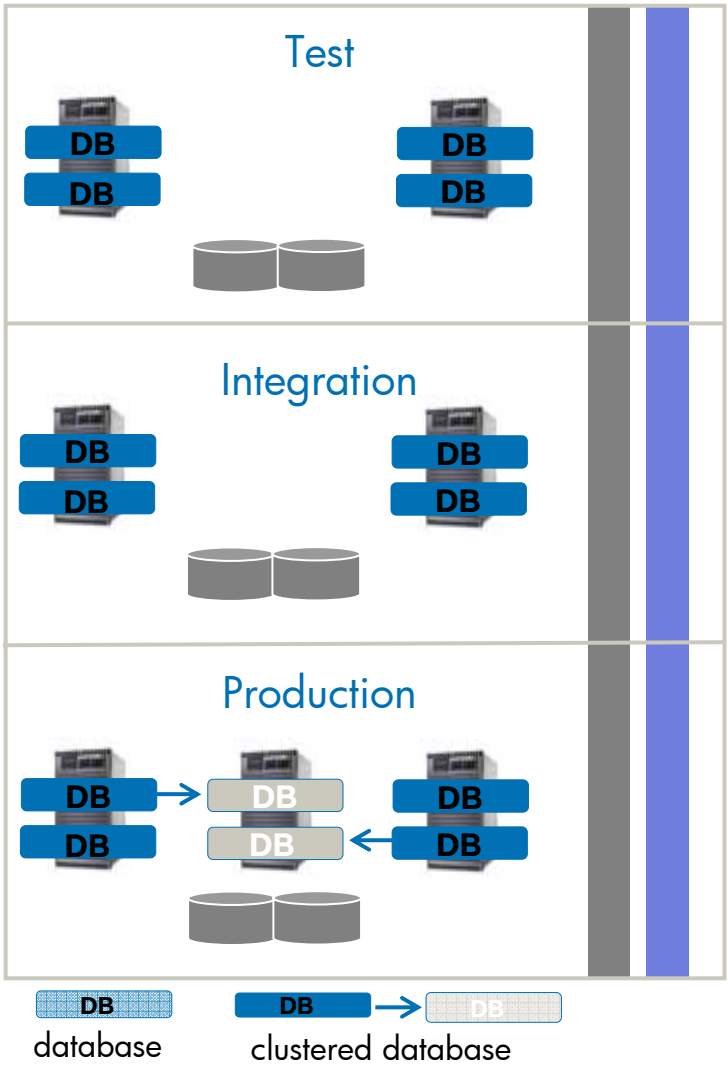
HP Virtual Server Environment Reference Architectures for HP-UX 11i

Reduce solution deployment time by half

More information: www.hp.com/go/vsera

Expanding HP's unique best-practice portfolio – Q2 2008		
	Line of Business	Shared IT
Databases	• Oracle Database RAC • Oracle Database	• Shared Database Infrastructure • Shared Application Server Infrastructure
Application Servers	• Oracle Application Server • WebLogic Server • WebSphere Application Server	• Shared Application Server Infrastructure
ERP	• SAP R/3 Updated! • mySAP Business Suite – Development and Test	•Shared Application Server Infrastructure
BI	• SAS Enterprise BI Server	

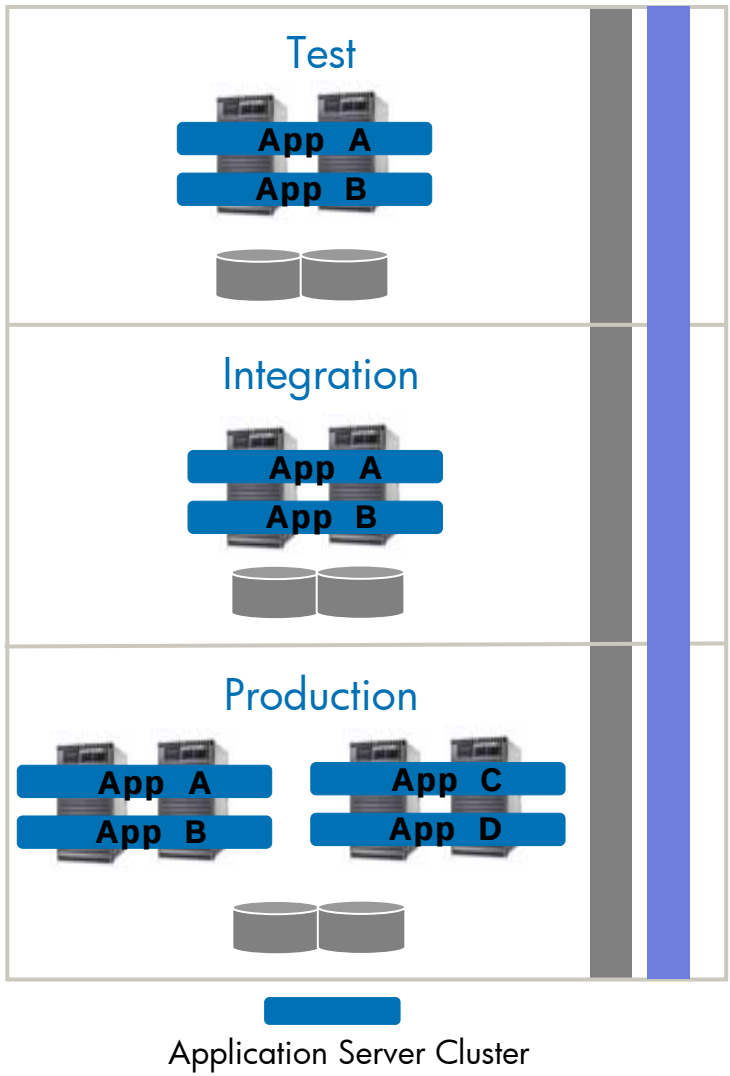
HP VSE Reference Architecture for Shared Database Infrastructure



- Complete hosting environment for databases
  - Separate Test, Integration, Production environments
  - Standardized database configurations
  - Centrally managed by shared IT function
- Offers new levels of business-IT alignment
  - Costs – economies of scale in hardware, software and support
  - Service Levels – shared investment for higher availability and performance
  - Agility – rapid deployment of new databases
- Proven implementation within HP

Partner with HP Services – HP IT Shared Services Portfolio

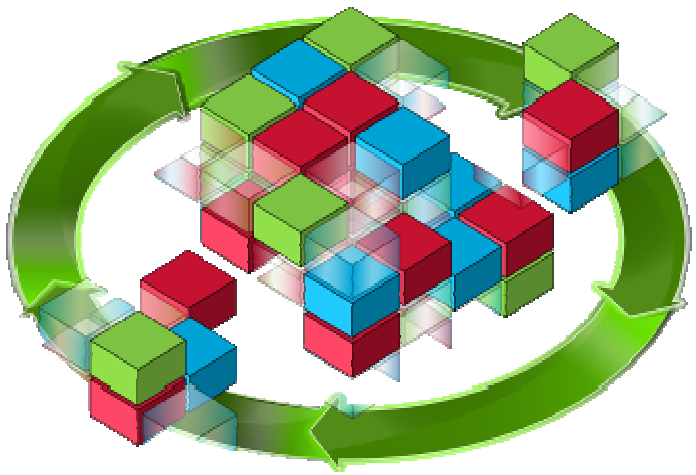
HP VSE Reference Architecture for Shared Application Server Infrastructure



- Complete hosting environment for application servers
  - Separate Test, Integration, Production environments
  - Standardized containers for applications
  - Centrally managed by shared IT function
- Offers new levels of business-IT alignment
  - Costs – economies of scale in hardware, software and support
  - Service Levels – shared investment for higher service levels
  - Agility – rapid deployment of new applications
- Proven implementation within HP

Partner with HP Services – HP IT Shared Services Portfolio

HP Insight Dynamics – VSE Reference Architectures

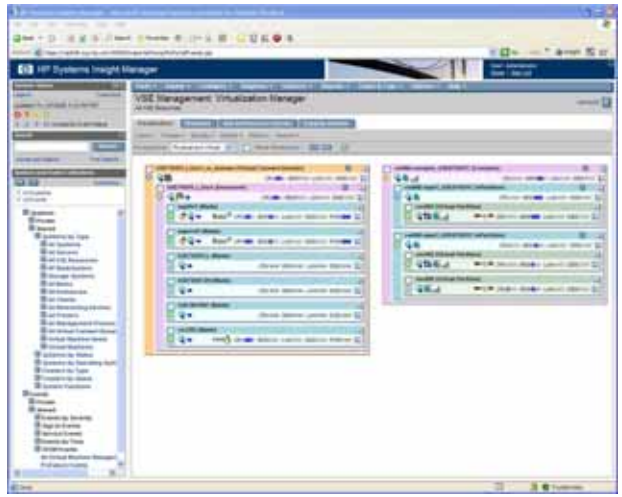


http://www.hp.com/go/idvsera

Documented best practices that reduce solution deployment time

- Deploy ID-VSE in less than half the time
- Customizable to suit your environment
- Based on proven, real-world IT deployments
- Includes servers and server blades for ProLiant and Integrity

HP Insight Dynamics – VSE Reference Architectures



Growing library of ID-VSE Reference Architectures, speeding deployment of virtualized solutions through best practices…

- **SAP Adaptive Infrastructure ID-VSE Reference Architecture –** multi-tiered SAP solution highlighting the consolidation and failover capabilities of ID-VSE (Available Now!)
- **MS Exchange ID-VSE Reference Architecture –** Exchange solution highlighting the consolidation and application recovery (HA) capabilities of ID-VSE (Available Now!)
- **Oracle RAC ID-VSE Reference Architecture –** Oracle solution highlighting the consolidation and dynamic provisioning capabilities of ID-VSE (Available later in 2008)

More information: www.hp.com/go/idvsera

HP Insight Dynamics – VSE Reference Architecture – SAP Application Services

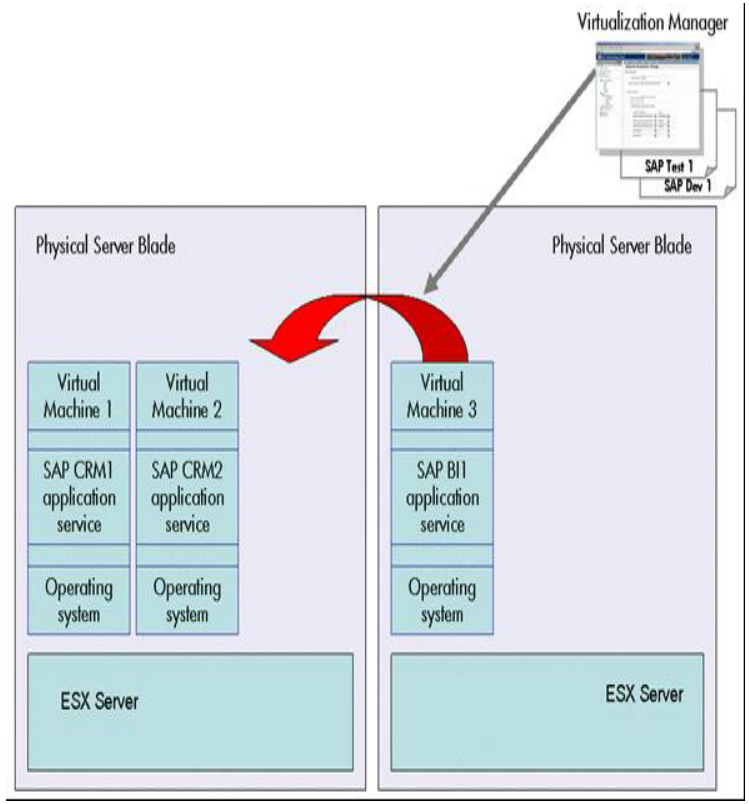
New

Multi-Tiered HW and Vendor solutions

- ProLiant BladeSystem servers running the SAP application
- Integrity servers running the Oracle database

Utilizing SW infrastructure components

- VMware ESX and Virtual Center
- Insight Dynamics - VSE highlighting:
  - logical server management
  - capacity planning
- Virtual Connect



Highlighting Use-Cases for Consolidation and Failover for improved application availability.

HP Insight Dynamics – VSE Reference Architecture – MS Exchange Server 2007

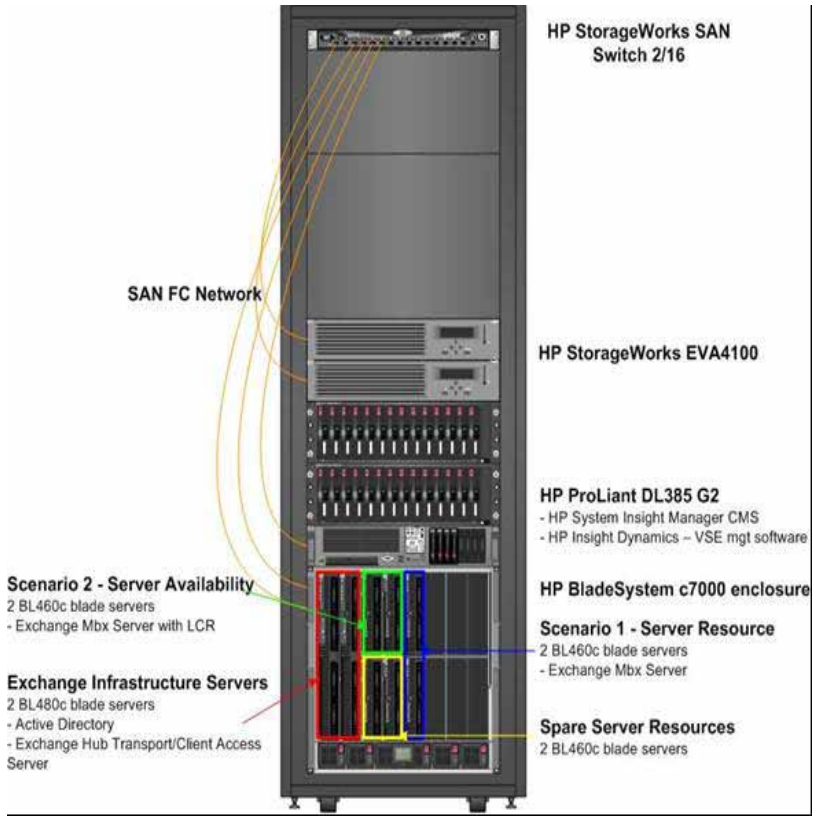
New

ProLiant BladeSystem solution

- ProLiant BladeSystem servers running Microsoft Exchange Server 2007

Utilizing SW infrastructure components

- Insight Dynamics - VSE highlighting:
  - logical server management
  - capacity planning
- Virtual Connect



Highlighting Use-Cases for Consolidation and Improved Availability for server resources.

Agenda

- HP VSE Program Update
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- Solutions – sample design points
  - Oracle
  - SAP
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  - SAS
- Solutions in action – examples
- TCO benefits – example

Applying VSE in your IT environment

What scale?

Line of business

- Applications within single department
- Managed within department
- Production and Test environments
- Customized configurations

Shared IT

- Applications across departments
- Managed centrally – by IT
- Production and Test environments
- Standardized configurations

- Incremental enhancement
- Near-term return on IT

- Transformational improvement
- Significant long-term return on IT

HP VSE Solutions

Implementation options:

Implement with in-house capabilities

Engage HP Services

Consult HP Partners

Technical Documentation

- VSE Product Documentation
- HP VSE Reference Architectures
- HP VSE book
- …and many other resources

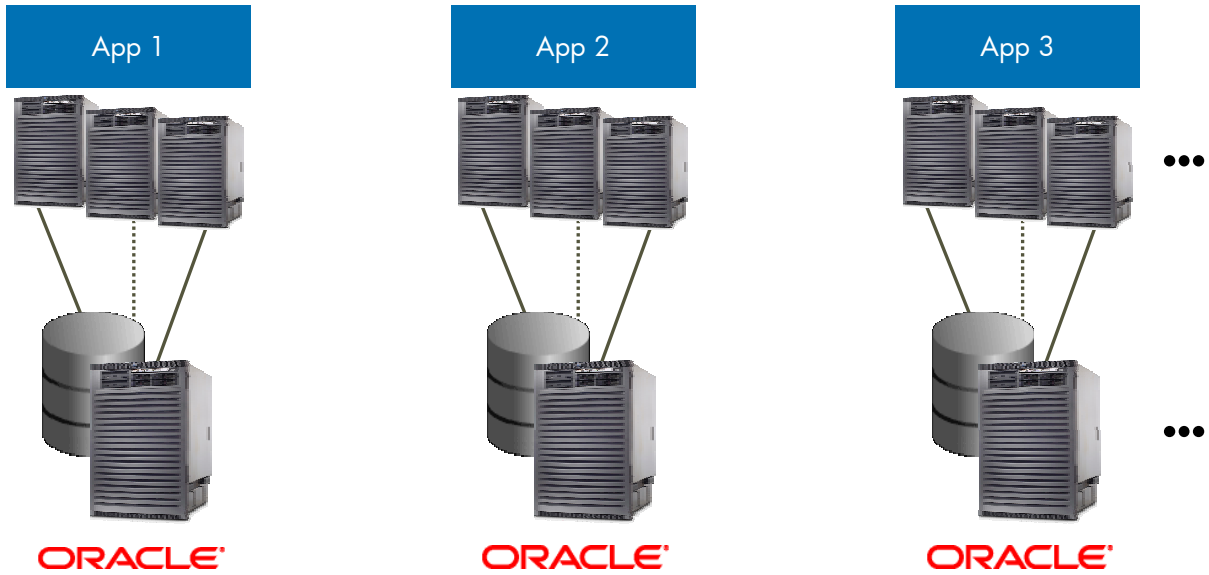
Services, Training and Support

- HP Education Services – VSE courses available
- IT Shared Services
- HP Support Services
- IT Consolidation Services
- …and many other services

Partners

- VSE Certified Channel Partners
- …and other HP authorized HP partners

Sample design points: VSE based solutions for databases



Databases: Design considerations

Key factors	Relevant issues
License costs	Database licenses scale with CPUs
System administration costs	Server sprawl due to ubiquity of databases – virtually every enterprise application needs its own database
Performance & availability	Application performance tends to bottleneck on database operations
Flexible server capacity to meet business growth	Lengthy procurement processes, costs of maintaining spare capacity

Optimize fluctuating mission-critical database workloads: automatically flex and add capacity

HP VSE Reference Architecture for Oracle Database RAC on HP-UX 11i

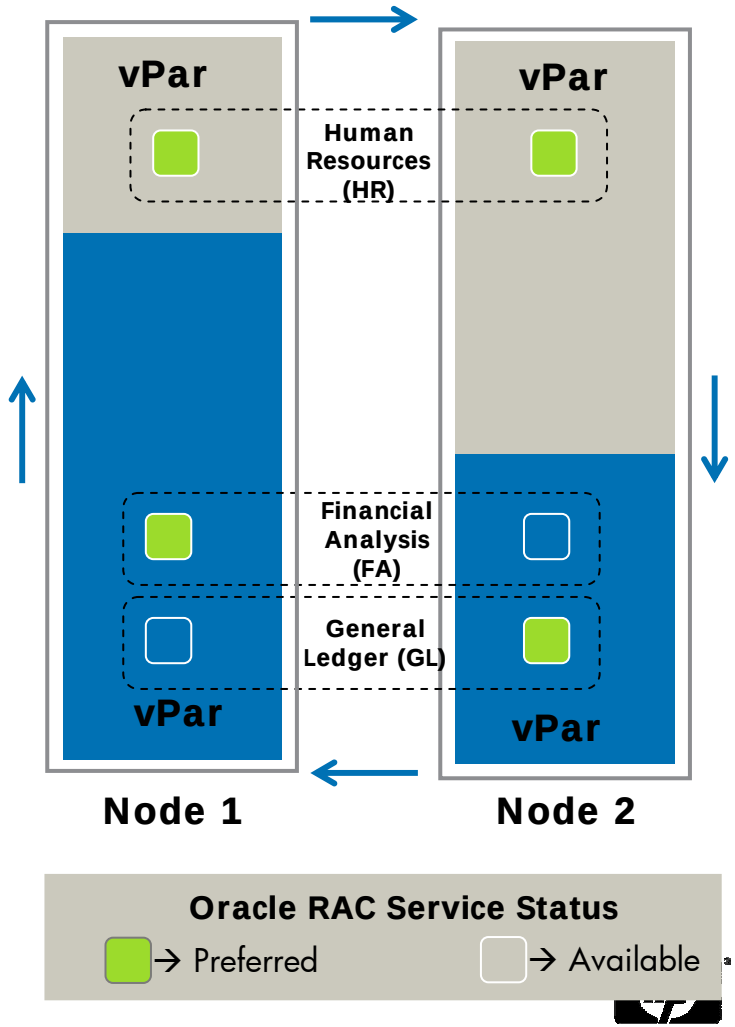
- Dynamic, automated scaling – up, out and back
  - VSE/Global Workload Manager and Oracle RAC integration
- Assured database response times
  - Mission-critical database uptime and data integrity with HP Serviceguard Cluster File System for RAC
- Proven HP VSE Reference Architecture methodology now extended to Oracle RAC
  - Deploy VSE in less than half the time
  - Integrated pre-tested configuration

www.hp.com/go/vsera

VSE Reference Architecture for Oracle Database RAC

Dynamic Resource Flexing with HP VSE and Oracle Database RAC

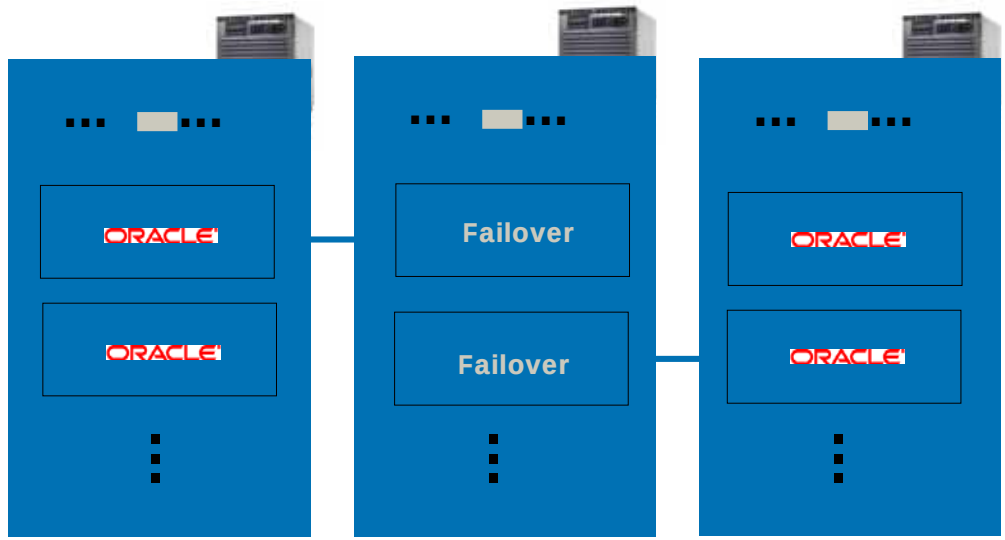
Database Load	VSE Response
Increase in database workload as sales reporting begins	Sense service level breached and scales up – moves CPUs from HR to FA on Node 1
Continued increase in database workload as sales reporting continues	Sense capacity exhausted on Node 1 and scales out – activates FA on Node 2
Sales reporting activity subsides, database workload returns to normal levels	Sense reduced demand and scales back – deactivates FA on Node 2 and moves CPUs back from FA to HR on Node 1



Solution – Line of business database consolidation

Solution	Benefits
• Consolidate separate databases • Share server resources flexibly between databases	• Improved TCO – lower hardware, software, administration costs • Higher service levels – simplified management • Increased agility – deploy new databases rapidly

VSE Components
WLM, Capacity Advisor, Virtualization Manager, vPars or Integrity VMs or Secure Resource Partitions (SRPs), Serviceguard, Instant Capacity (iCAP, TiCAP)

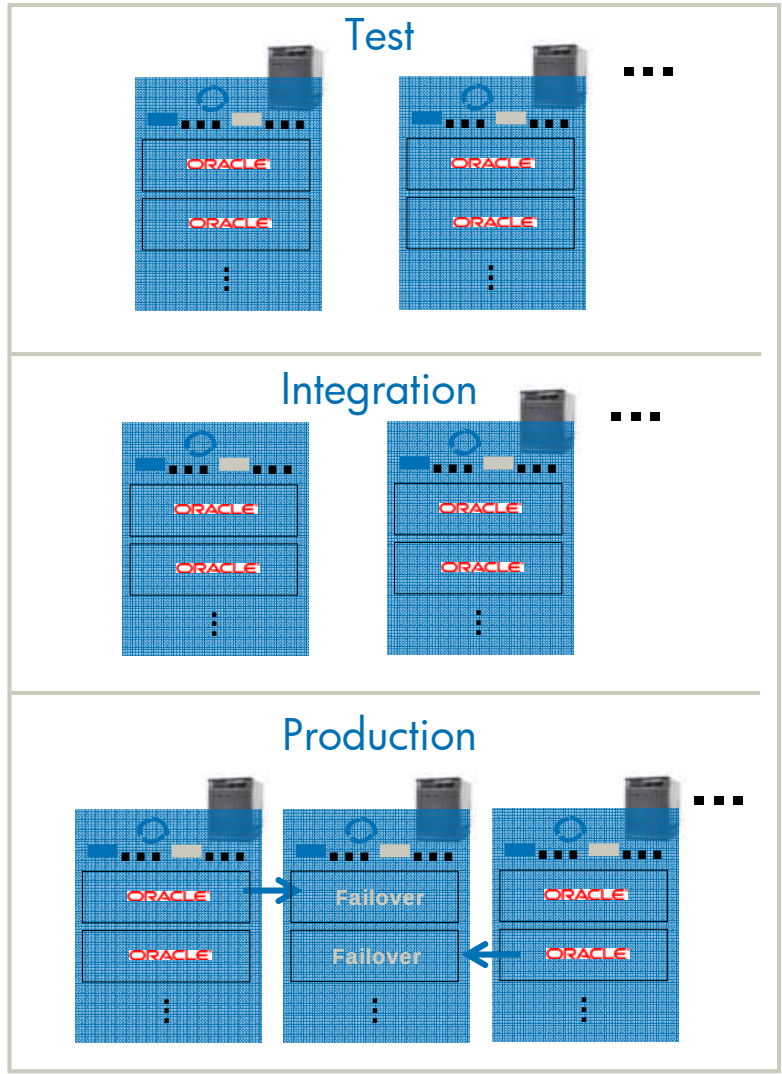


Solution – Shared database infrastructure

Based on NEW VSE RA for Shared Database Infrastructure

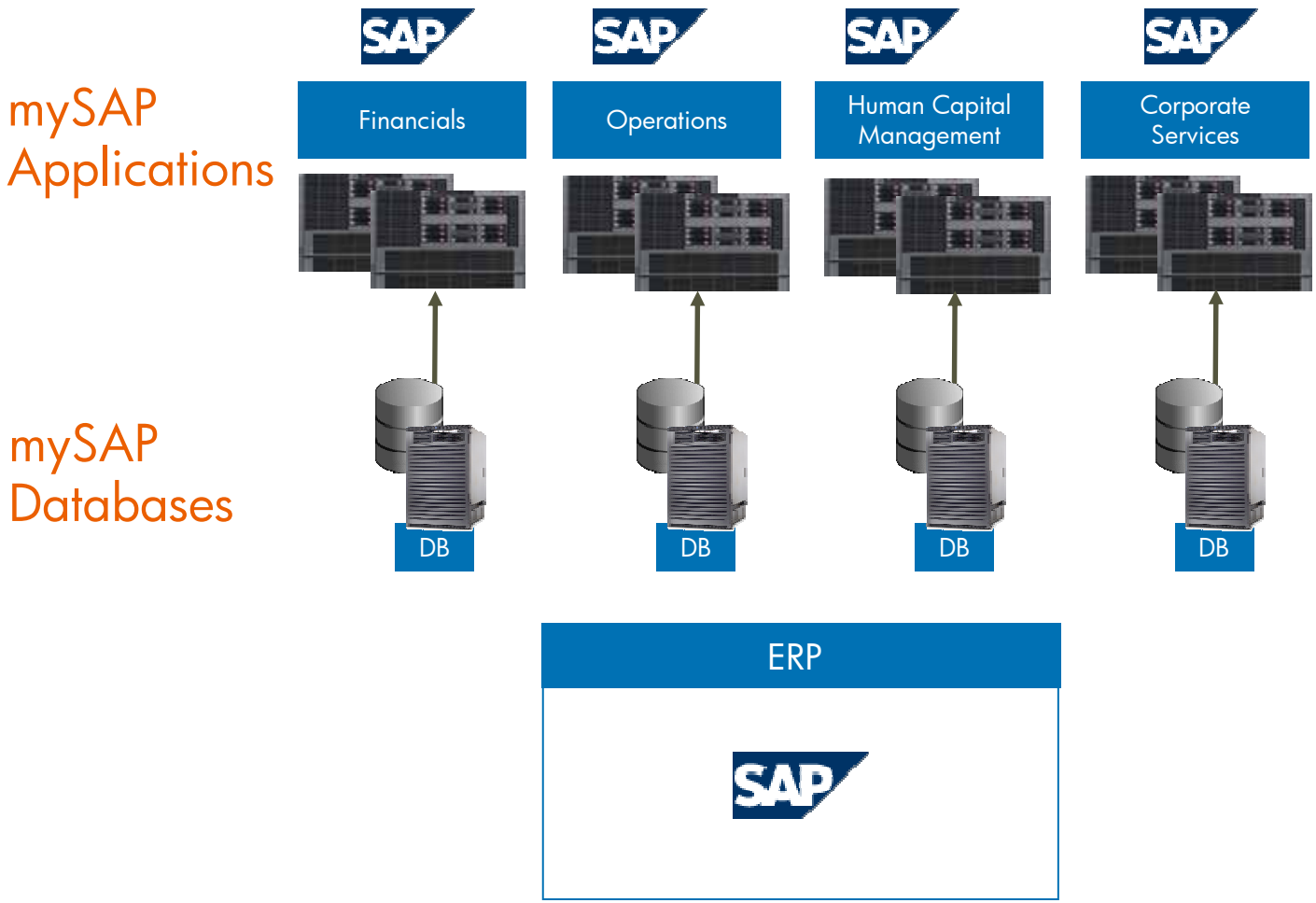
Solution	Benefits
• Build on line of business database solution • Complete, centrally managed shared database infrastructure • Separate Test, Integration, Production shared environments	• Significantly improved TCO – lower hardware, software, facilities, administration costs • Increased service levels – centralized management • Increased agility – deploy new databases rapidly

VSE Components
gWLM, Capacity Advisor, Virtualization Manager, vPars or Integrity VMs or Secure Resource Partitions (SRPs), Serviceguard, Instant Capacity (iCAP, TiCAP)



Workload Management | Failover | Active CPUs | Inactive CPUs | vPars / Integrity VMs / SRPs | Oracle Database

Sample design points: VSE based solutions for enterprise resource planning (ERP) applications

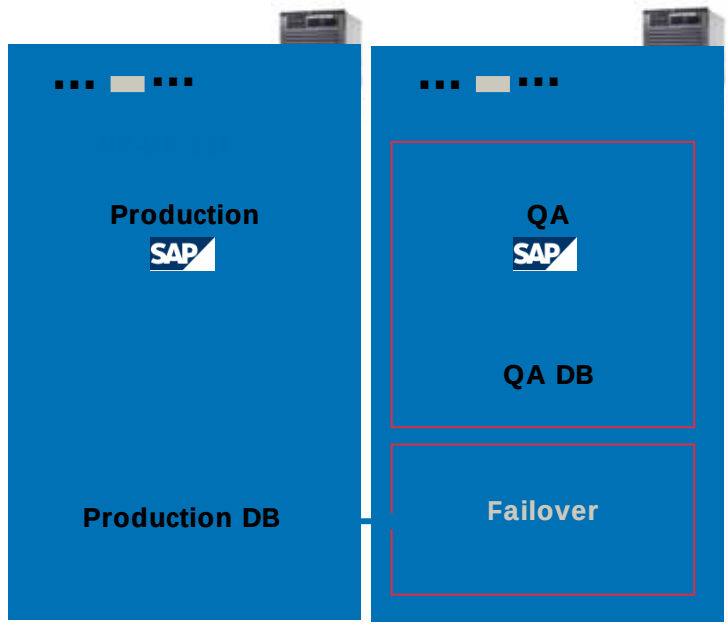


ERP Applications: Design considerations

Key factors	Relevant issues
System administration costs	Server sprawl due to numerous SAP applications, dedicated Production, QA, Development servers
Transaction and batch performance	Alternating performance requirements: • Days: online transaction heavy; response time critical • Nights: batch job heavy; hard completion deadlines
Flexible server capacity to meet business growth	Lengthy procurement processes, costs of maintaining spare capacity

Solution – Line of business ERP deployment

Solution	Benefits
• Consolidate Production & QA environments • Flexibly allocate server resources to meet peak demand or failover	• Improved TCO – lower hardware, software, administration costs • Higher service levels – consistent transaction and batch performance
Components	
• WLM, WLM SAP Toolkit w/ SGeSAP, Capacity Advisor, Virtualization Manager, vPar or Integrity VMs, Serviceguard, Instant Capacity (iCAP, TiCAP)	



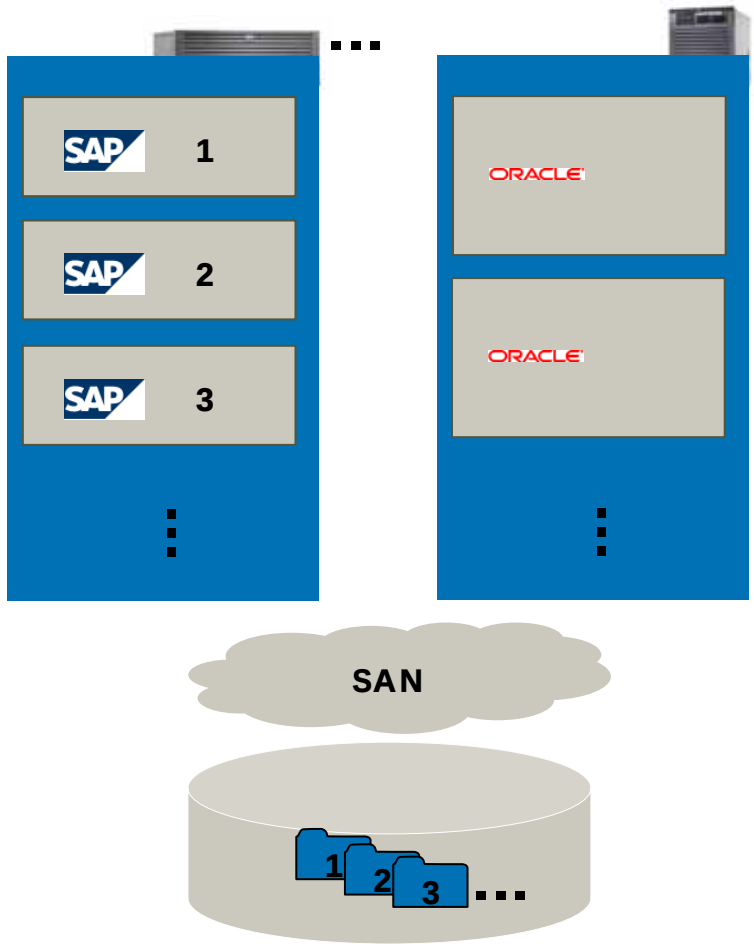
Solution – Development/Test ERP Consolidation

Based on NEW VSE RA for mySAP Business Suite – Development/Test

Solution	Benefits
• Consolidate Development/Test environments with HP Integrity VMs • Use SAN based shared storage for flexibility • Utilize available server capacity efficiently	• Improved TCO – lower hardware, software, facilities, administration costs • Increased agility – accelerate project cycles with flexible Development/Test environments

Components

Capacity Advisor, Virtualization Manager, Integrity VMs



Active CPUs | Inactive CPUs | Integrity VMs | Virtual Disks | SAP Application | Oracle Database

Solution – Shared ERP infrastructure

Solution	Benefits
• Consolidate Production environments • Flexibly allocate server resources to meet peak demand	• Significantly better TCO – lower hardware, software, facilities, administration costs • Increased service levels –consistent transaction and batch performance • Increased agility – deploy new SAP applications faster

Components
gWLM, Capacity Advisor, Virtualization Manager, vPars or Integrity VMs or Secure Resource Partitions (SRPs), Instant Capacity (iCAP, TiCAP)

Solution – Line of business ERP deployment

New

HP Insight Dynamics – VSE Reference Architecture for SAP Application Services

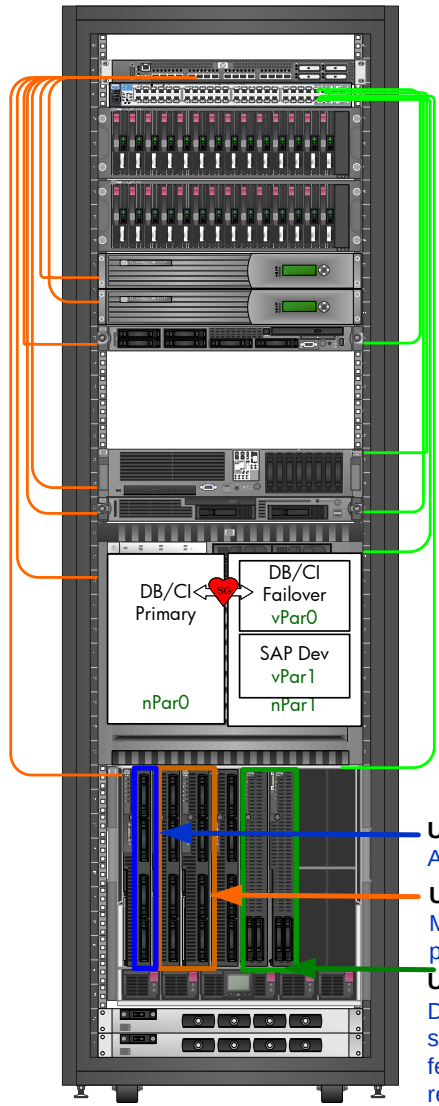
Solution	Benefits
• Flexibly activate, deactivate and move server resources to meet changing resource demand	• Lower cost of IT operations • Deliver higher quality of service • Accelerate the speed of IT change • Increase energy efficiency

Components – SAP DB/CI Tier rx7640 (HP-UX 11i v3)

- WLM, WLM SAP Toolkit w/ SGeSAP, Capacity Advisor, Virtualization Manager, vPar, Serviceguard, Instant Capacity (TiCAP)

Components – SAP Application Tier HP Blade c7000 Enclosure (Windows)

- Virtualization Manager, Logical Server Management, Capacity Advisor, Capacity Advisor Smart Server, Virtual Connect Enterprise Manger



HP StorageWorks Switch
HP ProCurve Switch

HP StorageWorks EVA4000

HP Proliant DL360 G5 (Windows Server)
- HP Insight Control Management CMS
- HP Insight Dynamics – VSE

HP Integrity rx2660 (HP-UX 11i v3)
- SAP Solution Manager

HP Integrity rx7640 (HP-UX 11i v3)
- SAP NetWeaver
- Oracle 10gR2
- HP VSE
- Serviceguard

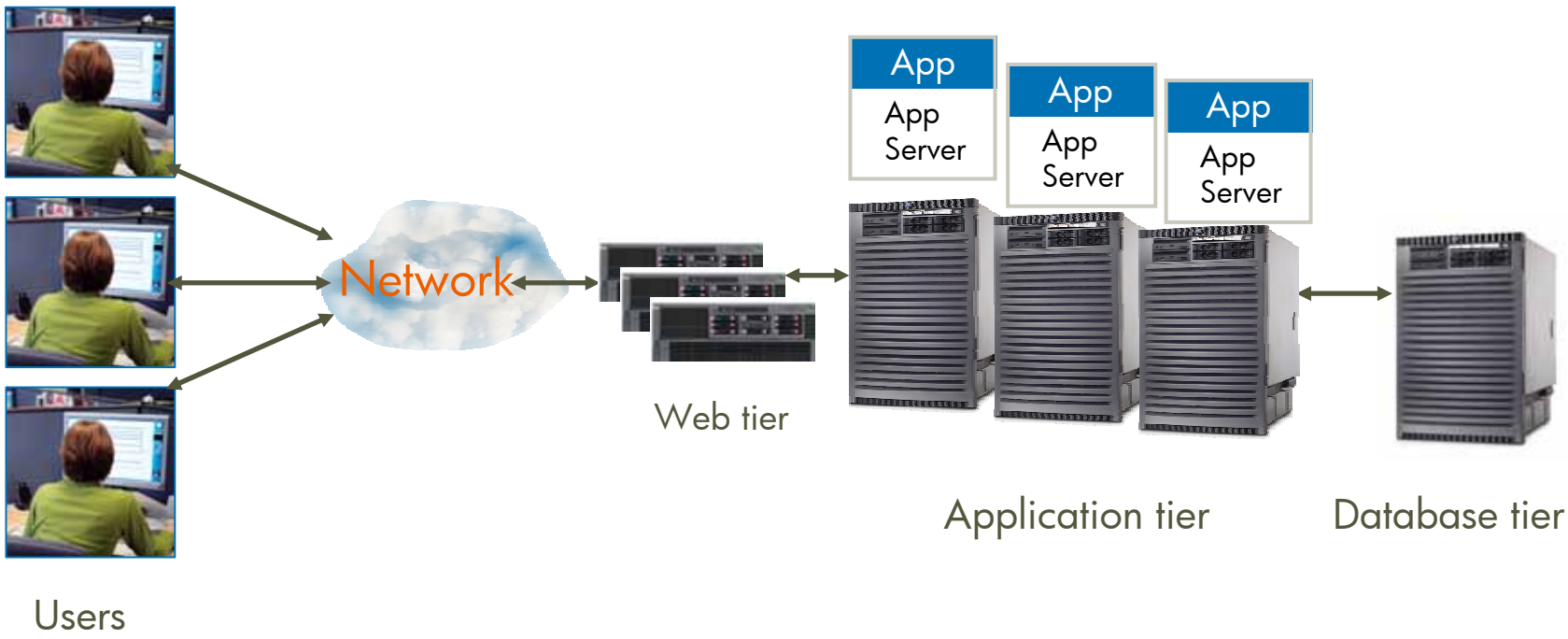
HP BladeSystem c7000 Enclosure
- SAP Application Servers (Windows Server)
- HP Virtual Connect Enterprise Manager
- HP Capacity Advisor
- VMware Server technology

Use Case 1 – Add Server Resources
Activate logical server to increase SAP capacity.

Use Case 2 – Increase Server Resources
Move SAP server workloads on failure or during planned downtime.

Use Case 3 – Reduce Space & Power Utilization
Dynamically consolidate virtual machine logical servers running SAP application services onto fewer physical servers, at times when resource requirements are lower.

Sample design points: VSE based solutions for application servers



J2EE

ORACLE

bea Think liquid.

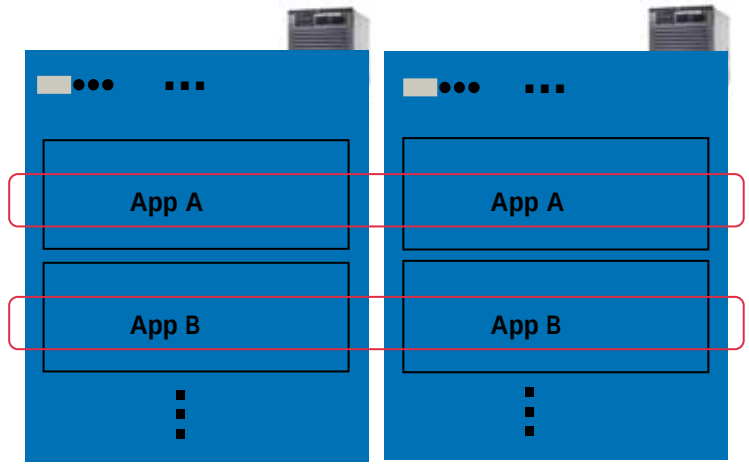
WebSphere.

Application servers: Design considerations

Key factors	Relevant issues
Application Server License Costs	Application server licenses scale with CPUs
System administration costs	Server sprawl due to clustering for scalability – single application server instance typically scales only up to 4 CPUs
Transaction performance	Web-traffic results in unpredictable load peaks
Cycle time for new projects	Lengthy timelines for procurement processes, development-to production testing

Solution – Line of business application server consolidation

Solution	Benefits
• Consolidate separate application servers • Share server resources flexibly between applications	• Improved TCO – lower hardware, software, administration costs • Increased service levels – simplified management • Increased agility – deploy new applications rapidly
Components	
WLM, Capacity Advisor, Virtualization Manager, vPars or Integrity VMs or Secure Resource Partitions (SRPs), Instant Capacity (iCAP, TiCAP)	



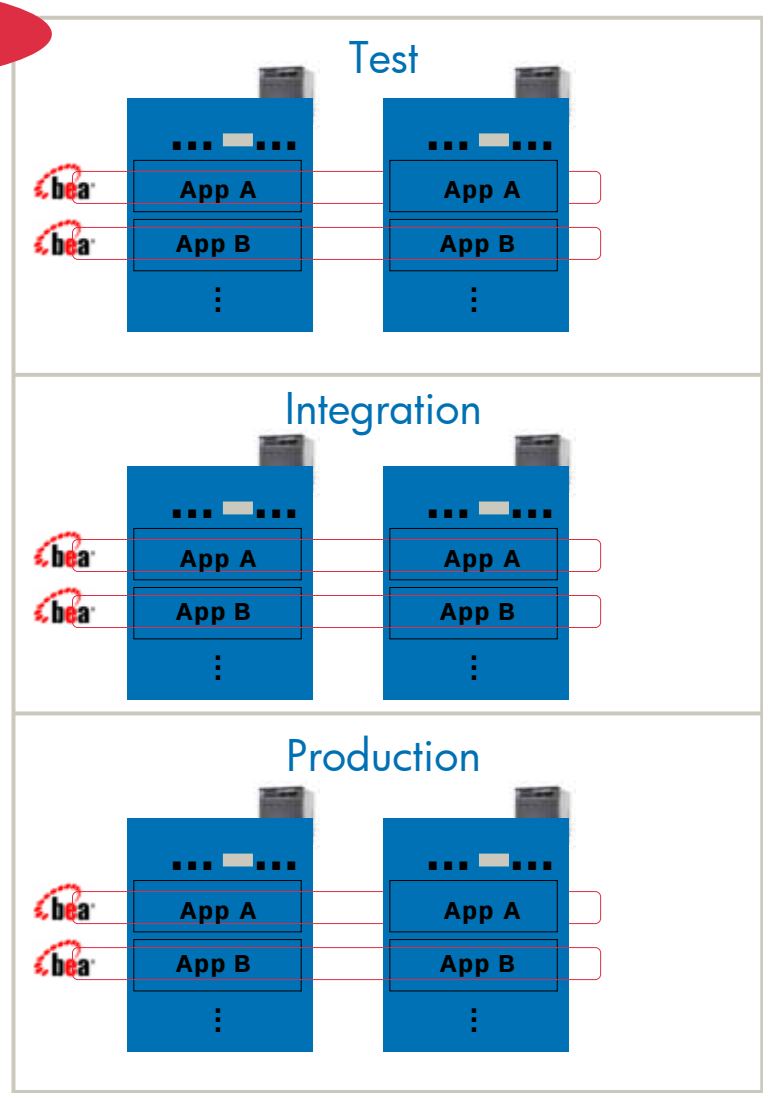
Workload Manager | Active CPUs | Inactive CPUs | vPars / Integrity VMs / SRPs | Application Server Cluster

Solution – Shared application server infrastructure

Based on NEW VSE RA for Shared Application Server Infrastructure

Solution	Benefits
• Build on line of business application server solution • Complete, centrally managed, shared application server infrastructure • Separate Test, Integration, Production shared environments	• Significantly better TCO – lower hardware, software, facilities, administration costs • Increased service levels – centralized management • Increased agility – deploy new applications rapidly

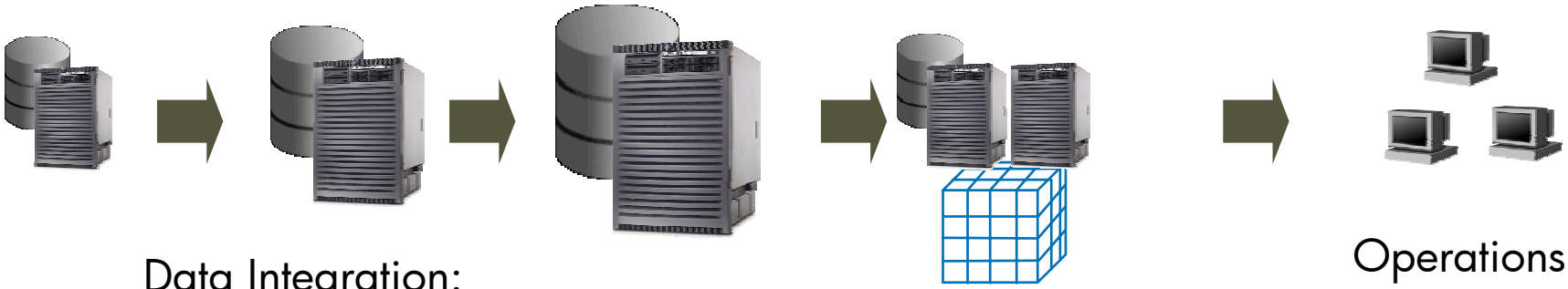
VSE Components
gWLM, Capacity Advisor, Virtualization Manager, vPars or Integrity VMs or Secure Resource Partitions (SRPs), Instant Capacity (iCAP, TiCAP)



Active CPUs Inactive CPUs vPars / Integrity VMs / SRPs Application Server Cluster

Sample design points: VSE based solutions for business intelligence (BI)

External Data | Online Data Store | Data Warehouse | Data Mart & OLAP Cubes | Portals and Data Analysis Tools



Data Integration:

- Extract Transform Load (ETL)
- Enterprise Application Integration (EAI)

BI

sas

Operations:

- Query
- Reporting
- Analytics
- Data Mining

Back-End

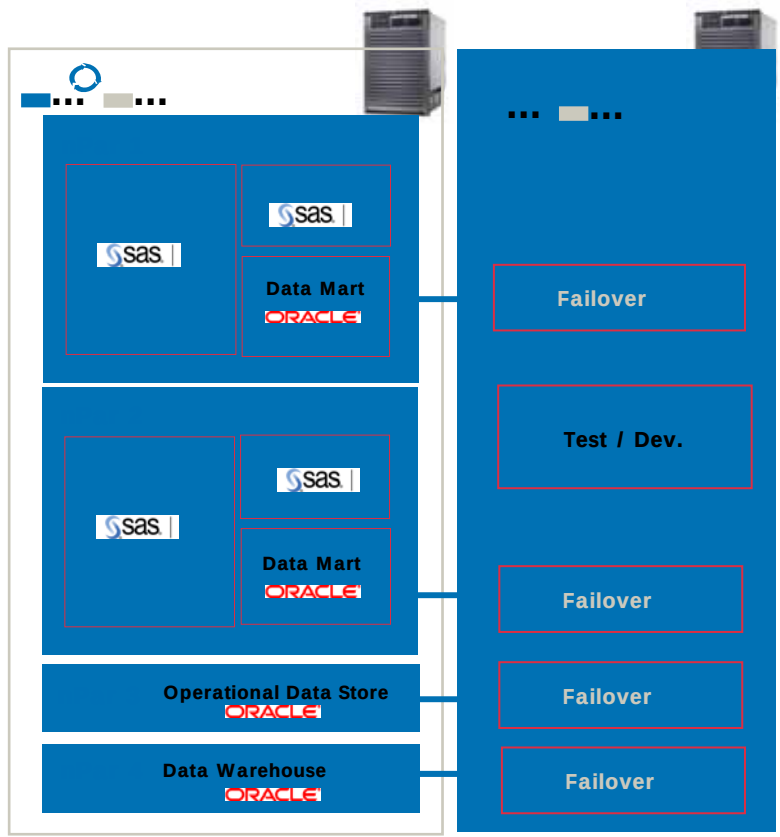
Front-End

Design considerations

Key factors	Relevant issues
System administration costs	Server sprawl due to multiple independent data marts and data warehouses, growing over time
Query performance	Distributed BI systems prone to system bottlenecks from sizing mismatches between web, application, database tiers
Flexible server capacity to meet business growth	Lengthy procurement processes, costs of maintaining spare capacity

Solution – Line of business BI deployment

Solution	Benefits
• Consolidate Production BI modules • Flexibly allocate server resources to meet peak demand	• Improved TCO – lower hardware, software, administration costs • Increased service levels – simplified management
Components	
WLM, Capacity Advisor, Virtualization Manager, nPars, vPars or Integrity VMs, Serviceguard, Instant Capacity (iCAP, TiCAP)	

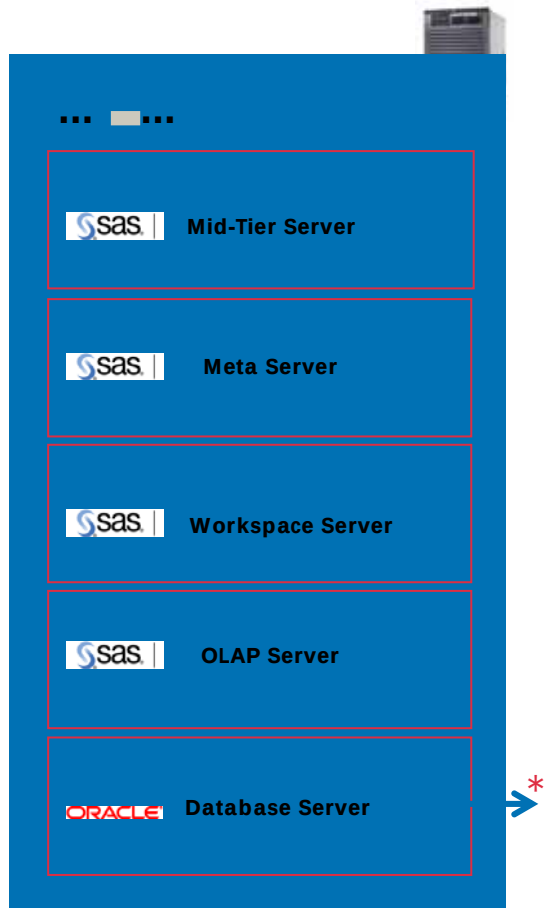


Workload Management | Failover | Active CPUs | Inactive CPUs | vPars / Integrity VMs | SAS Application | ORACLE Database Server

Solution – Line of business BI deployment (SAS Enterprise BI Server)

Solution	Benefits
• Consolidate Production BI modules • Flexibly allocate server resources to meet peak demand or failover	• Improved TCO – lower hardware, software, administration costs • Increased service levels – simplified management

Components
WLM, Capacity Advisor, Virtualization Manager, vPars or Integrity VMs, Serviceguard, Instant Capacity (iCAP, TiCAP)



Agenda

- HP VSE Program Update
- HP VSE Reference Architecture Program
  - Updates to existing white papers
  - Integration with Insight Dynamics – VSE Program
- Solutions – sample design points
  - Oracle
  - SAP
  - BEA
  - SAS
- Solutions in action – examples
- TCO benefits – example

Solution – Shared infrastructure for SAP

Scenario #1: Daily demand cycle

- Night: WLM moves CPUs from transaction to batch job – batch job completed by morning
- Day: WLM moves CPUs back to transaction – online transaction SLOs met

Scenario #2: New project, new SAP application

- New Project start: vPar created, two iCAP CPUs allocated – new project on line in hours
- Period peaks – WLM invokes TiCAP CPUs to service peaks in new application

Active CPU Inactive CPU SAP Module

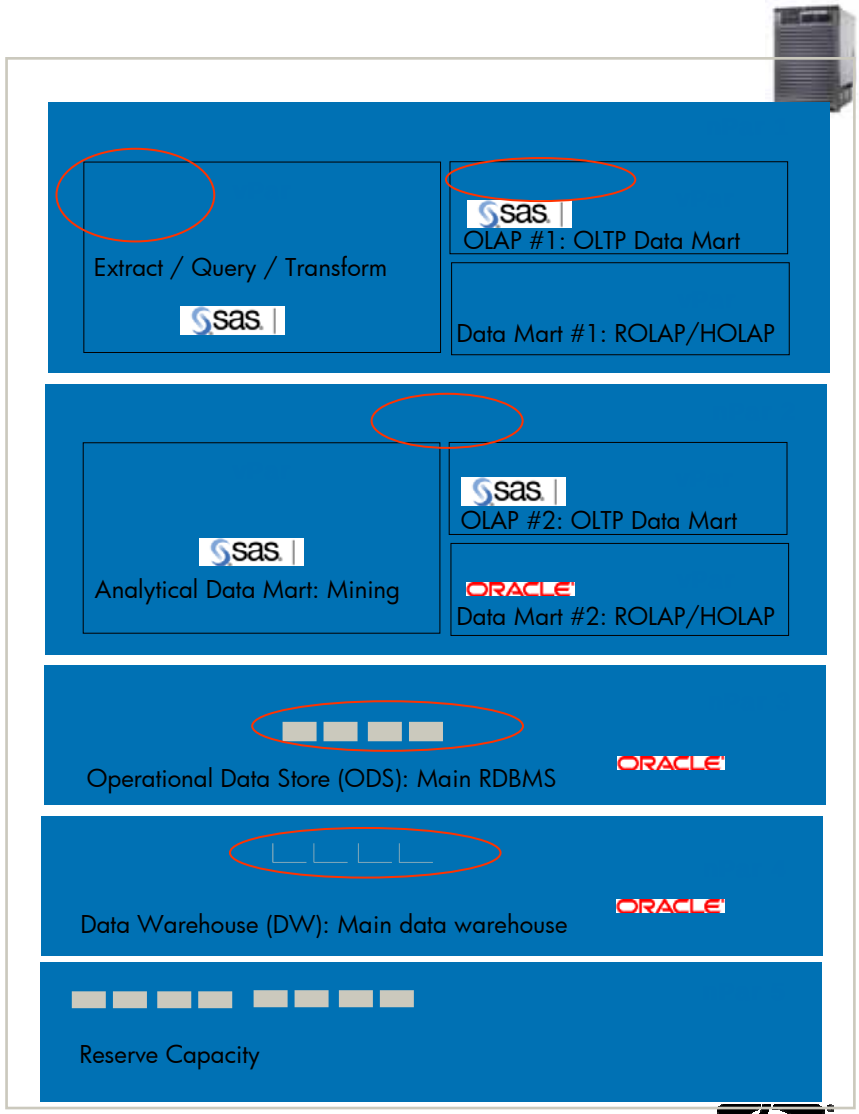
Solution – Line of business SAS deployment

Scenario #1: Shifting workload demands

- Load on OLTP Data Mart (#1) increases – WLM moves 1 CPU from ETL process
- Load on Analytical Data Mart & OLTP Data Mart (#2) go up – WLM activates 2 TiCAP CPUs

Scenario #2: Increased demand on DW

- Load on DW increases – WLM moves 4 CPU licenses from nPar 3 to nPar 4



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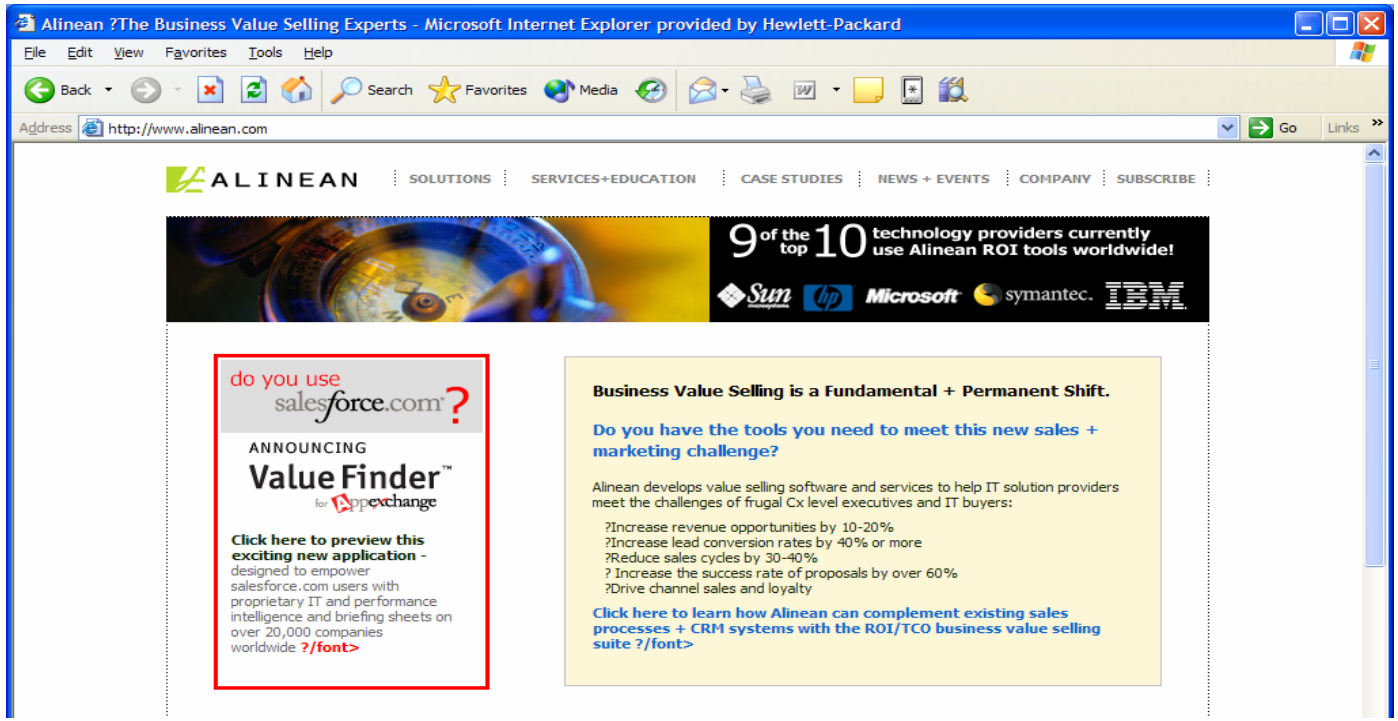
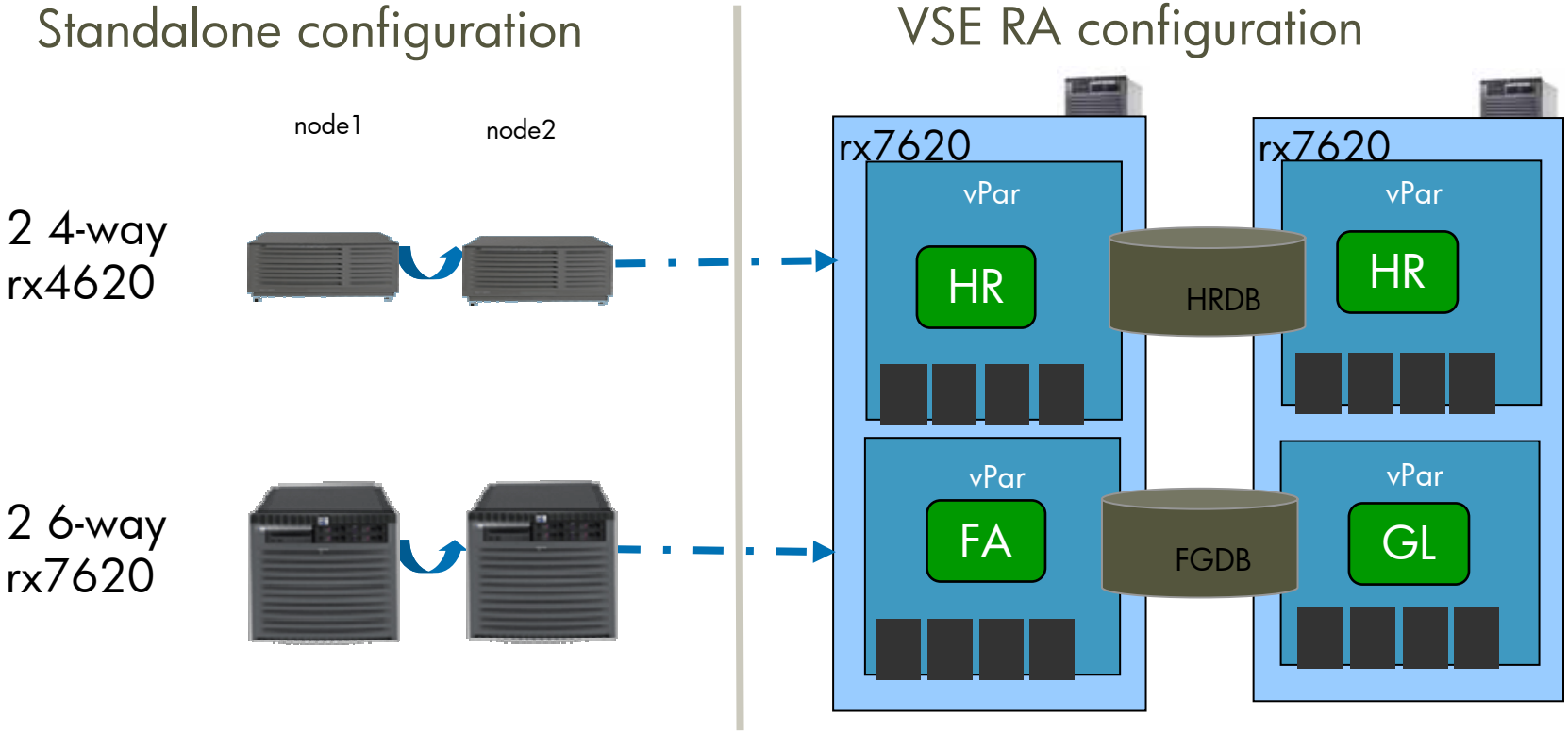
The Tool: The Alinean ROIAnalyst



- Leading Tier 1 IT Vendors (9 out of 10) sales tool provider – 100 tools +
- Launched ITVM initiative in January 2005 to Tier 1 Fortune 1000 companies including Citigroup, FedEx, Home Depot, Darden Restaurants and others
- Exclusive IDC partner

VSE RA for Oracle RAC – TCO comparison



- For illustrative purposes, this is a simplified example
- TCO analysis performed with Alinean / ROI Analyst tool, based on IDC data

TCO Analysis – two options

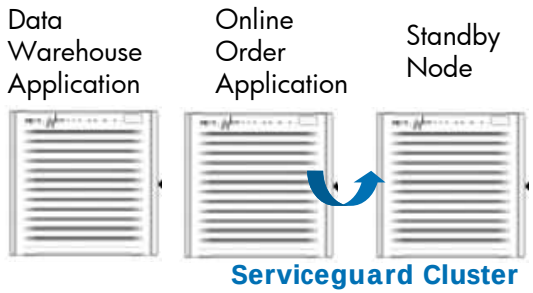
IT Costs (3-year Cumulative)	Standalone Configuration	RAC VSERA configuration	Savings from VSERA
Server Hardware	$561.623	$497.281	11.5%
Server Software	$2,050,403	$1,611,815	21.4%
IT Operations	$168.111	$91.980	45.3%
IT Administration	$18.201	$8.883	51.2%
Facilities	$28.917	$19.476	32.6%
Change Costs	$96.856	$34.688	64.2%
Total IT Costs	$2,924,111	$2,264.123	22.6%

VSE RA based solution yields 22.6% TCO benefit over 3-year period !

Contact your HP sales representative of authorized HP partner for a customized TCO analysis

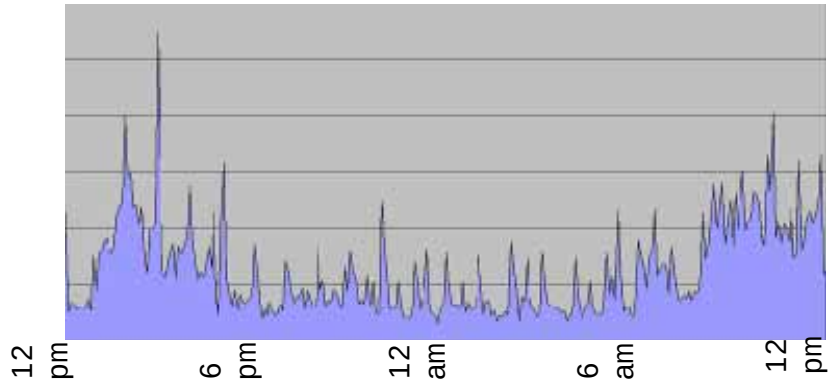
Scenario – server upgrade a business need

Current infrastructure



- Servers: 3 x 8-way HP 9000 N-Class
- Applications: online order, data warehouse
- Availability: Serviceguard

Growing demands



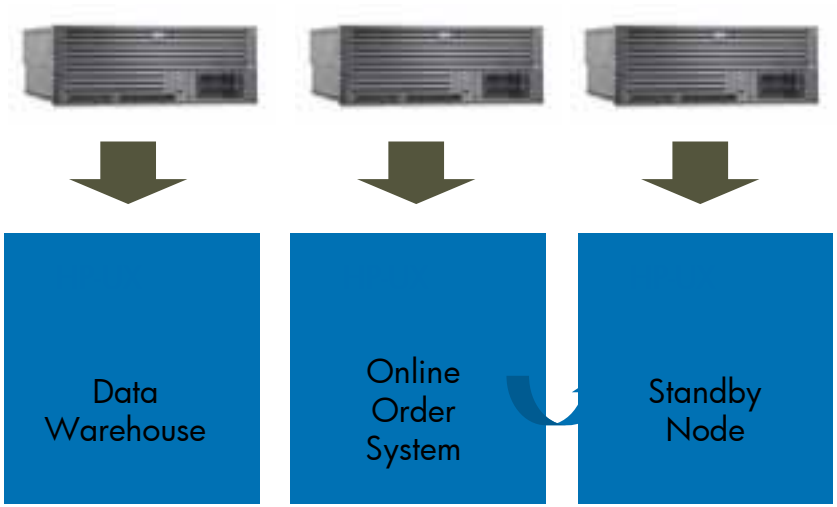
- Days – short peaks in online orders
- Nights and month ends – heavy data analyses loads

Need for server upgrade

- Online orders slow at peak times – customers impacted
- Overnight data analyses run into business day – marketing managers impacted

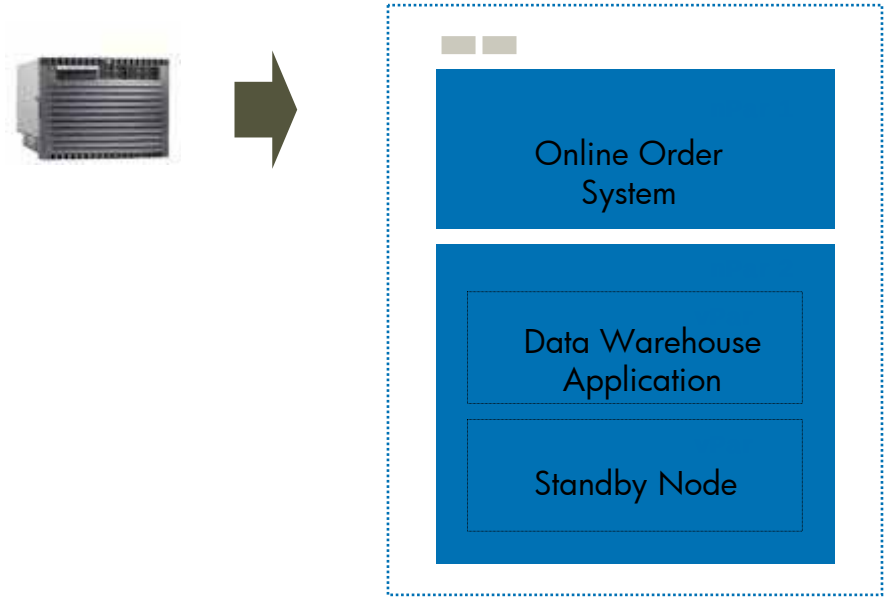
Server upgrade – two options

Traditional upgrade



- Servers: 3 HP Integrity rx4640 servers – 12 Itanium2 6M CPUs
- Availability: Serviceguard

Consolidation with VSE



- Servers: 1 HP Integrity rx7620 server – 8 Itanium2 6M CPUs (6 default, 2 TiCAP)
- Partitioning: nPar, vPar
- Control: WLM
- Availability: Serviceguard
- Utility Pricing: TiCAP CPUs

Server upgrade – two options

Costs (3-year Cumulative)	Traditional Upgrade	Server Consolidation with VSE	Savings from Consolidation
Server Hardware	$155,229	$188,214	-21%
Server Software	$461,631	$297,107	36%
IT Operations	$70,548	$30,531	57%
IT Administration	$8,295	$3,510	58%
Facilities	$14,160	$9,735	31%
Change Costs	$78,465	$74,994	4%
Other Operating Costs	$204,498	$203,469	1%
Total Costs	$992,826	$807,560	19%

Consolidating servers with VSE yields 19% TCO benefit over 3-year period !

Note:

- TCO analysis performed with Alinean / ROIAnalyst tool, based on IDC data
- Contact your HP Representative or HP sales representative and authorized HP partner for a customized TCO analysis

Resources

www.hp.com/go/vse
www.hp.com/go/vsera
www.hp.com/go/idvsera

- Product information
- Customer success stories
- Reference Architectures (VSE and ID-VSE)

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