

Oracle & HP Integrity blades - povoljno rješenje
za pouzdano i brzo posluživanje baza

OD13
hroug



Dr. Draško Tomić

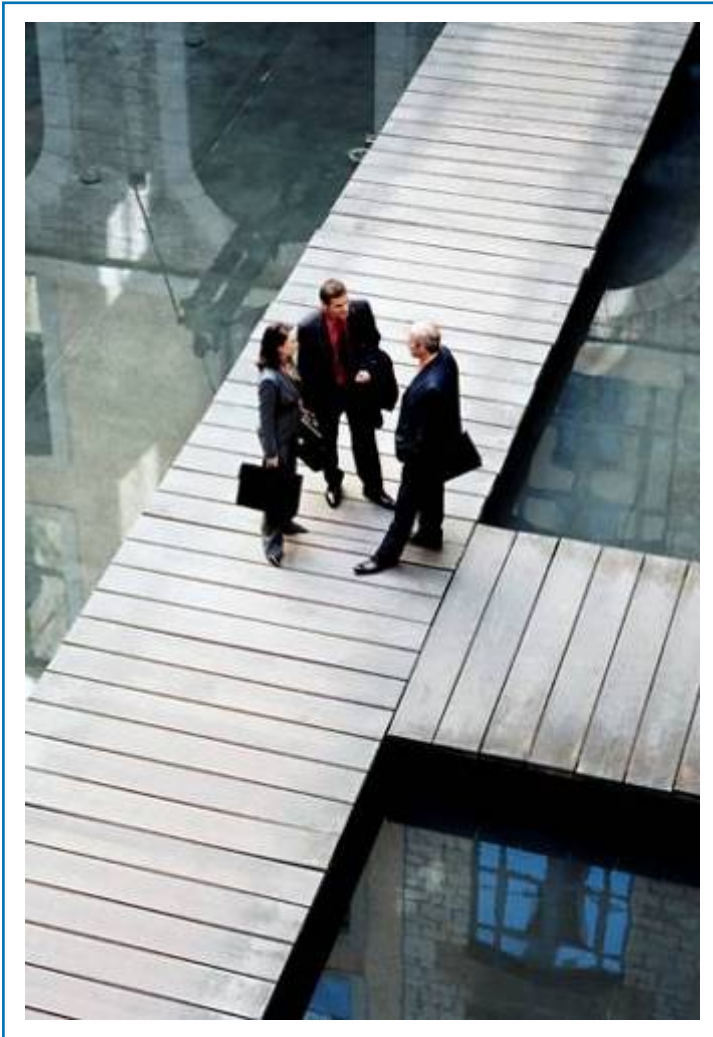
ESS technical consultant, HP EEM



Agenda

- Oracle & HP partnerstvo
- C-Class plošni poslužitelji
- HP Storage Management Suite
- HP Virtual Server Environment
- HP gotova rješenja za Oracle

Oracle & HP partnerstvo



- 25 godina partnerstva
- Preko 150,000 zajedničkih korisnika
- HP ima na EMEA tržištu 46% Oracle instalacija
- Zajednički razvoj produkata
- Najveći Oracle korisnik
- Oracle testira svoje proizvode na HP sustavima
- 13 zajedničkih razvojnih centara
- HP je Oracle #1 proizvođač poslužitelja u nuđenju zajedničkih rješenja

HP-ov tržišni udjel



Oracle HP

U EMEA regiji, 46% svih Oracle instalacija je na HP poslužiteljima

HP ima 30% više tržišnog udjela od najbližeg konkurenta

HP-ov tržišni udjel je veći od zajedničkog udjela 4 najbliža konkurenta

#1 i #2 tržišni udjel

Windows/ Linux/ UNIX poslužitelji

x86, x86/64, Itanium procesori

Blade poslužitelji

Fault-tolerant sustavi

High performance computing

Diskovna polja

Tračni sustavi

SAN rješenja

Segmentacija

Manufacturing – 9/10 vodećih proizvođača auta

Transportation – 4/5 najvećih avio kompanija

Financing – 66% kreditnih transakcija u svijetu

Telco – 80% Europskih mobile ponuđača

Utilities – 65% svjetske energetske infrastrukture

IDC Q1'07

C-class plošni poslužitelji

CD13
hpoung



HP BladeSystem c-Class portfelj



Šasije



Izbor 2P i 4P poslužitelja



Upravljanje



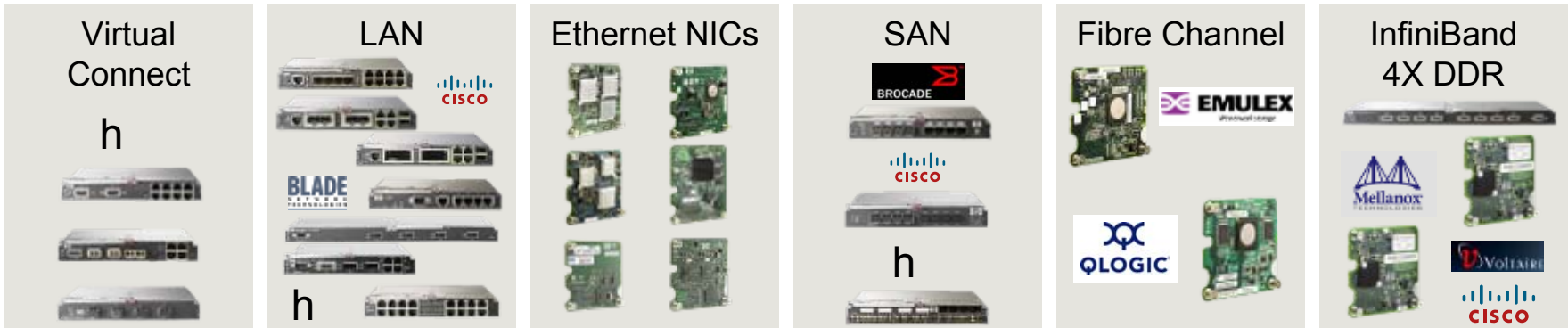
Izbor napajanja



Usluge

Assessment
Implementation
Support

Interconnect izbor za LAN, SAN i scale-out klasterne



HP BladeSystem c-Class pozicioniranje



Tradicionalni rack-mounted poslužitelji



Plošni poslužitelji

Intelovi 64-bit multi-core procesori

2P
RISC zamjena

Intel® Itanium® 9000

Mainframe-class servers with ultimate flexibility and reliability

Large Scale Database; Business and Data Analytics High end UNIX OS's; Partitioning and Consolidation

4P
Data Demanding

Intel® Xeon® 7000

Leading performance, reliability and scalability

Server consolidation; Enterprise Database; ERP, CRM, Decision Support; Scale-UP computing

2P
standardna
infrastruktura

Intel® Xeon® 5000

Maximize performance density and performance per watt

Infrastructure applications; Infrastructure virtualization Dense 1U rack/blades; Scale-OUT standardization

1P
Basic Computing

Intel® Xeon® 3000

Economical, dependable 1-way servers

Basic enterprise needs; Small businesses; Mail, network, file/print; Entry technical computing

HP Integrity BL860c



BL860c

Processor

Do dva single-core ilir dual-core Intel® Itanium® 9000 i 9100 series processors

RAM

- PC2-4200 DDR-SDRAM (533 MHz)
- 12 DIMM Sockets
- 48GB max (with 4GB DIMMs)

Interni diskovi

- 2 Hot-Plug SFF SAS HDDs
- Standard RAID 0/1 controller

Mreža

4 integrated Gigabit NICs

Mezanin slotovi

3 PCIe mezzanine expansion slots

Upravljanje

Integrity Integrated Lights Out 2 with Advanced Pack (standard)

Gustoća

8 server blades in 10U enclosure
4 server blades in 6U enclosure

HP Integrity BL870c



BL870c

Procesor Do četiri dual-core Intel® Itanium® 9100 series procesora

RAM

- DDR2 PC4200 (533 MHz)
- 24 DIMM Sockets
- 96GB max (with 4GB DIMMs)

Interni diskovi

4 Hot-Plug SFF SAS HDD

Mrežy

4 integrated Gigabit NICs

Mezanin slotovi

3 PCIe mezzanine expansion slot

Upravljanje

Integrated Lights Out 2
Advanced Pack (Standard)

Gustoća

4 server blades in 10U enclosure
2 server blades in 6U enclosure

**1 blade consumes two FH enclosure bays, must be in a quad slot*

SAS / SATA



One backplane accommodates both SAS and SATA drives...

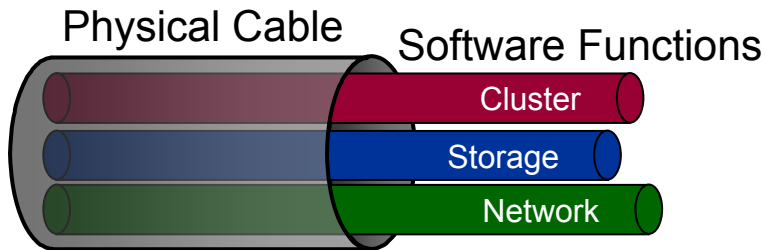
Serial ATA (SATA) and Serial SCSI (SAS) benefits:

- “Star” topology (point-to-point, no hubs)
- SATA and SAS drives are hot-pluggable
- 2.5” drives will consume 70% less space and 30% less power than 3.5” drives enterprise drives
- SATA drives have a 1 year warranty

High-performance and highly-reliable Serial Attached SCSI disk drives can be used for mission critical and performance-oriented applications

High-capacity SATA drives can be used for disk enhanced backup or non-mission critical reference data

HP mreža višestruke namjene



One connection,
multiple functions

| Feature | Benefit |
|----------------------|---|
| Receive side scaling | Increases server scalability |
| TCP/IP Offload (TOE) | Offloads TCP/IP processing to NIC for improved server efficiency |
| Accelerated iSCSI | iSCSI processing is offloaded to the NIC for improved performance |
| iSCSI Boot | Allows a server to boot from a SAN removing the need for drives in the server |

Interni USB port

- Dodan interni USB konektor. Može se koristiti kao disk-on-key USB device za povećanu sigurnost

USB Secure Key



Plugs into internal USB slot



HP StorageWorks SB40c storage blade

- Proširenje kapaciteta susjednog blejda
- Podrška za šest hot-plug SAS ili SATA diskova
- Podrška mix od SAS i SATA diskova
- Onboard Smart Array P400 RAID kontroler sa 256MB brze memorije, podržava RAID 0, 1, 1+0, 5, i 6 (ADG)



HP StorageWorks Ultrium 448c tape blade



- Half-height blade form faktor
- Cjelovito rješenje za zaštitu podataka sa HP Data Protector Express Single Server edicijom i One-Button Disaster Recovery (OBDR) funkcionalnošću



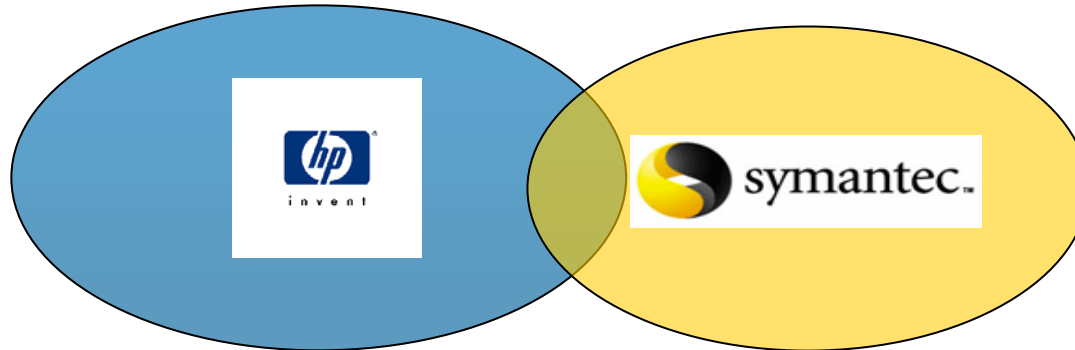
HP PCI Expansion Blade za c-Class



- Omogućava PCI-X ili PCI-e proširenje za susjedni blade poslužitelj
 - SSL, XML accelerator kartice
 - VOIP cards
 - Ostale special-purpose PCI-X ili PCI-e kartice

HP Storage Management Suite





HP Serviceguard, #1 rješenje za visoku raspoloživost na UNIX tržištu integriran sa vodećim Symantec file- system i volume managementom.

- Omogućava superiorne Oracle database performanse i administraciju u file-oriented sustavima
- Omogućava laku administraciju sa cluster file system mogućnostima
- Lako se integrira u VSE i Serviceguard portfolio

HP Serviceguard Storage Management Suite - glavne značajke



Cluster File System

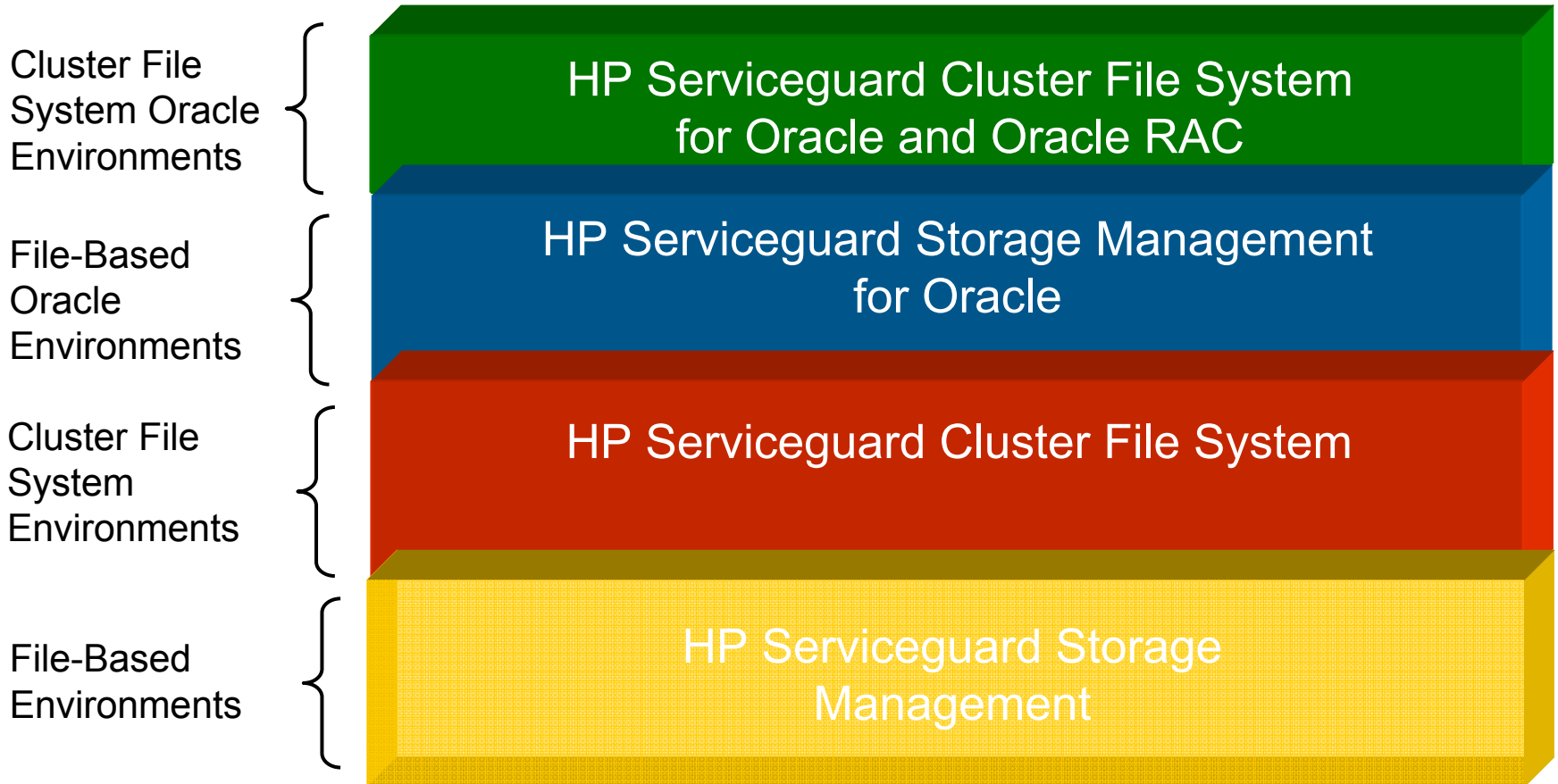
Oracle Disk Manager

Quality of Storage Service (QoSS)

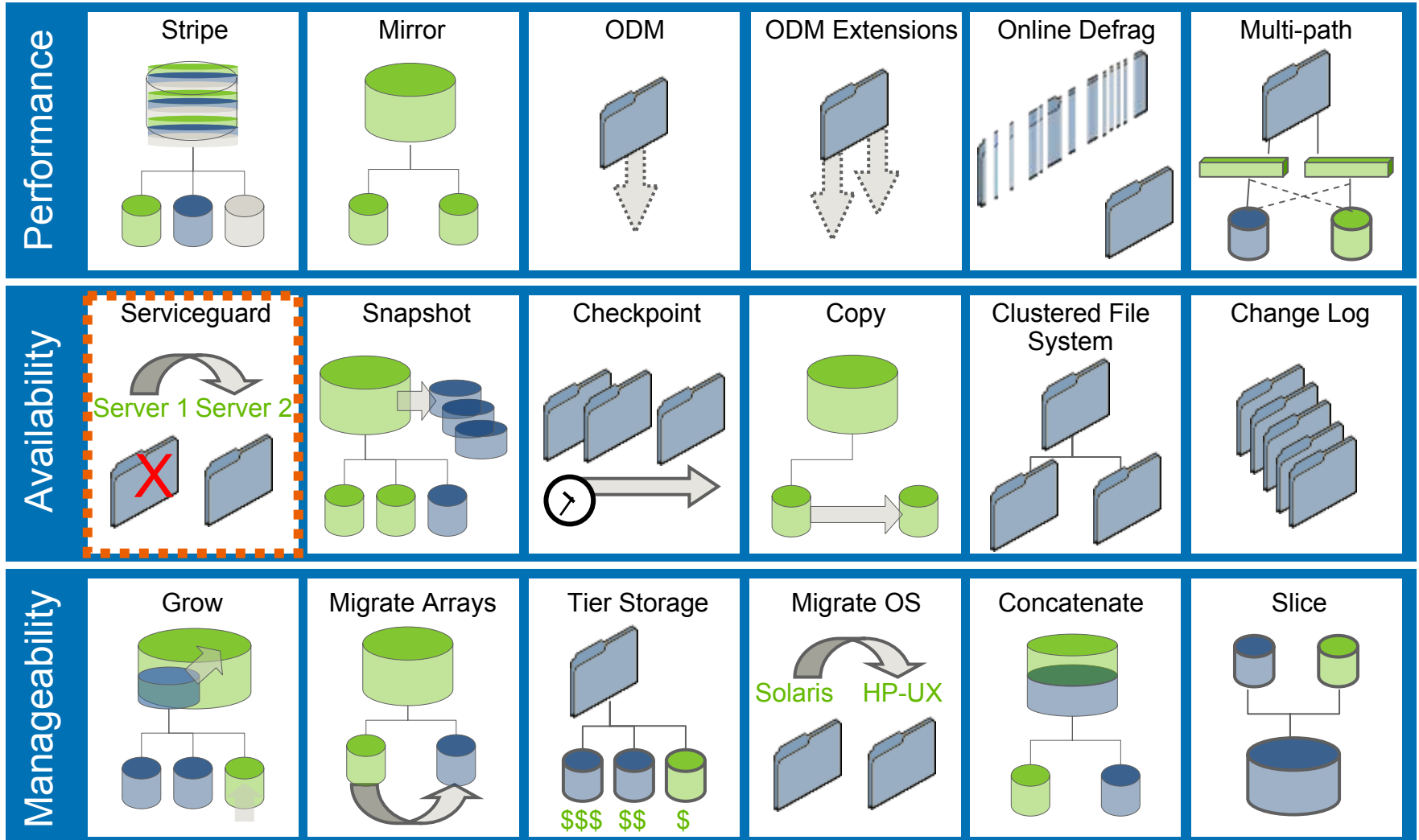
Portable Data Containers (PDCs)

Dynamic Multi-Pathing (DMP)

HP Serviceguard Storage Management Suites



Što je Serviceguard Storage Management Suite?



Storage Management Suite za Oracle

Serviceguard
SMS

Početak



- Unaprijed pridjeljivanje projiciranih resursa
- Raw način rada



Izazovi

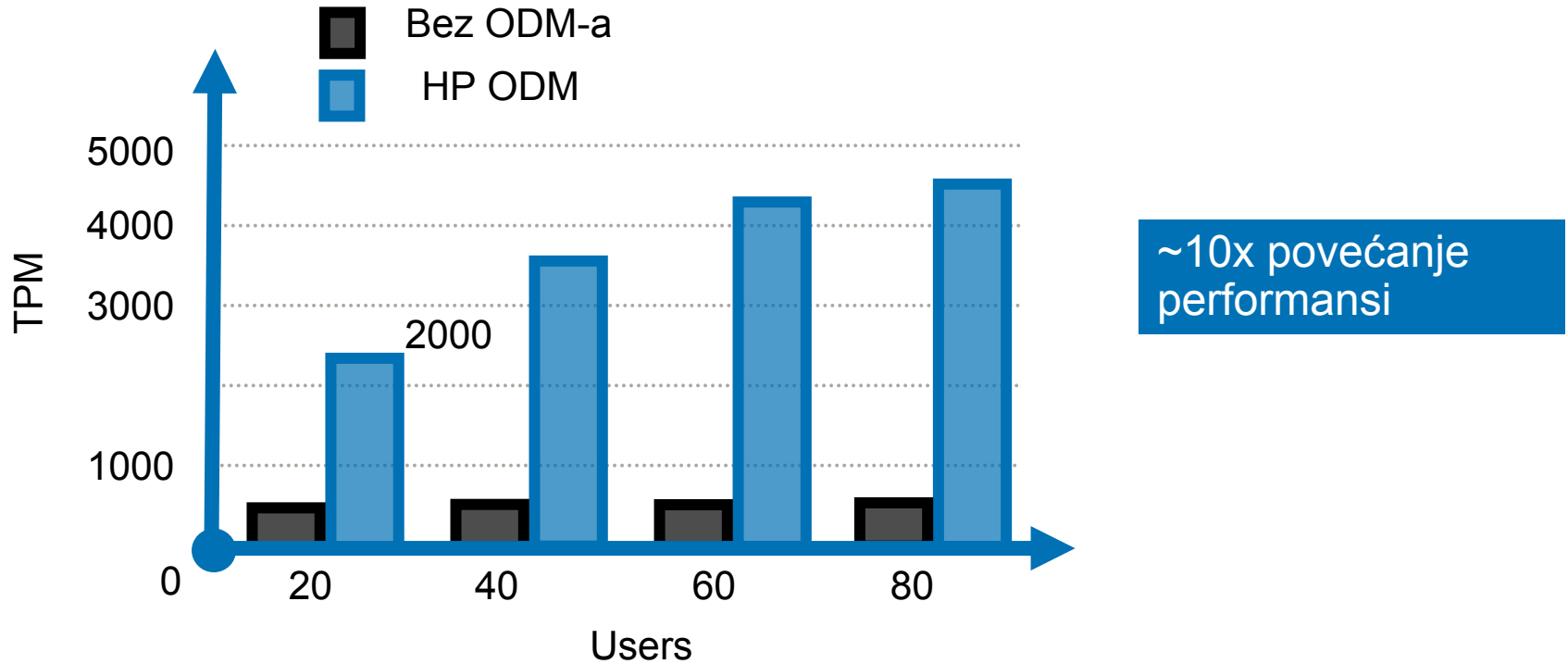


- Skupoća i kompleksnost raw administracije
- Svejedno se može izići iz zadanih okvira

SMS rješenje

- Jednostavnost administracije datotečnog sustava
- Raw performanse
- Povećanje kapaciteta po potrebi

HP SMS: 10x povećanje performansi



- HP ODM koristi low-level pristup disku, sličan raw načinu rada
- Prema administratoru se prezentira kao datotečni sustav, a interno radi slično Oracle raw-modu
- Povećanjem broja korisnika ne dolazi do negativnog utjecaja datotečnog sustava na performanse

Napredna HP-UX 11i rješenja za Oracle and Oracle RAC



Oracle
RAC
korisnici



Oracle
DB
korisnici



Prihvaćen i podržan od



HP-UX 11i operacijski sustav



HP-ux11i

Mission-Critical OE
+ Availability

Enterprise OE
+ Manageability

Foundation OE
+ Reliability
+ Security
+ Scalability

Osnova za kontrolu, raspoloživost, particioniranje, utility pricing

HP-UX 11i - hierarhija



HP-UX 11i Mission-Critical OE

HP-UX 11i Enterprise OE

HP-UX 11i Foundation OE

- HP-UX operating system
- Network drivers
- HP-UX Web Server Suite
- Intrusion detection
- Ignite-UX
- Java™ RTE, JDK, JPI
- CIFS client and server
- Servicecontrol Manager
- *kcweb* kernel configuration tool
- Mozilla
- Internet Express
- CIFS client/server
- CDE
- PRM Libraries
- gWLM agent
- Perl
- HP System Insight Mgr
- OpenSSL
- Logical Volume Manager
- Base VERITAS Volume Manager (VxVM 'lite')
- Base VERITAS File System (VxFS 'lite')
- Software Distributor-UX
- PAM Kerberos
- EMS framework
- GNOME GTK
- Secure Shell
- IP Filter
- Install Time Security
- Security Patch Check
- Bastille
- iCAP
- Software Package Builder
- Web-based kernel, peripheral, and device configuration tools

Add to Foundation

- Online JFS
- Mirrordisk/UX
- PRM
- Glanceplus Pak
- OpenView Performance Agent
- Single-System Event and Availability Management
- EMS HA Monitors

Add to Enterprise

- Serviceguard
- Enterprise Cluster Master Toolkit
- HP-UX Workload Manager
- HP-UX Workload Manager Toolkit
- Serviceguard NFS Toolkit

HP-UX 11i sa Serviceguard SMS nadgradr



Mission-Critical OE

Serviceguard Cluster File System
for RAC

Serviceguard Cluster File System
for Oracle

Serviceguard Cluster File System

Serviceguard Storage Management
for Oracle Premium

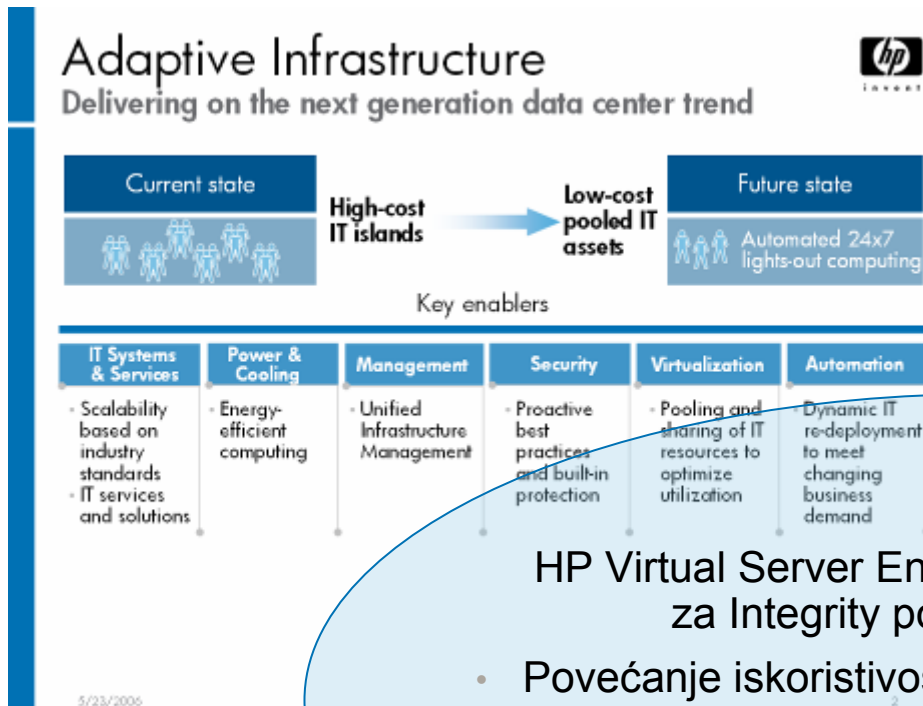
1. Serviceguard
2. ECM Toolkit
3. Online JFS (Veritas VxFS)
4. Mirrordisk/UX
5. Base VERITAS Volume Manager (VxVM 'lite')
6. Base VERITAS File System (VxFS 'lite')



HP VSE



HP Virtual Server Environment



HP Virtual Server Environment (VSE) za Integrity poslužitelje

- Povećanje iskoristivosti resursa
- Fleksibilnost resursa urnom vremenu stav
- Održivost servisa

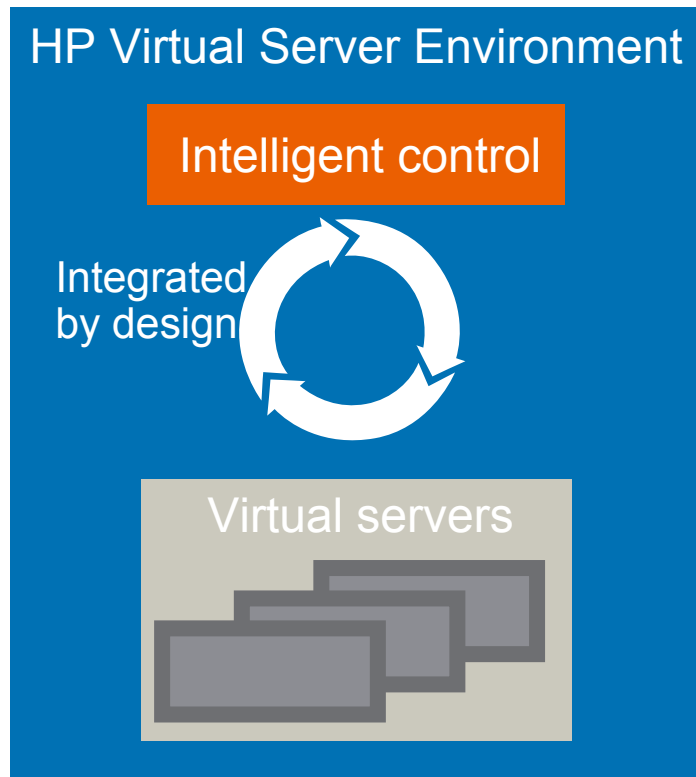
HP Virtual Server Environment



Virtual servers

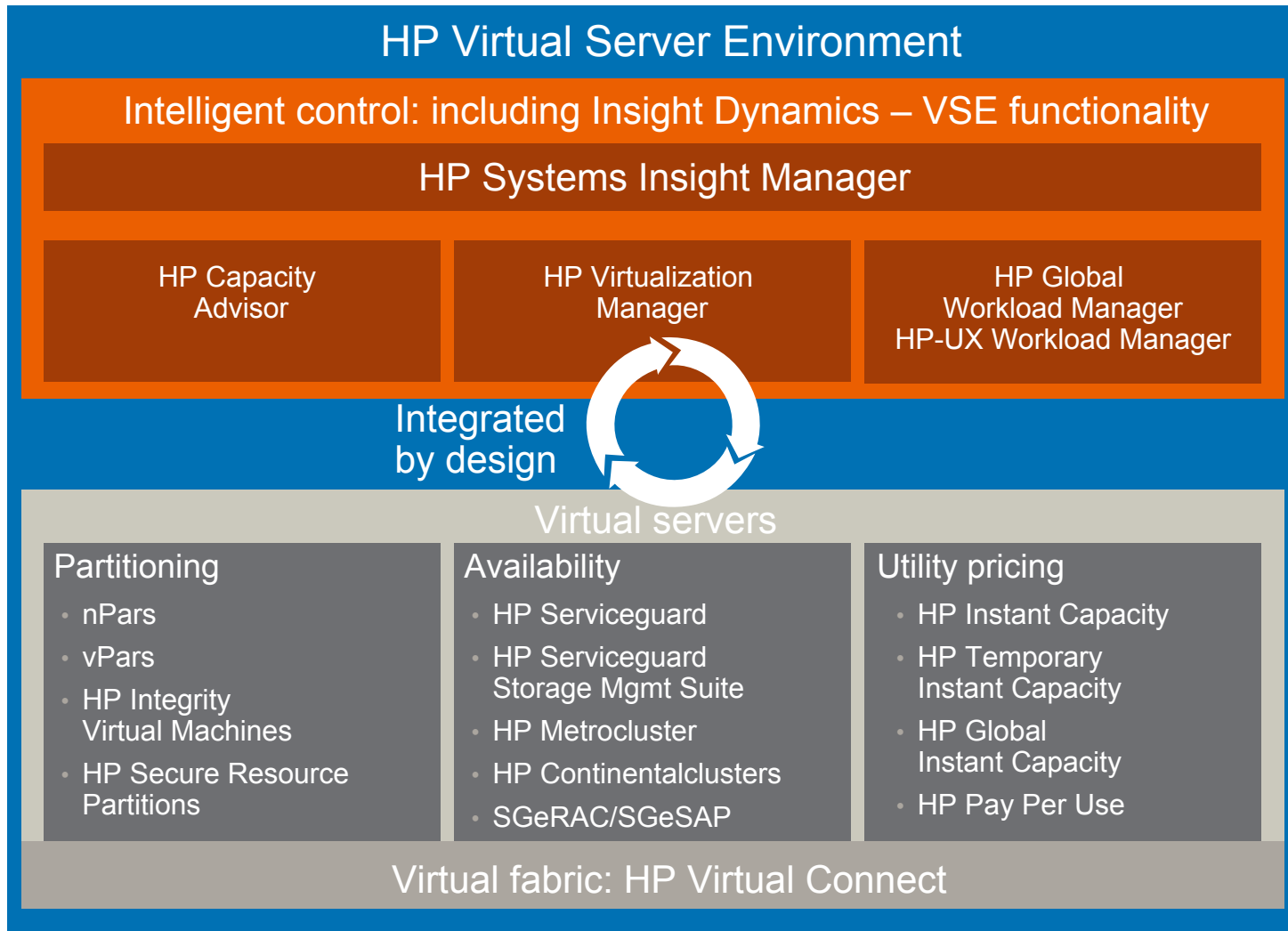
Dinamička raspodjela opterećenja

HP Virtual Server Environment za HP Integrity

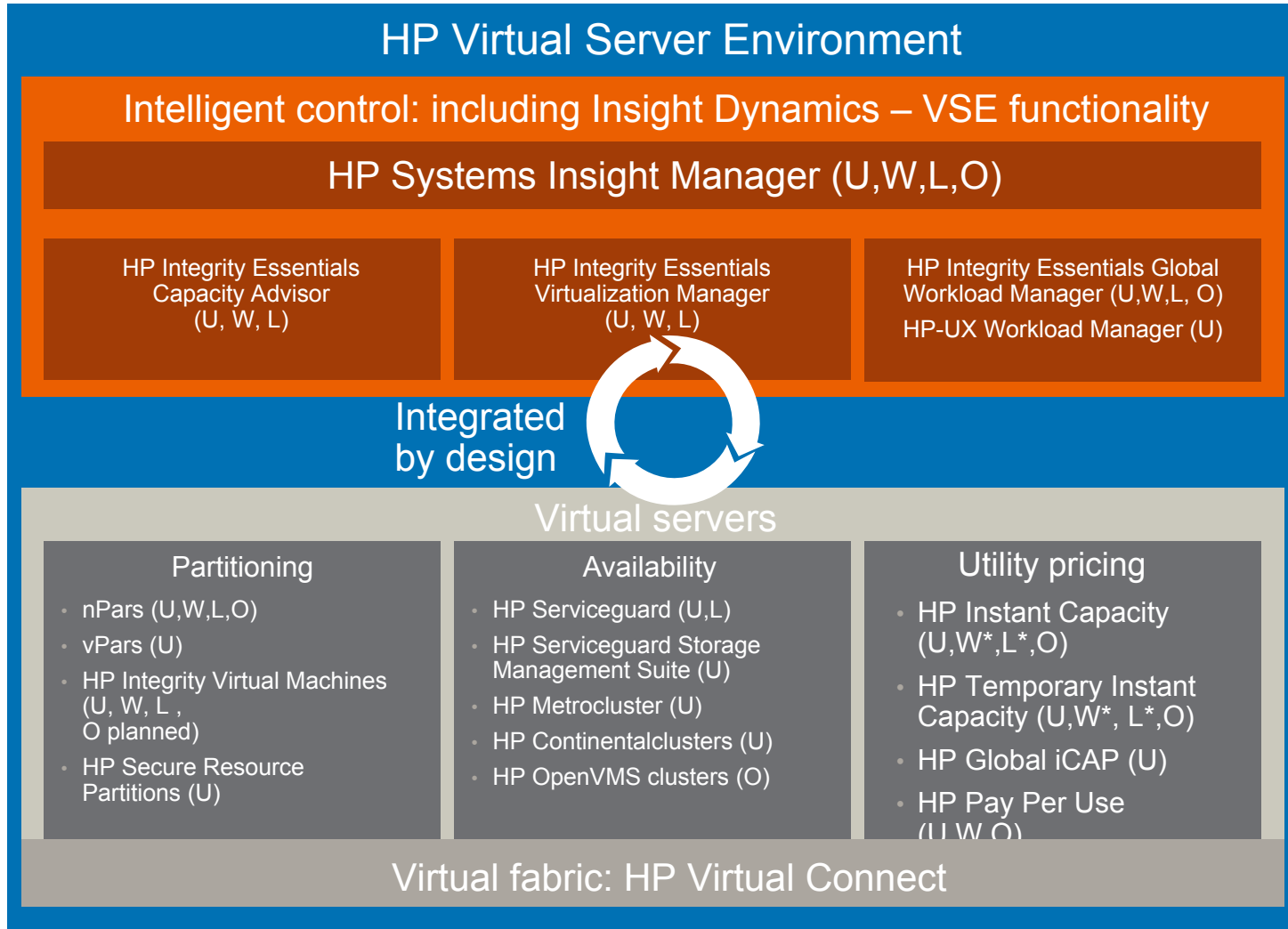


- Povećanje iskoristivosti resursa
 - Plaćanje samo onog što se koristi
- Fleksibilnost resursa
 - Povećanje brzine IT promjena
- Povećanje QOS

HP Virtual Server Environment za HP Integrity poslužitelje

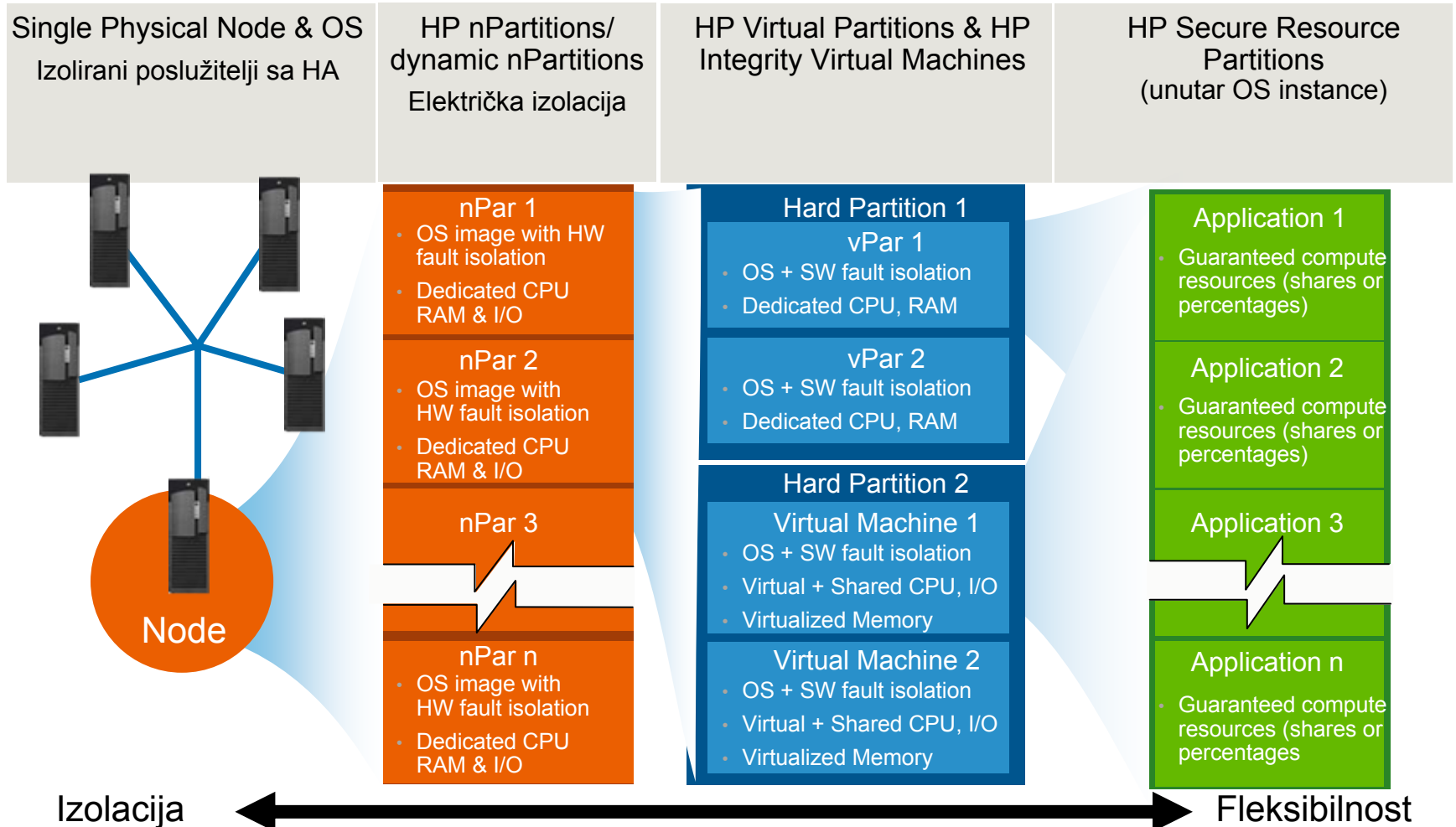


HP Virtual Server Environment za HP Integrity poslužitelje – multi OS podrška



| Legend |
|---------------|
| U – HP-UX 11i |
| L – Linux |
| W – Windows |
| O – OpenVMS |

HP Partitioning continuum



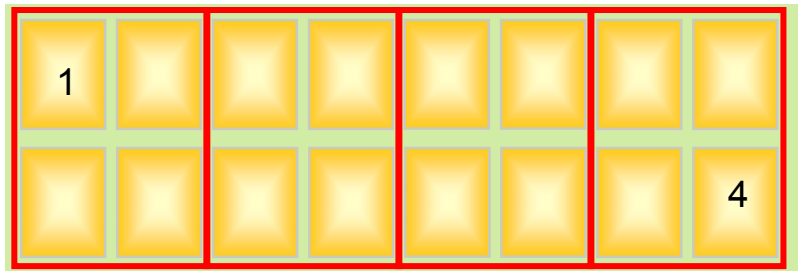
HP partitioning shema

| Vrsta | Podržani OS | HP Integrity | | HP ProLiant Partneri |
|-----------------------------------|------------------------------------|--|---|--|
| | | HP | Partneri | |
| Hard particije | HP-UX 11i, Windows, Linux, OpenVMS | HP nPartitions (cell-based servers) | | |
| Soft particije | HP-UX 11i | HP Virtual Partitions (cell-based servers) | | |
| Hypervisor | HP-UX 11i | HP Integrity Virtual Machines | | VMware; Microsoft; Citrix XenServer Red Hat; Novell; Oracle; Virtual Iron |
| | Windows | | | |
| | Linux | | Red Hat | |
| | OpenVMS | (future) | | |
| Resource partitions* (Containers) | HP-UX 11i | HP Secure Resource Partitions | | |
| | Windows | | Parallels Virtuozzo Containers | |
| | Linux | | Parallels Virtuozzo Containers | |
| Resource sets* | HP-UX 11i | HP Process Resource Manager/pSets | | |
| | Windows | | Microsoft Windows Server Resource Manager | |
| | Linux | | cpusets | |
| | OpenVMS | HP Class Scheduler | | |

* Within an operating system instance

nPartitions (nPars)

Više aplikacija na istom poslužitelju sa potpunom električkom izolacijom među particijama

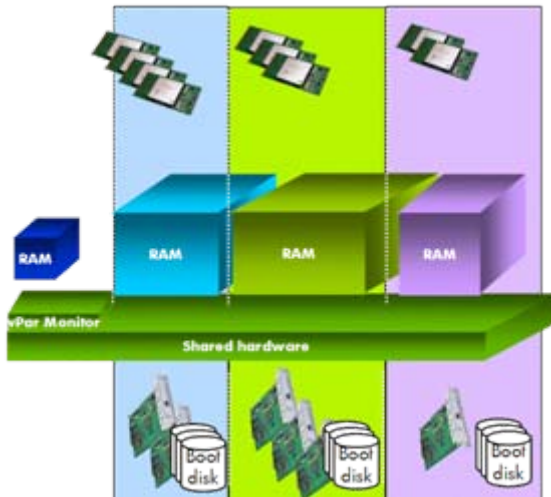


- Povećano iskorištenje sustava
 - Mogućnost kreiranja do 16 particija
 - on-line processor & memory (cell) migracija između particija
 - Povećana fleksibilnost:
 - Multi OS podrška: HP-UX, Windows, OpenVMS, Linux
 - Multi OS version podrška
 - Multiple patch level podrška
- Povećana raspoloživost
 - HW i SW izolacija među particijama
 - Podrška za Serviceguard i njegove ekstenzije

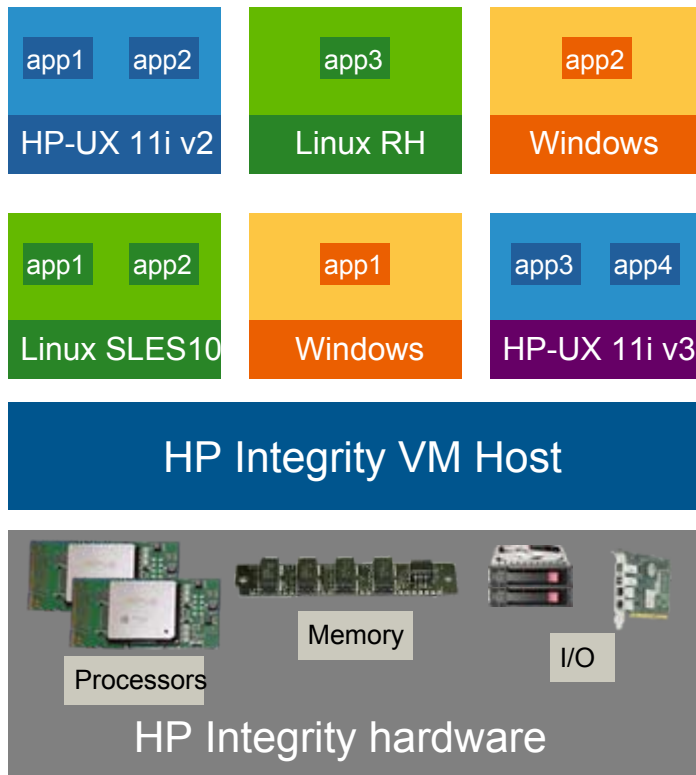
HP-UX 11i Virtual Partitions (vPars)

Više HP-UX instanci na istom poslužitelju ili nPar-u u više Virtualnih Particija:

- SW izolacija OS-a i aplikacija
- Individualna rekonfiguracija i reboot
- Dinamička CPU migracija među vPars-ovima
- Dinamička migracija memorije među vPars-ovima



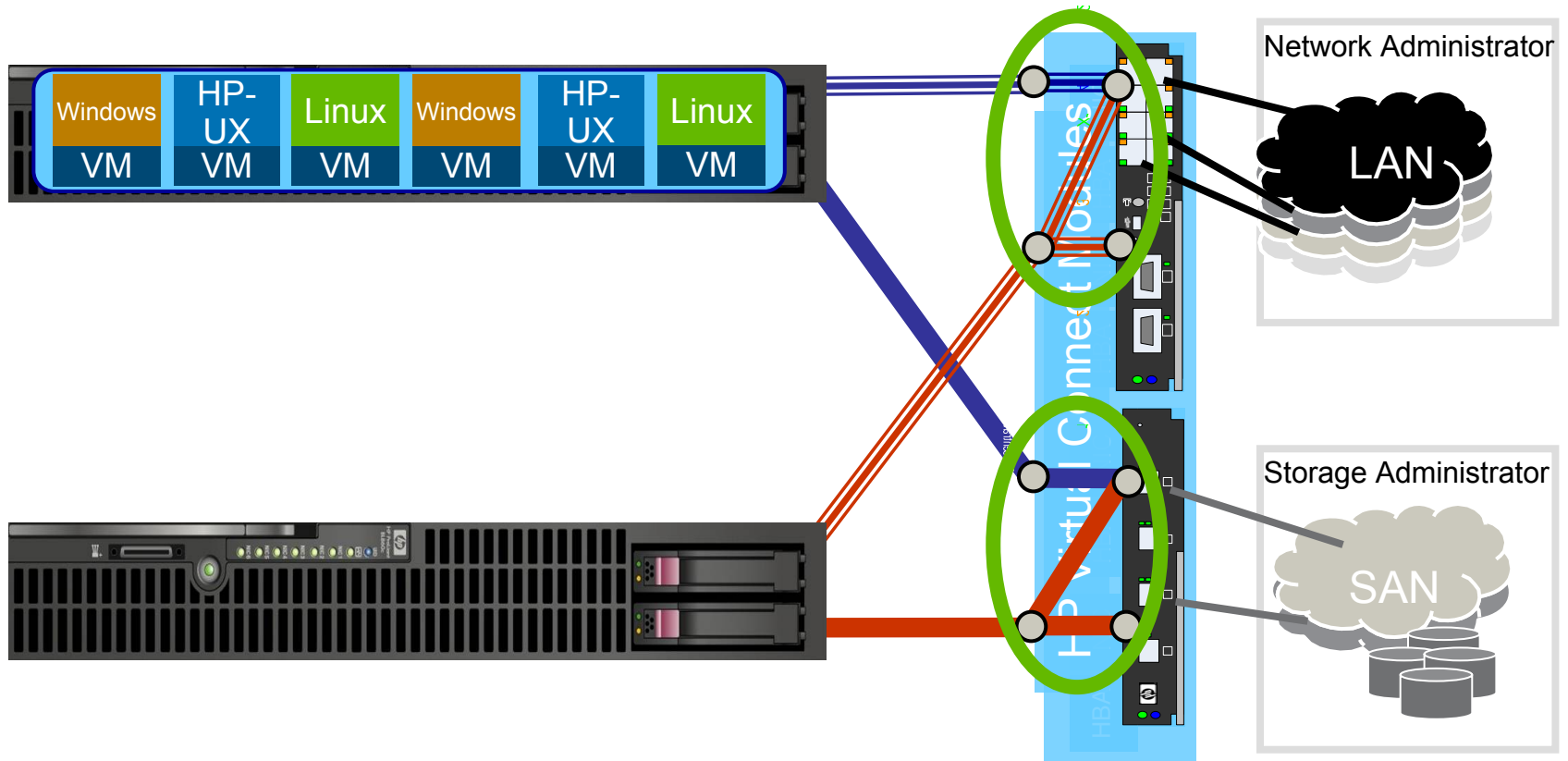
HP Integrity Virtual Machines (VM)



- VM sa dijeljenim procesorima, memorijom i I/O resursima
- Podržane na HP Integrity: poslužiteljuri na nPar entitetu
- Dinamička alokacija resursa
- Do 20 VMs per core
- OS fault i security izolacija
- Multi OS guests:
 - HP-UX 11i
 - Windows Server 2003®
 - Red Hat RHEL AP 4.4, 4.5, 4.6
 - SUSE® SLES10 SP1
 - OpenVMS

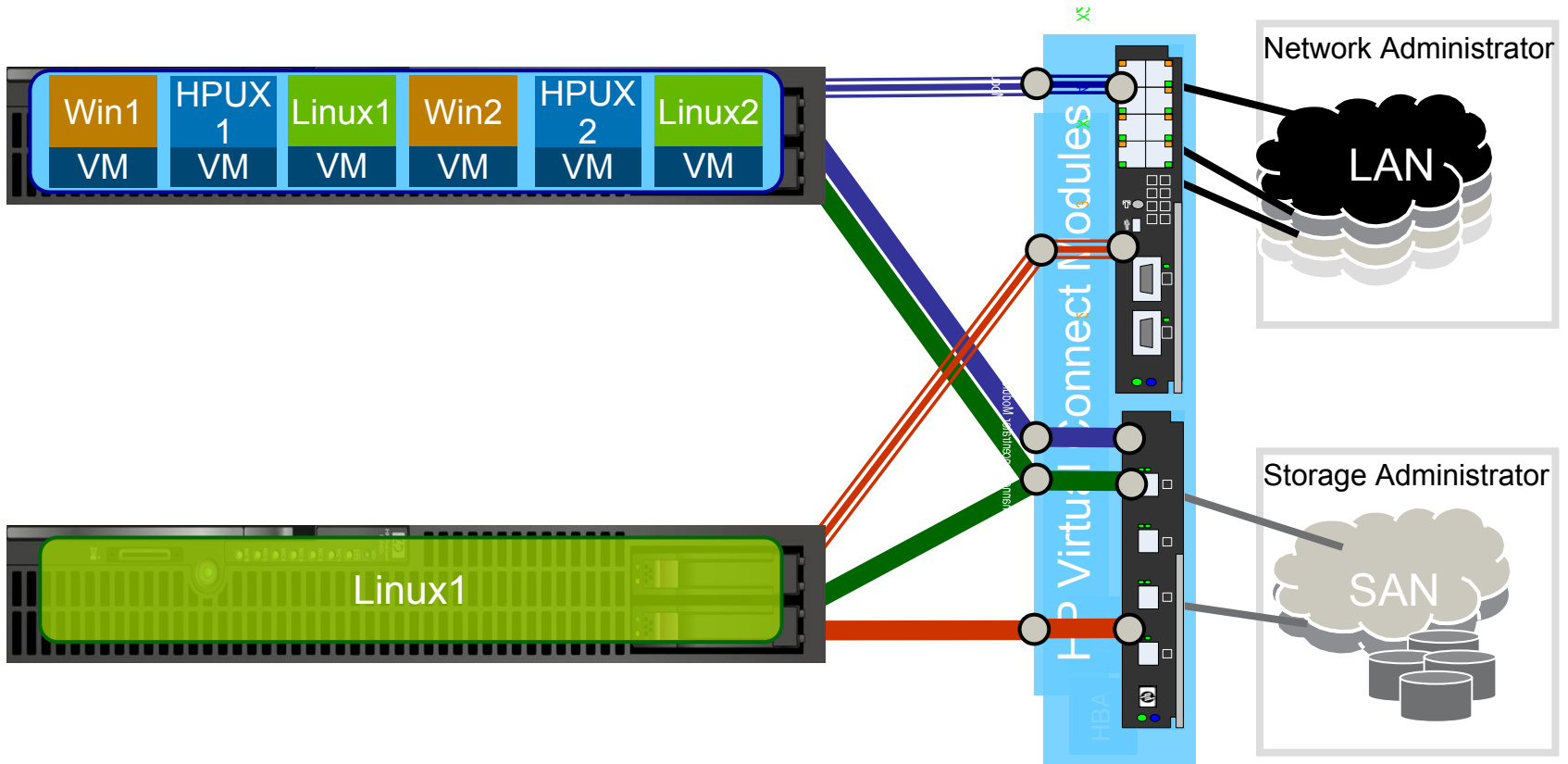
Integrity Virtual Machines & Blades

Visoka raspoloživost sa Virtual Connect modulima



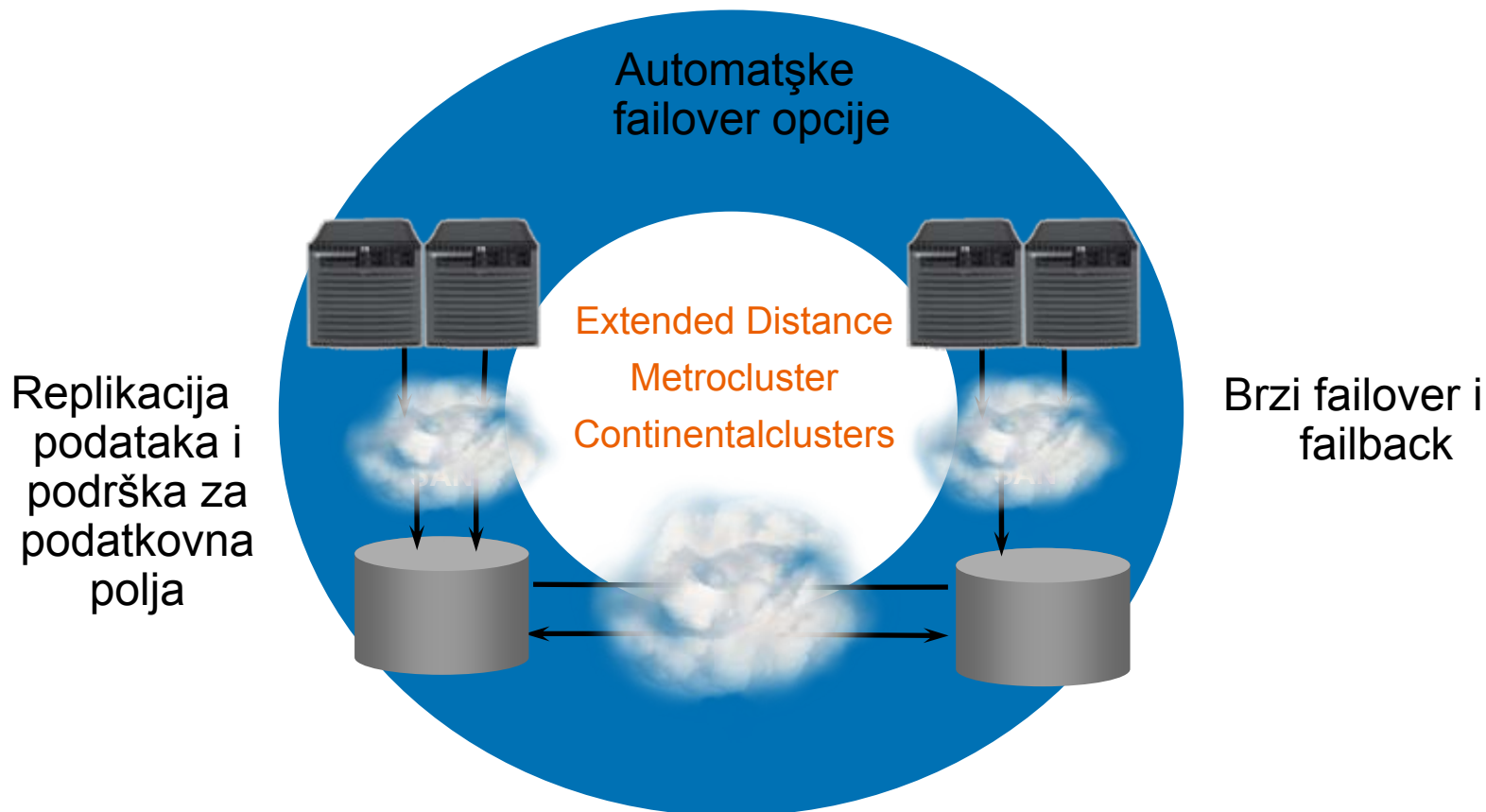
Integrity Virtual Machines & Blades

Load Balancing sa Virtual Connect modulima



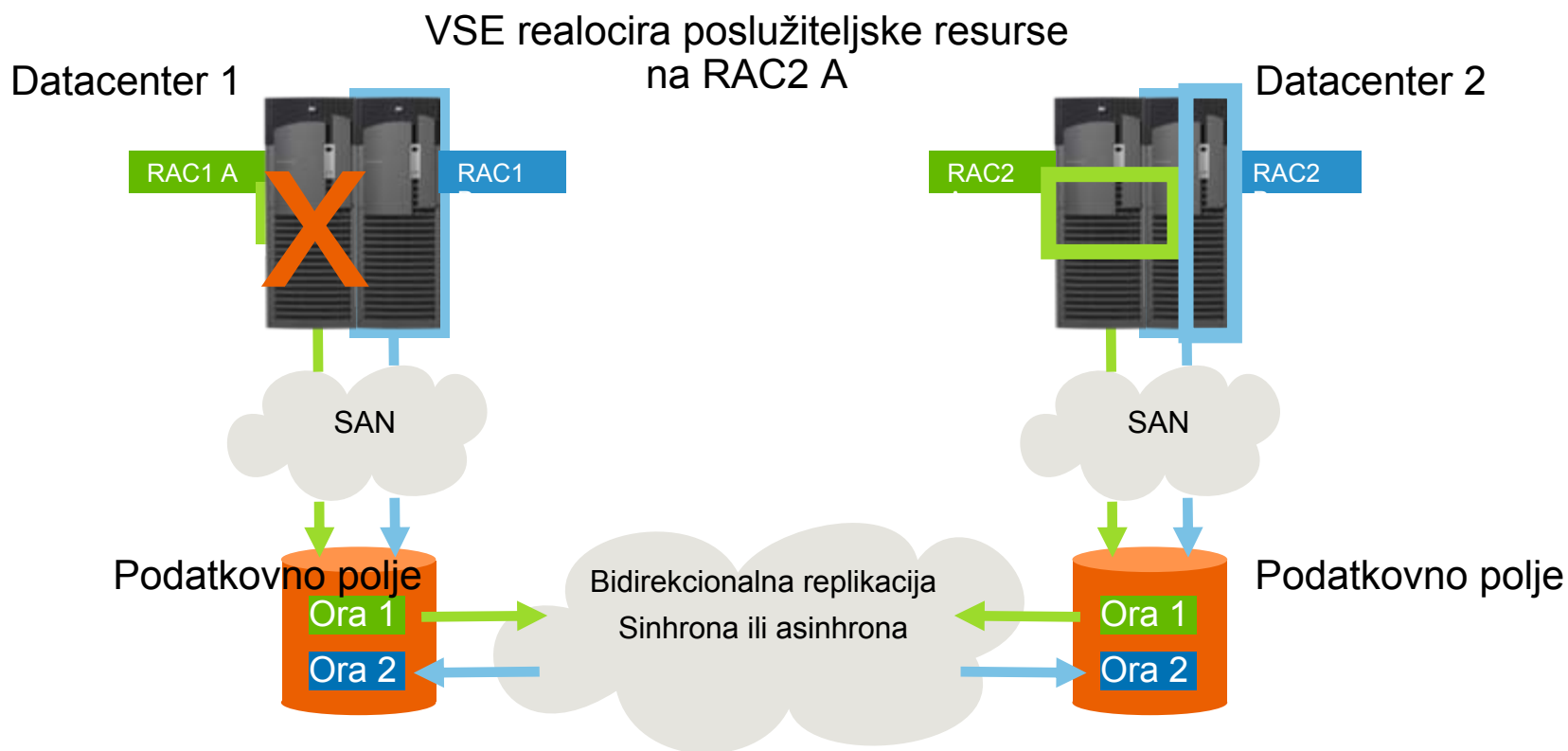
Disaster Tolerant produkti

HP vrednovan kao #1 u DTR rješenjima među svim Unix vendorima u protekle 3 godine

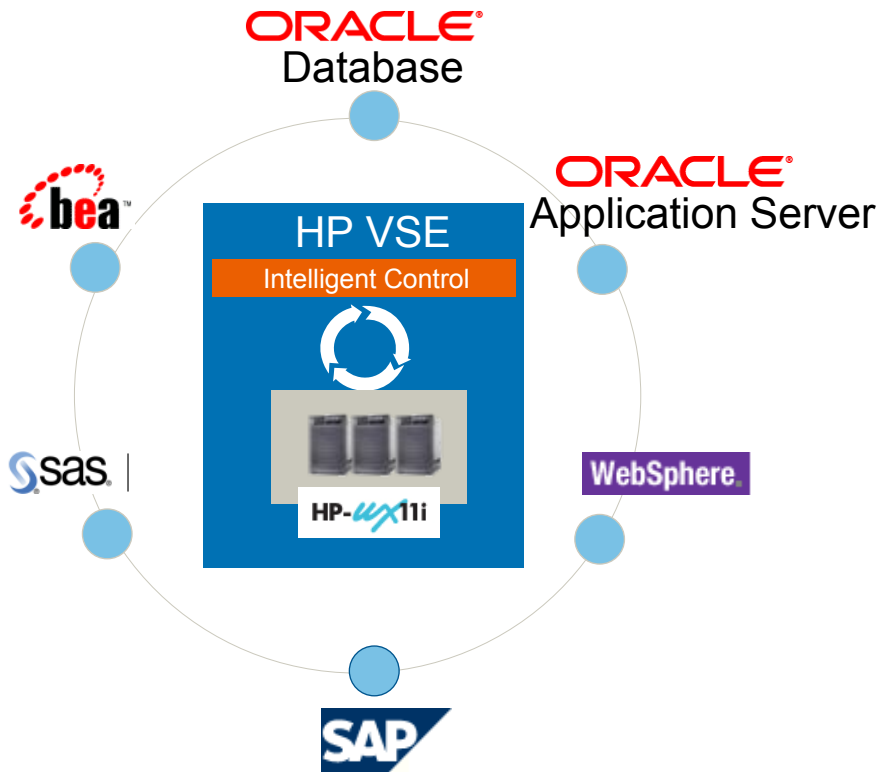


HA & VSE integracija

HP SGeRAC i Continentalclusters sa RAC



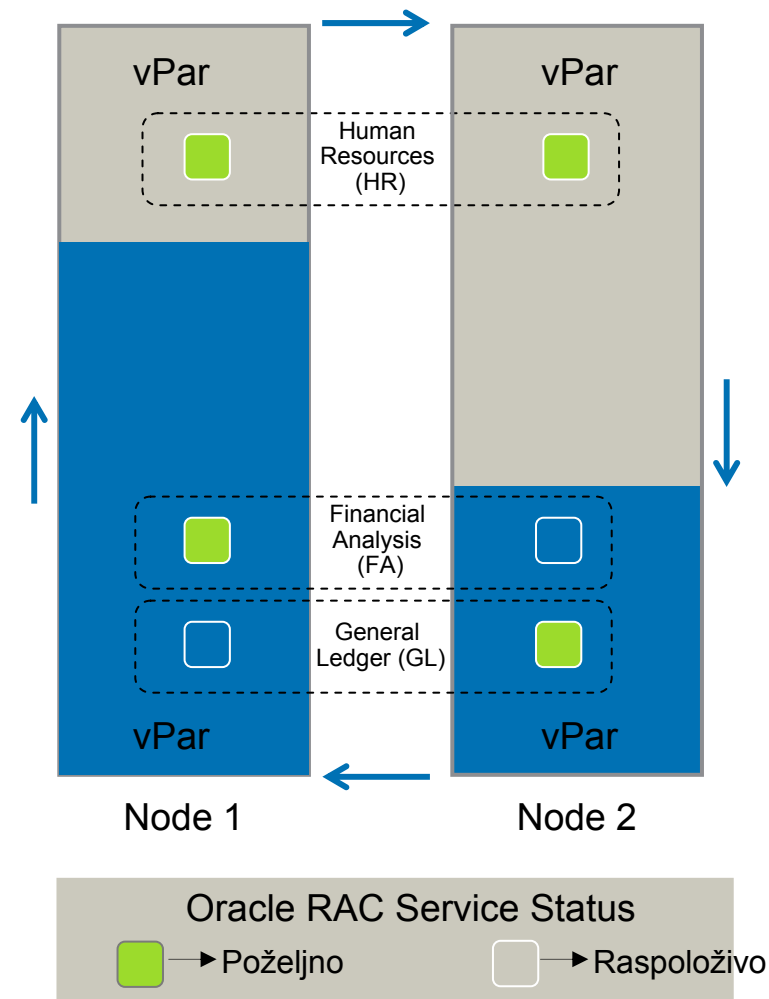
Gotova rješenja sa HP VSE



- Ugrađeni automatizam za sve aplikacije
 - Ne zahtijeva integraciju
- Prilagodba za nestandardne uvjete
- Toolkitovi za standardne aplikacije
- Best practices za brzo upogonjenje
 - Referentne arhitekture

Dinamička alokacija resursa sa HP VSE i Oracle RAC

| Opterećenje baze | VSE odgovor |
|---|---|
| Povećanje opterećenja uslijed sales reportinga | Migracija procesora sa HR na FA (čvor 1) |
| Nastavak porasta opterećenja uslijed sales reportinga | scale-out – aktivacija FA na čvoru 2 |
| Sales reporting aktivnost opada, opada i opterećenje baze | scale-back – deaktivacija FA na čvoru 2 i migracija procesora na čvoru 1 od FA na HR |



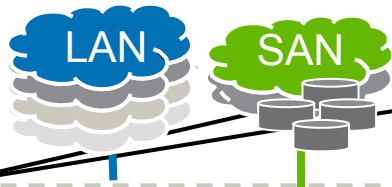
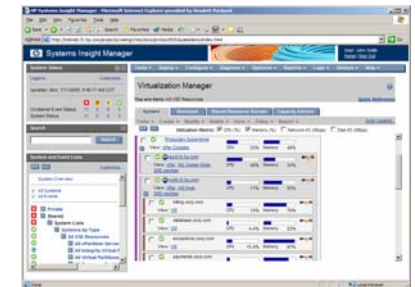
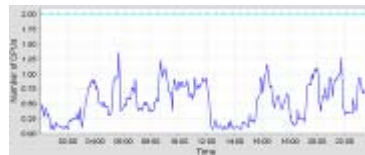
HP Virtual Server Environment na Integrity poslužiteljima



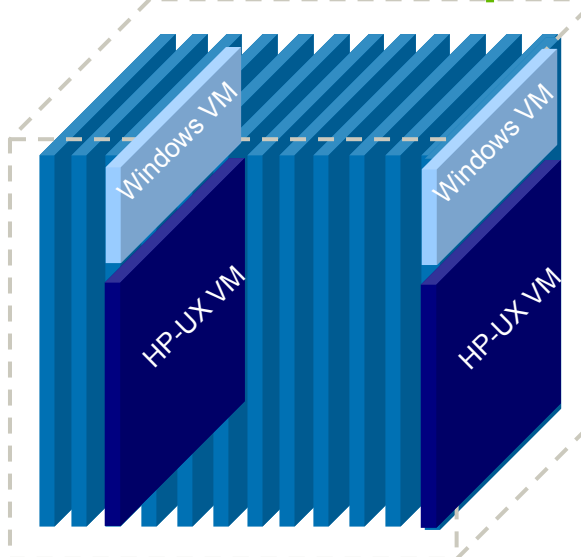
Serviceguard za failover i migraciju VM entiteta na blade poslužiteljima

Capacity Advisor za optimalnu raspodjelu tereta u virtualiziranom blade okolišu

Virtualization Manager za olakšanu navigaciju i vizualizaciju



Virtual Connect



Integrity Virtual Machines: konsolidacija

manjih okoliša na jednom blade poslužitelju

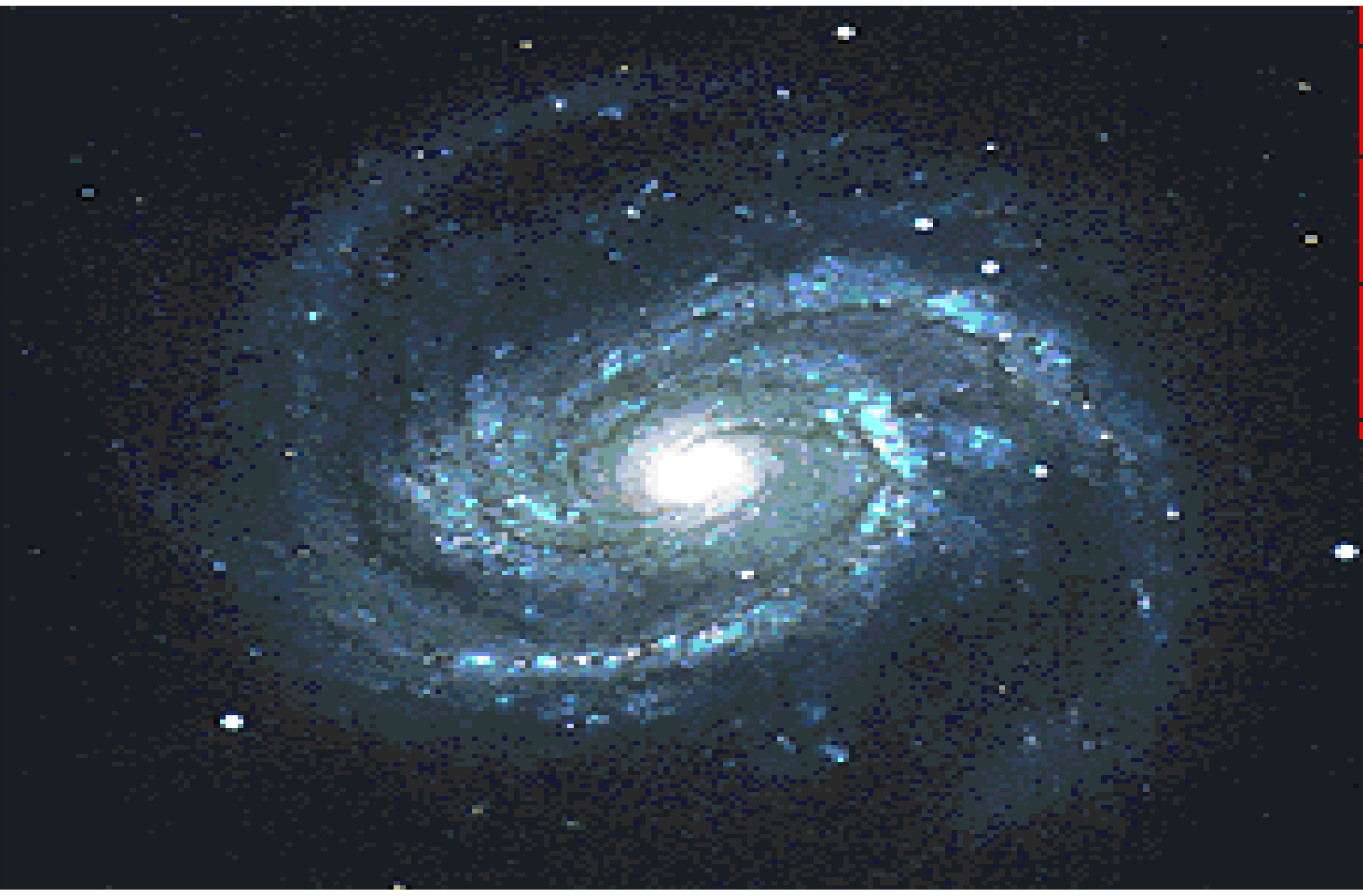


Secure Resource Partitions: sigurnosna izolacija aplikacija unutar jednog blejda ili VM-a



gWLM – alokacija resursa unutar polja blade poslužitelja

HP gotova rješenja za Oracle



HP gotova rješenja za Oracle

Omogućavaju brzo i stress-free pokretanje Oracle Database, Oracle RAC, Oracle Fusion Middleware, BI/DWH, JDEdwards i Oracle eBusiness Suite



- Itestirana HW infrastruktura za svako rješenje (poslužitelji, diskovna polja, mrežna oprema, sistemski SW)
- Potpuno dokumentirani, step-by-step plan upogonjenja
- Osigurana visoka raspoloživost korištenjem HP ServiceGuard i Continuous Access softvera
- Dinamičko pridjeljivanje resursa preko VSE i Integrity Essentials softvera
- Integrirani Oracle/HP upravljački alati

Oracle licenciranje - per processor

Oracle Database Enterprise Edition, procesorska metrika:

- Svi višejezgreni Intel (uključujući Itanium) i AMD procesori = 0,5 licenci po jezgri
- Svi ostali procesori (Power, SPARC, ...) = 0,75 licenci po jezgri

<http://www.oracle.com/corporate/pricing/databaselicensing.pdf>

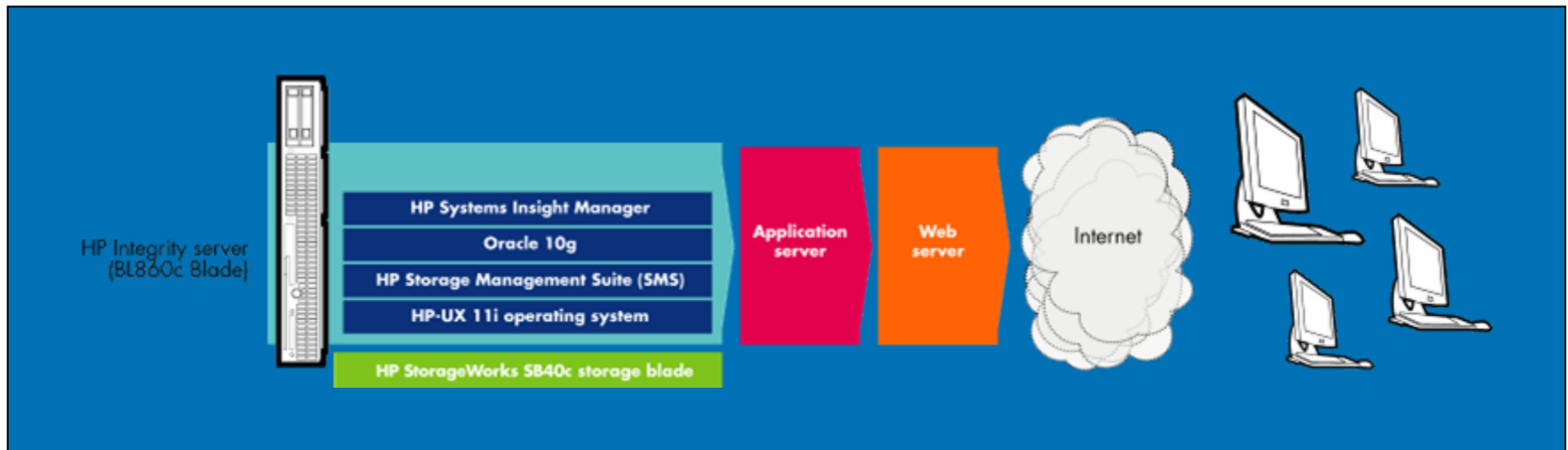
HP Integrity blade rješenja za Oracle¹³ baze podataka



- UNIX-class Oracle DB poslužitelj
 - Niska cijena
 - Lakoća upogonjenja
 - Jednostavnost administracije
- Cjelovito rješenje
 - Zasnovano na entry-class HP Integrity ili HP Integrity BladeSystem poslužiteljima
 - HP-UX 11iv3 operacijski sustav
 - Optimirano za korištenje Oracle 10g/11g softvera
 - HP Serviceguard Storage Management Suite (SMS) za ubrzanje rada baze

Arhitektura single-node rješenja

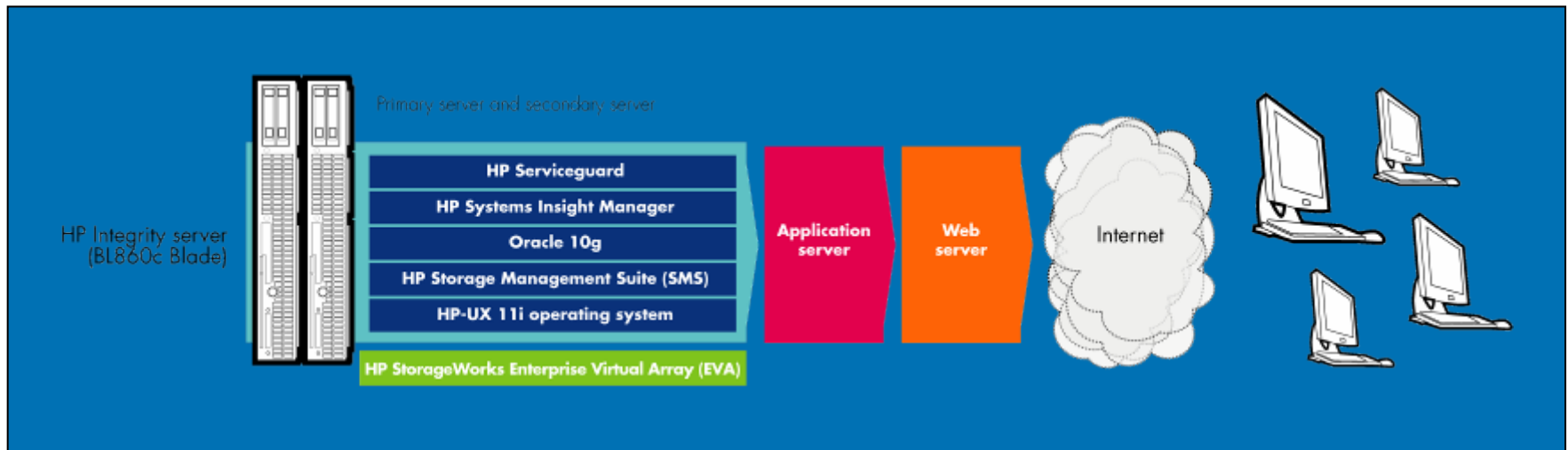
- HP BladeSystem c-class sa HP Integrity BL860c blade poslužiteljem - 2 ili 4 procesorske jezgre
- HP-UX 11iv3 operacijski sustav
- HP SMS softver



Arhitektura klaster rješenja



- HP BladeSystem c-Class sa dva HP Integrity BL860c blade poslužitelja—2 ili 4 procesorske jezgre svaki
- HP Serviceguard softver za visoku raspoloživost
- HP-UX 11i3 operacijski sustav
- HP SMS softver



Primjer:

- | | |
|--------------|---|
| Tko | • McKesson Corporation |
| Izazovi | • Povećanje performansi i smanjeni downtime RelayHealth Oracle RAC baze podataka |
| Rješenj e | • Dva klastera sa HP Integrity poslužiteljima • HP-UX 11i operacijski sustav • HP Serviceguard Storage Management for Oracle |
| Rezultat | • HP StorageWorks diskovna polja • Održavanje smanjeno sa 8 sati na 15 minuta • Planirani downtime smanjen 75% • ROI od US\$400,000 u trogodišnjem periodu |

Koliko košta u nekoliko primjera?



HP Integrity BL860c 1p/2c, 16GB RAM, HP-UX 11i v3, Storage Management for Oracle

Oracle Database Standard Edition

110K kn (cca 15K EUR)

Single server

2x HP Integrity BL860c 2p/4c, 32GB RAM, HP-UX 11i v3, Serviceguard, Storage Management for Oracle

2x Oracle Database Standard Edition incl. RAC

400K kn (cca 56K EUR)

RAC

HP Integrity BL860c 1p/2c, 16GB RAM, HP-UX 11i v3, Online JFS

Oracle Weblogic Server Standard Edition

68K kn (cca 9.5K EUR)

Application server

Pitanja?