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Reach for the Clouds with Oracle VM

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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
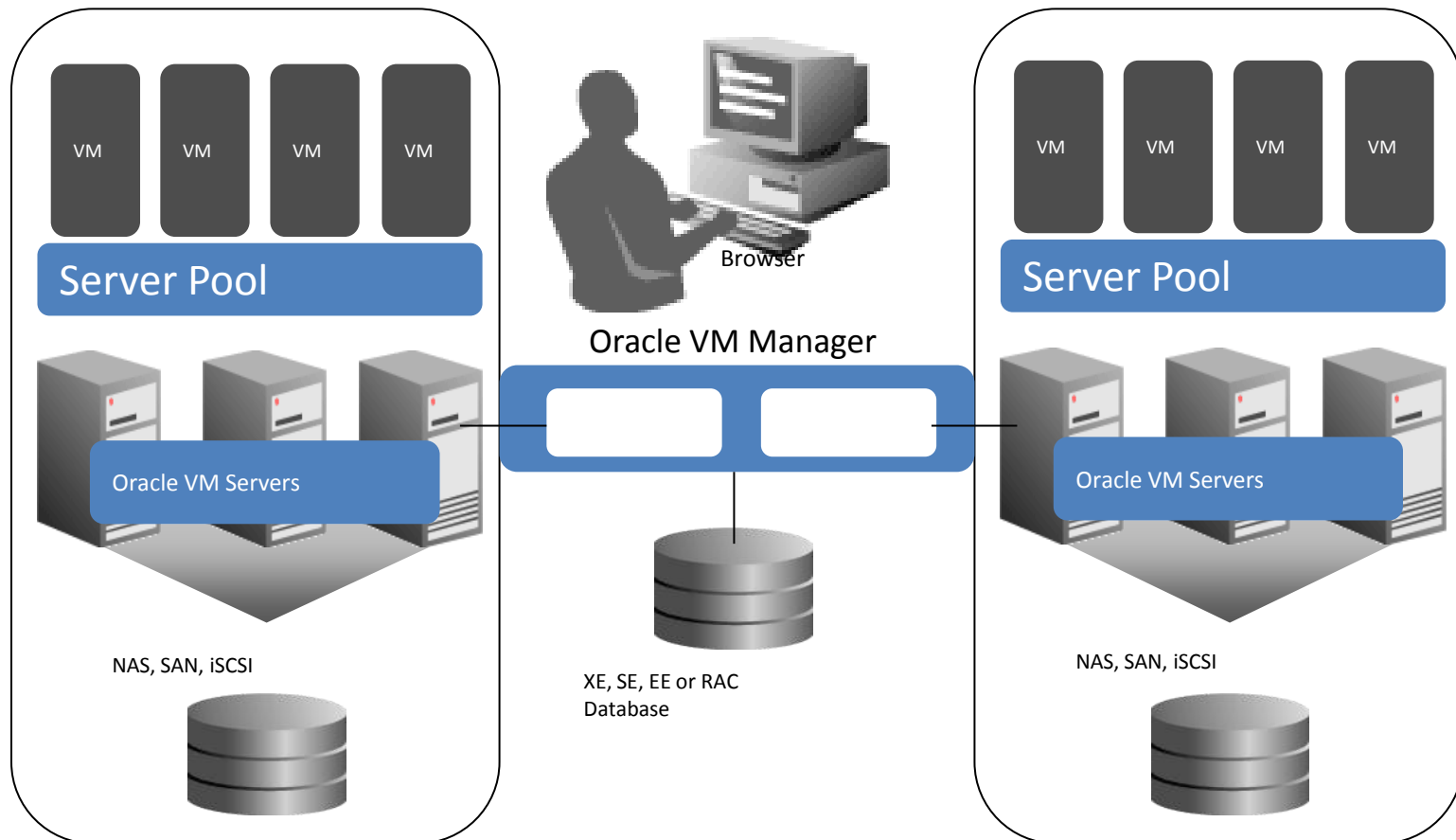- Useful Resources
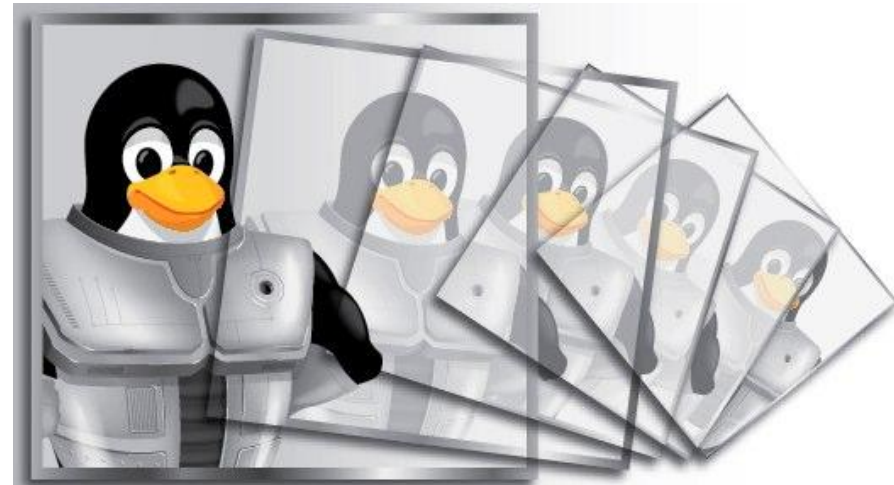
Cloud Computing & Virtualisation

- 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

Browser

Server Pool

Oracle VM Manager

Server Pool

Oracle VM Servers

Oracle VM Servers

NAS, SAN, iSCSI

XE, SE, EE or RAC
Database

NAS, SAN, iSCSI

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

VM VM VM VM

VM VM VM VM

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

This slide is based on material from Wim Coekaerts, Vice President, Enterprise Linux and Oracle VM Development at Oracle Corporation
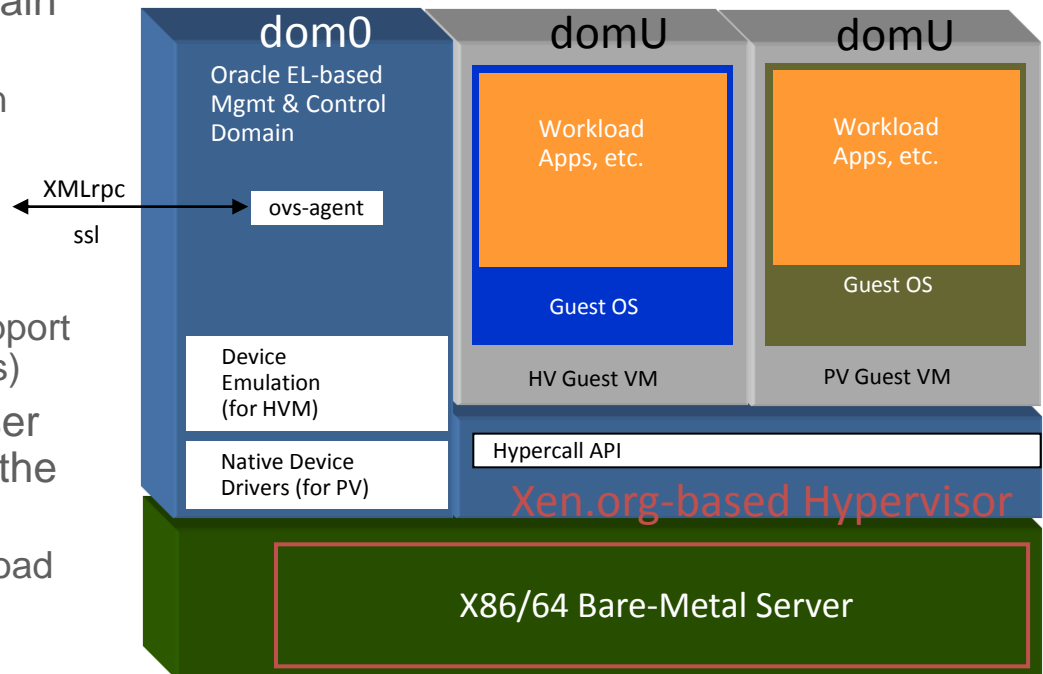
New Features in Oracle VM 3.0

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

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
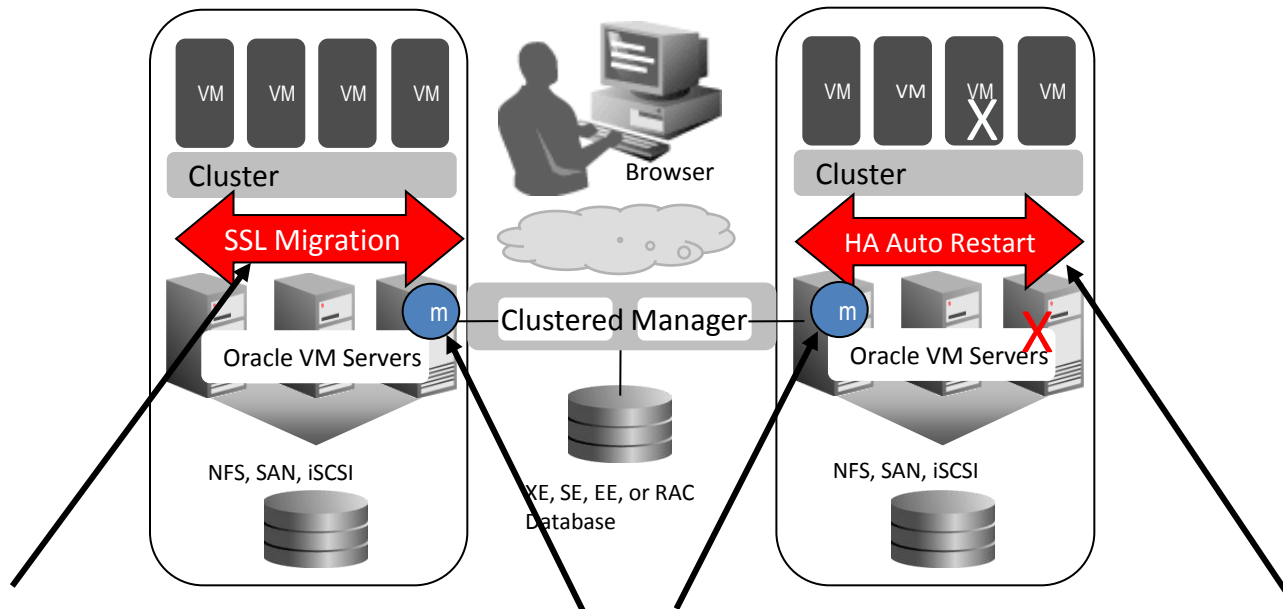- "Other" normal Linux security considerations

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

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

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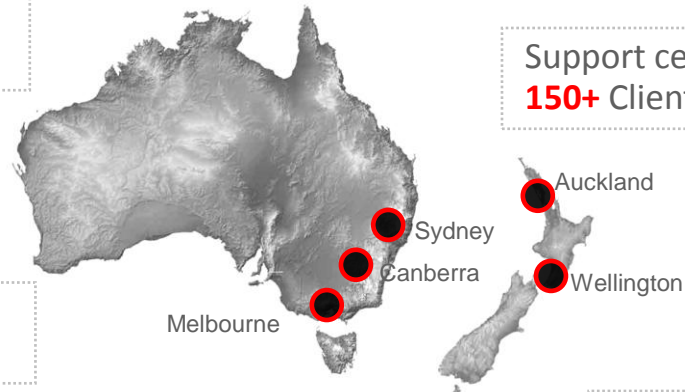**Over 500 Oracle professionals** across Australia and New Zealand

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