COMMAND

your infrastructure like a visionary, not a functionary.

Easing System Management with OpenVMS

Mandar Chitale, Global Lead, Office of Customer Programs
Agenda

- Overview of System Management
- HP Insight Software Portfolio
- OpenVMS Classic Products
- OpenView Suite
- Interrelationships
- Summary
- Q&A
System Management
FCAPS Framework
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<tr>
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<td>• Data Recovery</td>
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## System Management Portfolio on OpenVMS

### Present
- OpenView Suite
- OpenVMS Classic
- HP Insight Software Portfolio

### v8.4
- Capacity Advisor
- gWLM
- Virtualization Manager
- Insight Control Power Management
- GiCAP

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HP Insight Software Portfolio
Challenges in infrastructure management

**Too costly?**
Sprawl is expensive – virtual servers are growing much faster than physical servers

**Too time consuming?**
73% of consolidations took a year or more

**Too unpredictable?**
Few servers have traditional high-availability clustering

**Too energy hungry?**
Data center electricity use has more than doubled since 2000
Challenges in infrastructure management

Enterprises have unused server capacity yet still can’t meet demand

Most reports put average utilization at approximately 30%

Yet these systems are unable to handle the load

Tremendous amount of unutilized capacity

Utilization at an actual HP customer
HP Insight Software portfolio

**HP SIM**
- View of all Infrastructure Resources
- Delivers services for Discovery, Monitoring and control

**HP Insight Dynamics – VSE suite**
- with orchestration & recovery options

**HP Insight Foundation suite**
- HP Systems Insight Manager and/or HP Insight Remote Support

**HP ID – VSE Suite**
- Analyze and Optimize Virtual and Physical servers

**HP Insight Control Suite**
- Simpler, Cost effective Server Management
- Rapid Deployment

**Integrated capabilities & unified console**
HP Systems Insight Manager

- Asset management
- Event & fault management
- Distributed task management
- Monitoring & reporting
- Role based access
- Remote support

Supported OSs and virtualized environments:
- NonStop Platform-specific plug-ins

Central Management Server

Network Clients
https://<cms name>:50000

Managed Systems

HP SIM users see real results

- Server to administrator ratio doubled
- Administration costs declined by 29%
- Downtime reduced 77%
Enabling complete infrastructure management with HP SIM

HP Systems Insight Manager

Insight Dynamics for Proliant

Insight Dynamics – VSE for Integrity

Embedded management

Insight Control management
HP Virtual Server Environment for HP OpenVMS Integrity Systems

Introducing OpenVMS as Virtual Server Environment (VSE) managed node

- Unlock the potential of your server infrastructure
  - Application peaks
  - Application Consolidation/Stacking
  - Share Spare Capacity

- Tools – Visualization, Capacity Planning, Workload Management

- Integrates with HP SIM

- Centralized Management

- Simplify Infrastructure Management

---

1 Support with OpenVMS v8.4
2 Support with v8.4 + Patch
Integrity Virtual Machine Manager (VMMGR)

Key features

- Graphical view of virtual to physical network & storage
- VM configuration including create, start, reset, stop, & delete
- View all VMs in a host including utilization information
- Available from HP-UX host System Management Homepage (SMH)
- Seamless integration with Virtualization Manager (Vman)
System Management Homepage (SMH)

- Colour-coded status of system components
- Drill-down for more details
- Browser-based GUI
- Easy drill-down from HP SIM to SMH
Provisioning with HP SIM

Provisioning with HP SIM

• HP SIM can discover all Blades in the enclosure
• Can select Blade to run each Operating System
• Automatic provisioning of Blades or Integrity servers (Limited Support)
• Up to eight Systems at a time

Requires either:

• OpenVMS node running Infoserver software
  OR........

• PC and vMedia to serve the DVD
## What’s new in provisioning?

<table>
<thead>
<tr>
<th>Version</th>
<th>Features</th>
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</thead>
</table>
| **4.1** | • Provision OpenVMS 8.4 on next generation HP Integrity BL8x0c i2 servers and rx2800 i2 servers  
• Requires HP SIM 6.1 for provisioning on BL8x0c i2 servers  
• Requires HP SIM 6.2 for provisioning on rx2800 i2 servers |
| **4.0** | • Provision OpenVMS 8.4 on currently supported servers  
• Configure HP OpenVMS TCP/IP on currently supported servers  
• Requires HP SIM 6.0 |
| **Pre-4.0** | • Automated OpenVMS install or upgrade from InfoServer  
• Automated OpenVMS install or upgrade from vMedia  
• Automated OpenVMS license (PAK) install  
• Supported servers: rx3600, rx6600, BL860c, BL870c |
Provisioning architecture

NOTE: OpenVMS InfoServer and the target server must be in the same LAN.
OpenVMS 8.4 deployment using HP SIM

NOTE: Provisioning OpenVMS 8.4 on HPVM will come in future.
Configure OpenVMS TCP/IP using HP SIM

- Configure DHCP client or with static IP address
- Configure 8 servers simultaneously
- Configure up to one LAN interface per system
- IPv4 supported at this time
- OpenVMS TCP/IP 5.6 or later to be installed
SNMP based management agents

• Discovered by HP Systems Insight Manager (SIM)

• Provides information on
  – System
  – System board
  – System resources
  – Software inventory
  – NIC
  – LAN
  – Cluster

• Being replaced by WBEM services and providers
WBEM services and providers

• Providing WBEM services based on *Pegasus* open source implementation
  
  – WBEM Services = CIM server + providers
  
  – Providers available show the status of the different components
Web-based Based Enterprise Management (WBEM)

- Industry standard
- Management across multiple platforms and operating systems
- Common Information Model (CIM)
- Web-access to management data and managed elements
- Enables Management Applications

How many processes are running on Congo? How may users are logged on to Thames? How many processors are available on Nile?
WBEM solutions for OpenVMS

- **WBEM Services**
  - Management Framework (CIM Server)
  - Built-in WBEM providers

- **WBEM Providers**
  - Monitors core hardware of the system
  - Monitors system event log
  - Monitors system resource utilization
## What’s new in WBEM?

<table>
<thead>
<tr>
<th>Version</th>
<th>Features</th>
</tr>
</thead>
</table>
| 8.4 with i2 servers | - WBEM Services 2.9-9 and WBEM Providers 2.2-3  
- Adds support for HP Integrity blades BL8x0c i2 servers and rx2800 i2 servers  
- Requires HP SIM 6.1 for BL8x0c i2 servers  
- Requires HP SIM 6.2 for rx2800 i2 servers |
| 8.4 | - WBEM Services 2.9-6  
- WBEM Providers 2.0-4 (Adds support for cell-based systems, HPVM and single-partition systems rx1620, rx2600, rx4640)  
- Requires HP SIM 6.0 or later  
- Available with OpenVMS 8.4 OE media |
| 8.3-1H1 | - WBEM Services 2.9-1  
- WBEM Providers 1.7-16 (Supports on BL860c, BL870c, rx3600, rx6600)  
- Requires HP SIM 5.2 or later |
WBEM for OpenVMS V8.4 running on Integrity VM

- OpenVMS V8.4 can run as a guest inside Integrity VM
- HP-UX WBEM Providers monitor core hardware on VM host
- WBEM Providers on VM host and VM guest required.
- VM Provider on HP-UX host needed to discover VM guests in HP SIM.
Example: Enclosure with BL890c i2 in HP SIM
Example: Integrity BL890c i2 home page in HP SIM
Example: OpenVMS Guests hosted on VM Host
Example: HP-UX System hosting OpenVMS Guest
Insight Control Power Management (IPM)

- Monitor and Manage Power Consumption
- Policy-based power and thermal management
- Works in cooperation with OpenVMS
- Supports HP Integrity servers (Except cell Based) and blades
- HP Proliant Servers and blades

Combined with IPM, Capacity Advisor will get detailed power readings, and then find the relationship between the use of the system and the power consumed. Capacity Advisor can use that to predict power needs in the future.

Power Control
- Taken care by OpenVMS
- New System service
- SYSGEN Parameters
- Can also be managed by EFI Prompt
- iLO Web Interface

Power Monitoring
- Not controlled by OpenVMS
- Managed by System Platform
- EFI Prompt
- iLO Web Interface
Web Based Enterprise Services – WEBES

• Rules based diagnostic tool
  – Proactive diagnosis of failing hardware
  – Automatic indication of failing hardware
  – Electronic “phone home” capabilities

• Event Log Monitoring Collector (ELMC) on OpenVMS
Web Based Enterprise Services – WEBES

- Windows Integrity
- HP-UX
- HP 9000 & Integrity
- Tru64 & OpenVMS AlphaServer
- Linux Integrity
- Director Agent
- IBM xSeries (Blades)
- Storage servers, switches, SANs, I/F, appliances
- SNMP
- HTTPS
- WBEM
Storage essentials (SE)
HP Insight Software – Quick recap

- CMS (Windows)
  - HP-SIM
    - Provisioning
    - ID-VSE

- Infrastructure
  - OpenVMS Node
    - gWLM Agent
    - WBEM
  - OpenVMS Node
    - gWLM Agent
    - WBEM
  - HP-UX (VM Host)
    - WBEM
    - OpenVMS VM Guest
    - OpenVMS VM Guest

- Clients
OpenVMS Classic products
OpenVMS classic products

**Availability Manager**
- Performance and resource analysis in Real-time
- Data Collector, Server and Analyzer
- Support for WAN and Clusters using IPCI
- Support for 32 bit Windows 7 and Windows server 2008

**ECP Performance Analyzer**
- Data Collector (VAX and Alpha only)
- Performance Analyzer
- Historical Performance Analysis

**Performance Data Collector (TDC)**
- Native Data Collector
- Support for Multiple agents

**Management Station**
- Single GUI based system administration
- Ability to manage multiple OpenVMS systems/clusters
CockPitMgr for OpenVMS

Monitors the entire OpenVMS production environment (systems, clusters, network, storage, logfiles,…)
Runs on a dedicated OpenVMS system
Features
  - System Monitor (processes, disks, shadow sets, queues….)
  - SNMP-based monitoring tools for network and storage devices
  - Security event monitor
  - Performance degradation monitor
  - Configuration and change management
  - Job scheduler
  - Event notification via event console, GUI, SMS, and web browser
OpenView product suite
HP OpenView Suite

Operations Manager Agent

Smart Plug-Ins

OpenView Performance Agent (OVPA)

- Data collection, logging and alarming component
- Detects alarm conditions on resources across the system
- Provides response time measurements
- Support Network and Database measurements
- Uses Performance Data Collector (TDC)
HP Operation Manager with OpenVMS Operation Agent

OM Server (HP-UX/Solaris/Linux/Windows)

OpenVMS Node

Agent Deployment
Certificate

Certificate Request

Secure Communication

Server addition after Agent Installation

OpenVMS Node/VM Guest

Certificate
Policies

Operation Agent Stack
SPI-Processes
System management tools – Usage and interrelationships
System management framework

**System Management**
- Control and monitoring of system or cluster
- Managing of system resources
- Execution of administrative and operational tasks

**Enterprise Management**
- Manage large heterogeneous environments
- Manage every critical resource
- Optimize system/network availability
- Improve overall performance and predict system outages

**OpenVMS Offering**
- HP Insight Software Portfolio
- OpenView Suite
  - HP HTTPS Operations Agent for OpenVMS
  - HP OV Performance Agents (OVPA)
  - HP SPI Oracle Rdb VMS
- Partner with CA and BMC

**Infrastructure Management**
- Management from a single point of control
- Hardware and software inventory
- Detect, isolate, and report hardware failures
- Install/Upgrade OpenVMS

**Data Center Management**
- Control/monitoring of medium to large OpenVMS environments
- Monitoring of:
  - System health
  - Consoles
  - Performance
  - Scheduling/workloads
  - Network
  - Storage
System management tools interrelationships

- Provisioning tools
- SMH
- WBEM
- VSE Mgmt Software
- HP SIM
- HP OpenView
- Perf. Tuning /Monitoring
- HP VM
- OA/iLO
- Utility Pricing Solns (iCAP, TiCAP, GiCAP)
- Management Agents
- Libraries
- WBEM Providers
- WBEM Providers
- Providers, Indications
- SNMP Sub agents
- Property pages, Indications display
- VM Provider
- Fault Mgmt
- DPR
- WEBES
Summary

• System Management tools are available to cater to different types of Customer Environments

• There are continued enhancements in this space
  – VSE Suite
  – OpenView Suite

• Better integrated with HP Offerings on other Operating systems

• Currently planning for v.Next
Resources

For any further queries contact:

• Product Manager
  – Ashok Kumar (ashok.kumar13@hp.com)

  Or

• Office of OpenVMS Programs (openvms.programs@hp.com)
Q&A
THANK YOU
Virtual Server Environment views

- **Visualization**
  - Perspectives for Physical, Virtual, Logical, Blades, Events
  - Physical, Virtual, and Logical Server Management operations*

- **Workload**
  - Simple server-wide workload summary
  - gWLM partition-specific or process(es) or applications

- **Shared Resource Domains**
  - gWLM – Real-time, policy-based resource allocation for workloads within, among, or across partitioned domains

- **Capacity Advisor**
  - VSE-aware advising and scenario analysis tools
  - Detailed utilization data

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*Present in v8.4*
HP Insight Software portfolio

Integrated suites

Targeted functionality

HP Insight software products

HP Insight Control suite

HP Insight Dynamics – VSE suite
with orchestration & recovery options

HP Operating Environments
... including HP Virtual Server Environment suite

HP Insight Foundation suite with HP Systems Insight Manager and/or HP Insight Remote Support

Integrated capabilities & unified console
HP Systems Insight Manager

- Asset management
- Event & fault management
- Distributed task management
- Monitoring & reporting
- Role based access
- Remote support

HP SIM users see real results

- Server to administrator ratio doubled
- Administration costs declined by 29%
- Downtime reduced 77%

Supported OSs and virtualized environments

- Microsoft
- VMware
- Citrix

Platform-specific plug-ins

- Deployment
- Workload management
- Others
HP Virtual Server Environment for HP OpenVMS Integrity Systems

Introducing OpenVMS as Virtual Server Environment (VSE) managed node

HP Virtual Server Environment - OpenVMS

- Unlock the potential of your server infrastructure
- Application peaks
- Application Consolidation/Stacking
- Share Spare Capacity
- Tools - Visualization, Capacity Planning, Workload Management
- Integrates with HP SIM
- Centralized Management
- Simplify Infrastructure Management

1 Support with OpenVMS v8.4
2 Support with v8.4 + Patch
Virtual server environment views

The Virtualization Manager presents four views

- **Visualization**
  - Perspectives for Physical, Virtual, Logical, Blades, Events
  - Physical, Virtual, and Logical Server Management operations*

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<td>208 Kib/s</td>
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<td>3 %</td>
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<td>5 %</td>
<td>0 Kib/s</td>
<td>3 Kib/s</td>
</tr>
<tr>
<td>mqtb2.ind.hp.com</td>
<td>Server</td>
<td>mqtb2.ind.hp.com</td>
<td></td>
<td>0 %</td>
<td>25 %</td>
<td>0 Kib/s</td>
<td>114 Kib/s</td>
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<tr>
<td>15.146.157.172.2</td>
<td>Integrity VM</td>
<td>15.146.157.221</td>
<td></td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>15.146.157.202</td>
<td>nPartition</td>
<td>15.146.157.202</td>
<td></td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
</tbody>
</table>
The Virtualization Manager presents four views:

- **Visualization**
  - Perspectives for Physical, Virtual, Logical, Blades, Events
  - Physical, Virtual, and Logical Server Management operations*

- **Workload**
  - Simple server-wide workload summary
  - gWLM partition-specific or process(es) or applications

- **Shared Resource Domains**
  - gWLM – Real-time, policy-based resource allocation for workloads within, among, or across partitioned domains

- **Capacity Advisor**
  - VSE-aware advising and scenario analysis tools
  - Detailed utilization data

* Logical Server Management is not supported for OpenVMS v8.4
Virtual server environment views

The Virtualization Manager presents four views:

- **Visualization**
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### List of Planning Scenarios

<table>
<thead>
<tr>
<th>Scenario Name</th>
<th>System List</th>
<th>Scenario Description</th>
<th>Owner</th>
<th>Modify Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>guest-ims_rajendra</td>
<td>mgbl2</td>
<td>for testing with more systems</td>
<td>Administrator</td>
<td>Tue, 9/22/2009 5:06 PM IST</td>
</tr>
<tr>
<td>guest3-rajendra</td>
<td>mgbl2,mgbl1</td>
<td>for testing</td>
<td>Administrator</td>
<td>Tue, 9/22/2009 4:58 PM IST</td>
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<tr>
<td>Guest3-testing</td>
<td>mgbl2,mgbl1...</td>
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<tr>
<td>guest_rajendra1</td>
<td>mgbl2</td>
<td>final testing</td>
<td>Administrator</td>
<td>Tue, 9/22/2009 5:52 PM IST</td>
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<tr>
<td>Host testing</td>
<td>15.146.235.115</td>
<td>rajendra_testing</td>
<td>Administrator</td>
<td>Wed, 8/6/2009 9:57 PM IST</td>
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<td>mgbl2</td>
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<td>mgbl1ft</td>
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<td>MGTBL1</td>
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<td>this is for what-if scenario...</td>
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<td>TESTING</td>
<td>Administrator</td>
<td>Thu, 8/6/2009 1:15 PM IST</td>
</tr>
</tbody>
</table>
What does GWLM do?

- **Monitors** the CPU resource demands of managed workloads
- **Reallocates** CPU resources in accordance with user assigned policies
- **Migrates** CPU resources per the allocation using the capabilities of HP partitioning technologies
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Storage Essentials (SE)

- SE CIM Extension (CIME) on OpenVMS Host
  - Read Only Agent – No Host Management
- SE Database Viewers
  - Oracle DB
  - Cache DB

- Host topology
- Host details
  - HBA, HBA ports and target Mappings
  - File system
  - Processor and memory
  - Disk drives, partitions and multipathing
- Capacity manager
- Performance manager
- Application viewer
Storage essentials (SE)

- SE CIM Extension (CIME) on OpenVMS HostWorks in cooperation with OpenVMS
  - Read Only Agent – No Host Management

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  - Oracle DB
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- Host Details
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Storage essentials (SE)
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Storage essentials (SE)
HP OpenView Suite

Operations Manager Agent

Smart Plug Ins

OpenView Performance Agent (OVPA)
HP OpenView Suite

Operations Manager Agent

Smart Plug-Ins

OpenView Performance Agent (OVPA)

Smart Plug-Ins (SPI)

- VMS SPI
  - Security SPI
  - System SPI
  - Performance SPI
- RTR SPI
- Rdb SPI
HP OpenView Suite

Operations Manager Agent

Smart Plug-Ins

OpenView Performance Agent (OVPA)
- Data collection, logging and alarming component
- Detects alarm conditions on resources across the system
- Provides response time measurements
- Support Network and Database measurements
- Uses Performance Data Collector (TDC)
System management framework

**Infrastructure Management**
- Management from a single point of control
- Hardware and software inventory
- Detect, isolate, and report hardware failures
- Install/Upgrade OpenVMS

**OpenVMS Offering**
- HP Insight Software Portfolio
  - Provisioning using HP SIM
  - SNMP-based Management Agents
  - HP WBEM solutions
  - WBEM services
  - WBEM providers
Data Center Management
• Control/monitoring of medium to large OpenVMS environments
• Monitoring of
  • System health
  • Consoles
  • Performance
  • Scheduling/workloads
  • Network
  • Storage

OpenVMS Offering
• HP Insight Software Portfolio
  • Capacity Advisor
  • Utility Pricing Solutions
  • gWLM
  • Virtualization Manager
• OpenView Suite
• 3rd party products
System management framework

**Enterprise Management**
- Manage large heterogeneous environments
- Manage every critical resource
- Optimize system/network availability
- Improve overall performance and predict system outages

**OpenVMS Offering**
- HP Insight Software Portfolio
- OpenView Suite
  - HP HTTPS Operations Agent for OpenVMS
  - HP OV Performance Agents (OVPA)
  - HP SPI Oracle Rdb VMS
- Partner with CA and BMC