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# Reach for the Clouds with Oracle VM

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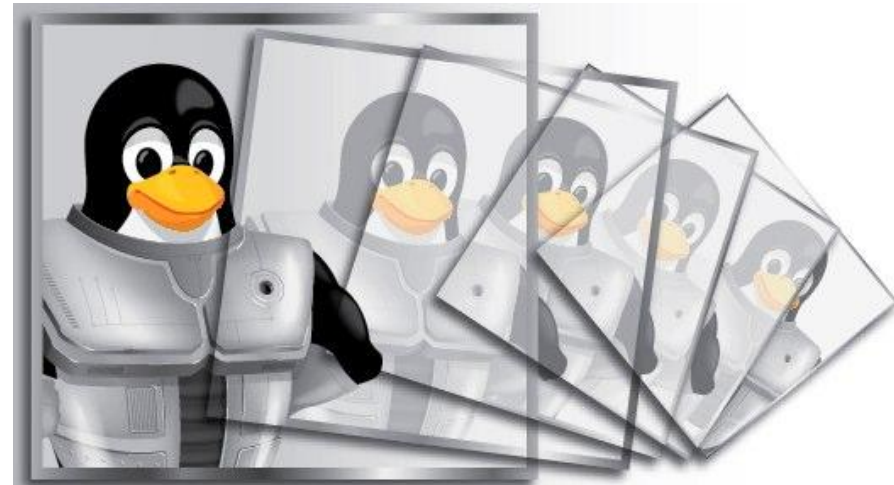
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- The opinions expressed in this presentation do not necessarily represent those of Red Rock Consulting or UXC



# Agenda

- Overview
- Planning your Oracle VM platform
- Capacity Planning
- Installation best-practices
- Managing your Server Pools
- High Availability
- Management Tools
- VM Templates
- Backup & Recovery
- What To Be Aware Of
- New Features in Oracle VM 3.0
- Useful Resources



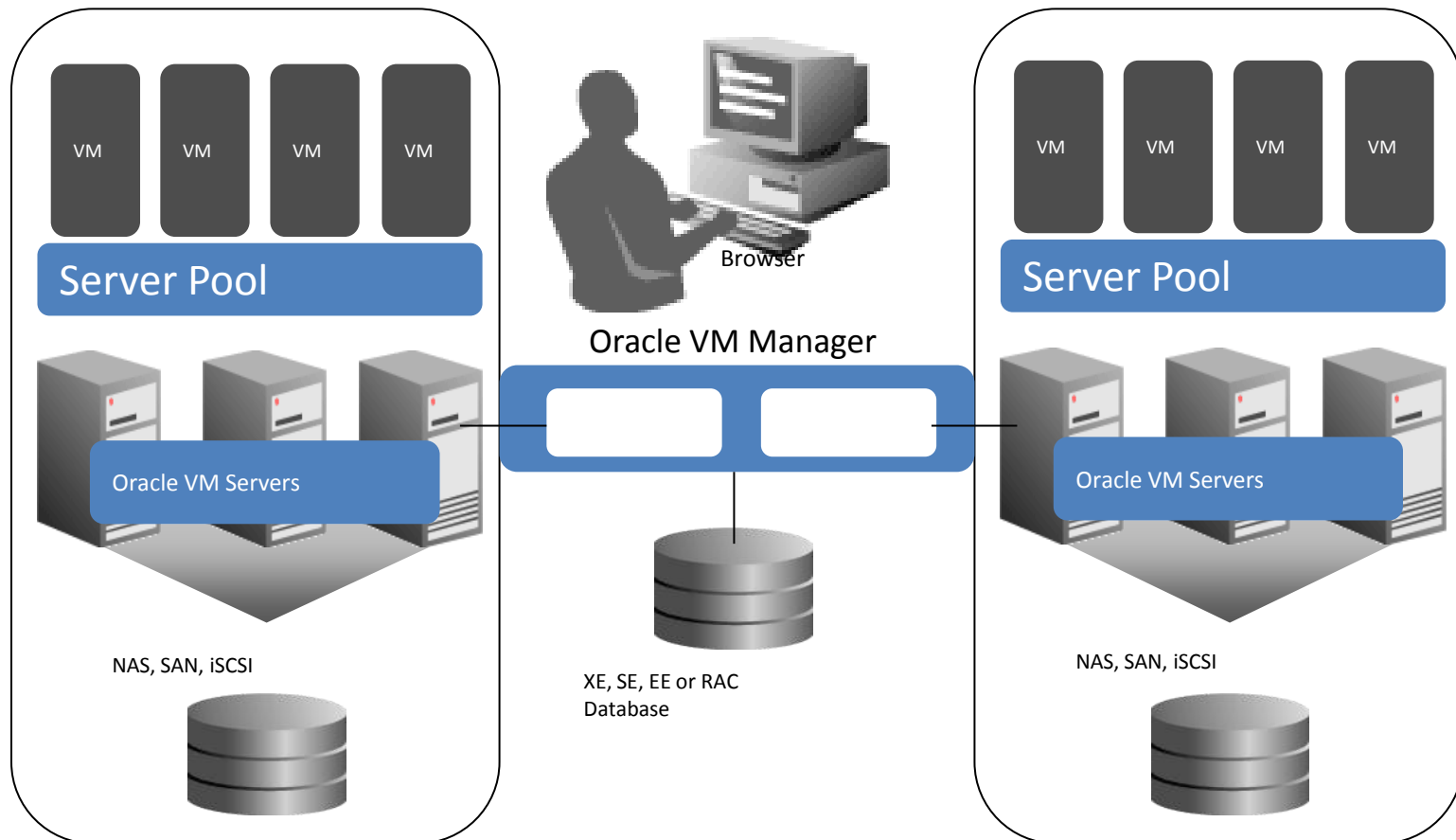


# Cloud Computing & Virtualisation

- Virtualisation is a key technology behind the “cloud” movement
- Abstraction of underlying hardware
- “Infrastructure as a Service”
- Benefits:
  - Increased agility in matching resources to the changing needs of your workload
  - Performance
  - Availability
  - Security
  - Stability
- Oracle VM is the only x86 virtualisation technology certified for Oracle products



# Oracle VM Technical Overview

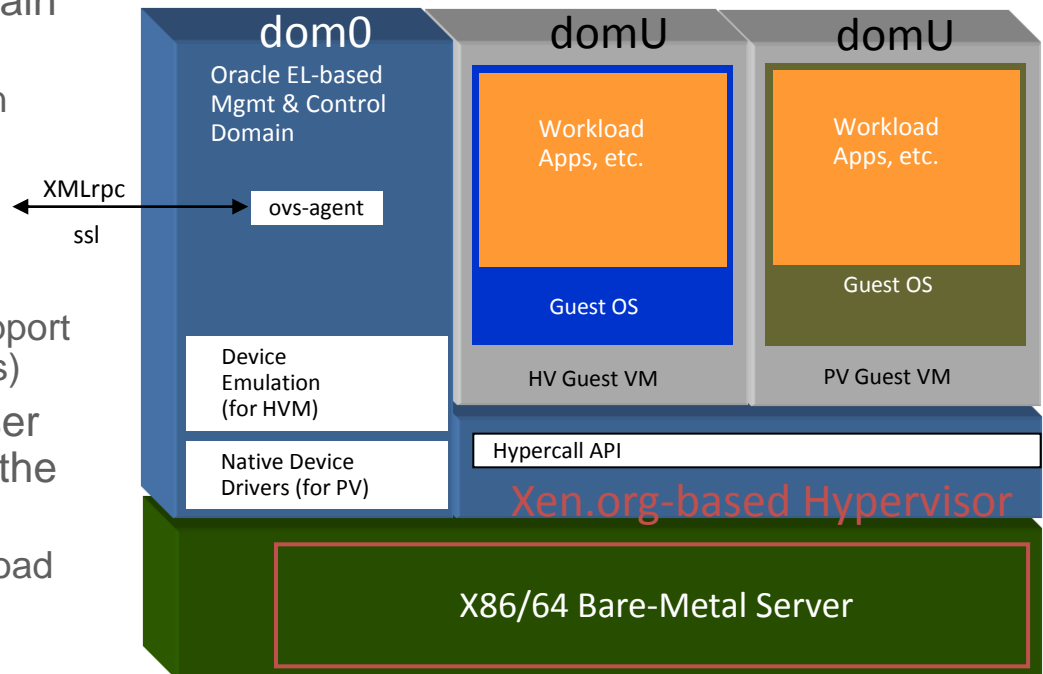


This slide is based on material from Wim Coekaerts, Vice President, Enterprise Linux and Oracle VM Development at Oracle Corporation



# Oracle VM Technical Overview

- “**Dom0**” is a privileged management and control domain typically containing...
  - A thin control kernel based on Oracle Enterprise Linux
  - Open / native Linux device drivers
  - Oracle VM Manager agent
  - Device emulation code to support non-PV guests (e.g. Windows)
- “**DomU**” is an unprivileged/user domain that is a guest VM on the server
  - Run any normal server workload
  - One domU is not aware of another





# New Features in Oracle VM 3.0

- A much better UI
- Thin Cloning
- Storage Connect Plugins
- Cloud self-service through Oracle Enterprise Manager 12c

The screenshot displays the Oracle Enterprise Manager 12c Cloud Control 12c interface. The main dashboard is titled 'Enterprise Summary' and includes several key sections:

- Overview:** Shows 'Targets Monitored 69' and a pie chart for 'Targets with Status 82'. The chart indicates 83% (green) and 17% (red). A legend shows 'Down(5)' and 'Up(43)'.
- Incidents:** Shows 'Open 30' and 'Updated in last 24 hours 6'. A table lists categories: Availability (9), Performance (-), Security (-), and Others (21).
- Problems:** Shows 'Open 5' and 'Without Service Request 5'. A summary for 'Jobs' shows 'Suspended Executions (last 7 days) 0', 'Problem Executions (last 7 days) 10', and 'Action Required Executions (last 7 days) 0'.
- Inventory and Usage:** A table lists platforms and their host counts and OS patches.

Platform	Hosts	OS Patches
Enterprise Linux Server release 5.5 (Carthage)	3	No
Enterprise Linux Server release 5.7 (Carthage)	2	No
Enterprise Linux Server release 5.2 (Carthage)	2	No
Enterprise Linux Server release 5.6 (Carthage)	1	No
- Compliance Summary:** Shows 'Compliance Frameworks' and 'Compliance Standards'. A table lists 'Name', 'Target Evaluations', 'Violations', and 'Average Compliance Score (%)'. It currently shows 'No data to display'.
- Least Compliant Targets:** A table lists target names, types, and compliance scores.

Target Name	Target Type	Standard Evaluations	Violations	Average Compliance Score (%)
db-archer.af.mokum.com	Host	0 0 1 0 0 0	0 0 0 0 0 0	100
cmn-acdly.af.mokum.com	Host	0 0 1 0 0 0	0 0 0 0 0 0	100
yum-44k.af.mokum.com	Host	0 0 1 0 0 0	0 0 0 0 0 0	100
vpe-odk.af.mokum.com	Host	0 0 1 0 0 0	0 0 0 0 0 0	100
cmn-tuvok.af.mokum.com	Host	0 0 1 0 0 0	0 0 0 0 0 0	100





## 3 Questions

- What are you trying to achieve with virtualisation?
  - Consolidation?
  - Flexibility & Agility?
  - High Availability?
  - Efficiency?
- Where are your pain points?
  - Hardware cost?
  - Management overhead?
  - Licensing costs?
  - Agility?
- What is your organisation's strategy going forward?
  - In-house/outsourced management?
  - Infrastructure as a Service?





# Capacity Planning

- Size as though you were sizing physical servers
- Consider where your bottlenecks are:
  - CPU can be over-allocated
  - Memory cannot be over-allocated
  - Shared network interface
  - Shared I/O path
- Consider the type of workload you have
  - Is it CPU intensive?
  - Is it memory intensive?
  - Is it I/O intensive?
- Try to blend different workloads where possible





# Installation Best Practices

- Installation is quite simple – just follow the user guide
- **Beware:** memory for dom0 incorrectly calculated
- Keep dom0 “clean”
- Automate your install and configuration where possible
  - Kickstart (or Enterprise Manager Deployment Pack)
  - Puppet (or similar orchestration/config management tool)
- Install updates
- Secure your ovs-agent
- “Other” normal Linux security considerations



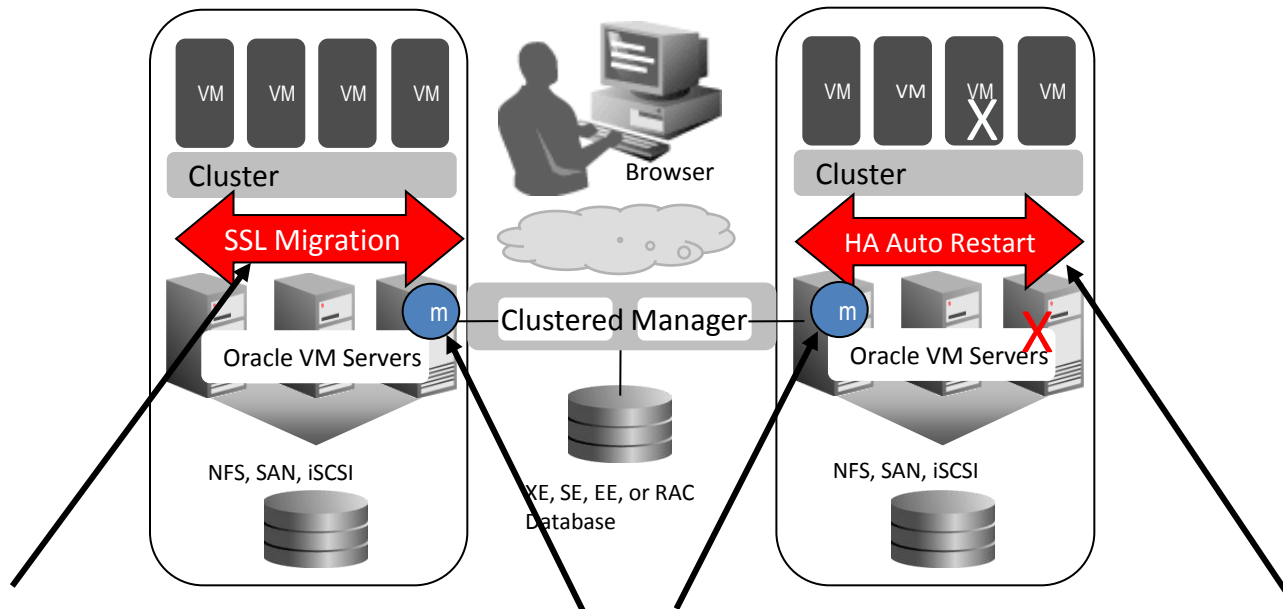


# Managing your Server Pools

- Oracle VM 2.x: expect to dive into dom0
  - Management tools can't do disk/network configuration and setup
  - NIC Bonding
  - VLANs
- Oracle VM 3.x: don't touch dom0 after install
  - "Everything" can be done using the manager



# High Availability Features



## Planned Events:

- E.g. maintenance or upgrades
- Secure Live Migration
- Zero interruption

Pool Masters assure  
Secure Migration or  
HA restarts complete  
in the event of a  
Manager outage

## Unplanned Events

- E.g. Server or VM failure
- HA Auto-restart in pool
- No manual intervention



# High Availability/DR

- HA uses OCFS2
- Tune the following parameters for failover tolerance (not in the documentation):
  - O2CB\_HEARTBEAT\_THRESHOLD
  - O2CB\_IDLE\_TIMEOUT\_MS
- Very sensitive to network/disk interruptions
- Implications for licensing of applications/software
  - Can't use Live Migration
- No VM-level disaster recover functionality



# Management Tools

- Oracle VM Manager vs. Oracle Enterprise Manager Grid Control
  - Free vs. “all of enterprise” management & monitoring tool
- Management tools have constraints
  - Must do things a certain way
  - Quirks/bugs can catch you out
- Interesting things coming in OEM Grid Control 12c
  - Self Service
  - Chargeback/Billing



# VM Templates

- Oracle supplied VM templates
  - Download preconfigured from Oracle E-Delivery
  - E.g. 2-node Oracle RAC 11.2.0.2 cluster up and running in 40 minutes
- Oracle VM Template Builder
  - Gets you to the OS level
- Manual templates

The screenshot shows the Oracle Software Delivery Cloud interface. At the top, the Oracle logo is displayed on a blue background. Below the logo, the text "Software Delivery Cloud - Oracle Linux and Oracle VM" is visible. To the right of this text are links for "Sign Out", "Cloud Portal (Oracle Linux/VM)", "Language (English)", and "FAQs". A progress bar with three steps is shown: "Terms & Restrictions" (unselected), "Search" (selected), and "Download" (unselected). Below the progress bar, the "Media Pack Search" section is visible. It includes the instruction "Select the Product Pack and Platform and click 'Go'." and two dropdown menus: "Select a Product Pack" with "Oracle VM Templates" selected, and "Platform" with "x86 64 bit" selected. A "Go" button is located below the dropdowns. At the bottom left, the word "Results" is displayed.





# Demo

1. Quickly create an Oracle VM database VM from template
2. Take a snapshot to try out changes
3. Create a template from an existing VM



# Backup & Recovery

- Virtual Machine Servers
  - Don't bother backing up – quicker to rebuild than restore
  - Back up VM templates, ISOs etc. on a management host
- Guest VMs
  - Treat VMs as though they were physical servers
  - No backup solution at the virtualisation layer





# Some Things To Be Aware Of

- Oracle VM Template Builder generating insecure templates
- Older versions of ovs-agent – security, stability
- Intel ixgbe driver in Oracle VM 2.2.x
- Lack of Jumbo Frame support – considerations for RAC
- File-backed disk performance poor compared to block-backed
- VMs in inconsistent state in Enterprise Manager



# Useful Resources

- Underground Oracle VM Manual
  - <http://itnewscast.com/underground-oracle-vm-manual>
- Video Series on Oracle VM 3.0 and Cloud Control
  - <http://www.oracle.com/goto/oll>
- Free training courses for Oracle Partners
  - [https://competencycenter.oracle.com/opncc/spec\\_status.cc?spec\\_id=1121](https://competencycenter.oracle.com/opncc/spec_status.cc?spec_id=1121)



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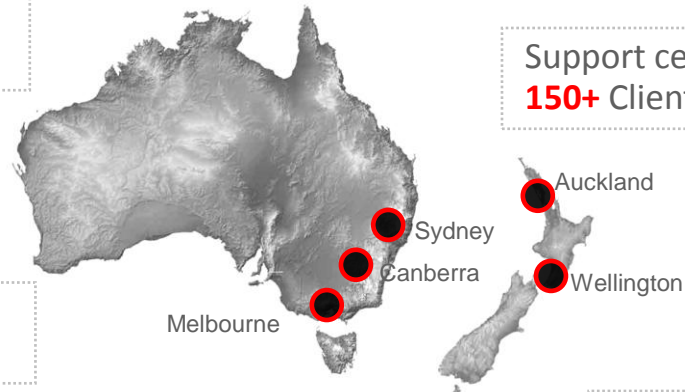
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