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Oracle Database Appliance Virtualized Implementation with HA and DR for Banner Database and Application Servers.

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DBA, Capilano University

Agenda

- Oracle Database Appliance (ODA) Overview
- CapU and ODA
- ODA Virtualization Architecture Review
- Re-installation of the Appliance,
- Deploying the vitalized images on the ODA,
- Deployment of ODA_Base,
- Deployment of a User VMs,
- Create and manage the virtual LANs in the ODA,
- Create and manage Shared Repository in the ODA,
- Patching the Virtualized ODA,
- HA and DR set up

ORACLE DATABASE APPLIANCE

Oracle Database Appliance

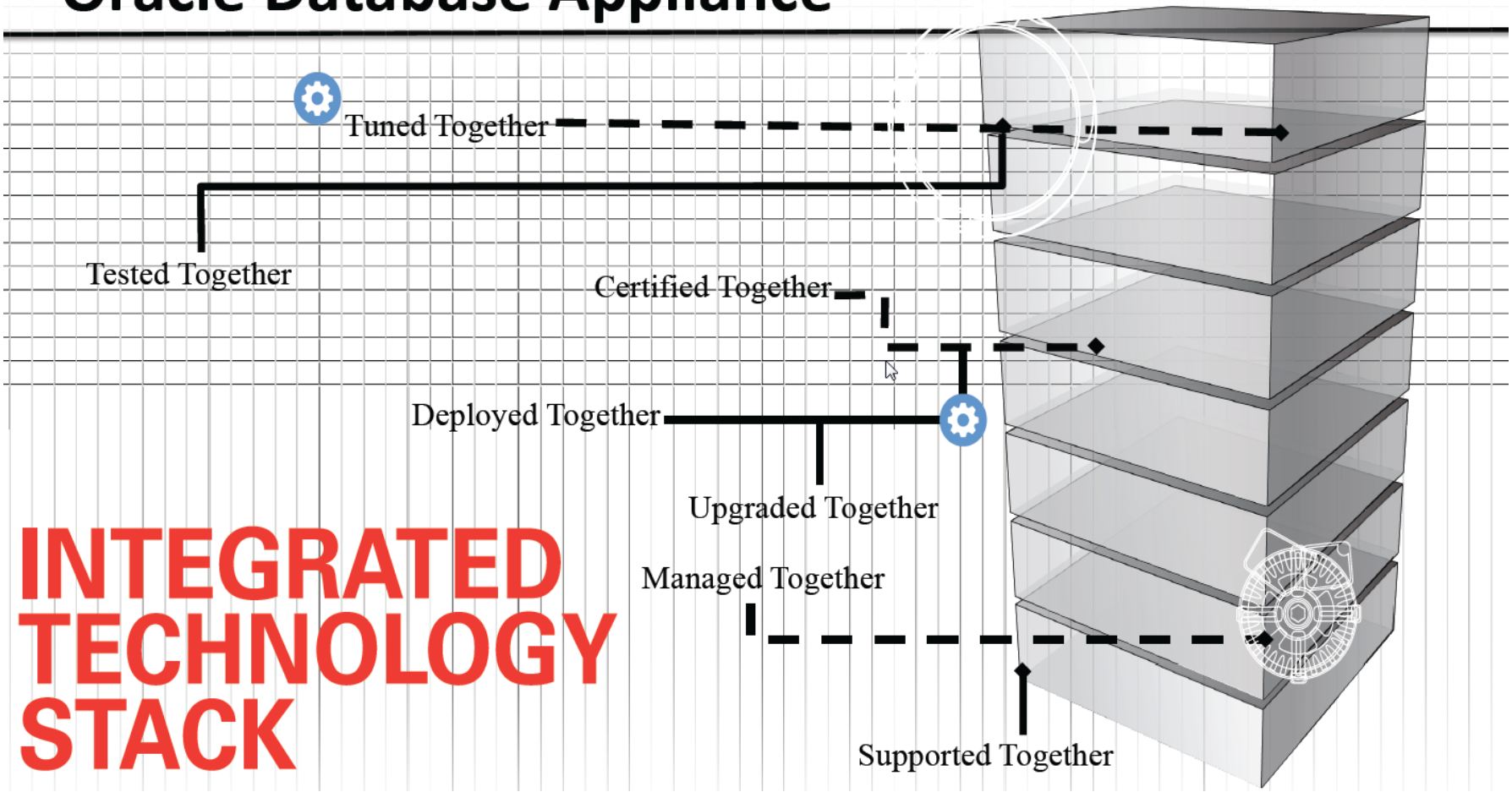
Complete, Simple, Reliable, Affordable

Engineered System optimized to run the Oracle Database and database-centric applications

- Complete high availability database solution in a single appliance
- Simple to deploy and manage both databases and applications to improve time to value and reduce operational expense
- Reliable system to ensure database and application availability
- Affordable Capacity on Demand (CoD) licensing to manage capital expense

ORACLE DATABASE APPLIANCE

Oracle Database Appliance



Oracle Database Appliance Generations

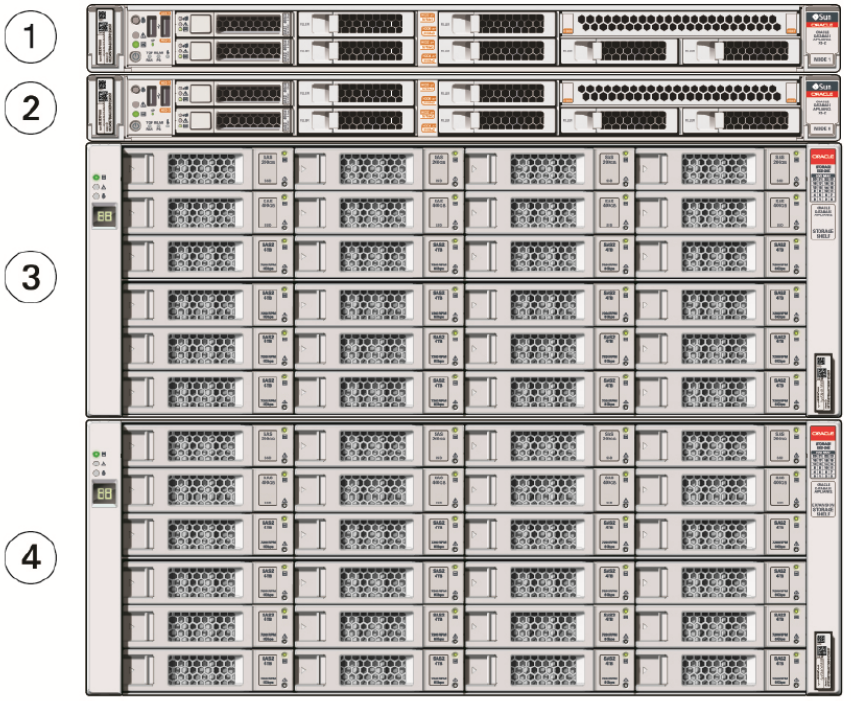
	ODA V1 – Oct 2011	ODA X3-2 – Mar 2013	ODA X4-2 – Dec 2013	ODA X5-2 – Feb 2015
Processor	Intel X5675	Intel E5-2690	Intel E5-2697 V2	Intel Xeon E5-2699 V3
Server Node	Built-in (X4370 M2)	X3-2	X4-2	X5-2
Sockets/node	2	2	2	2
Cores / node (total)	12 (24)	16 (32)	24 (48)	36 (72)
Max Memory / node (total)	96GB (192GB)	256GB (512GB)	256GB (512GB)	256GB – 768GB (1024GB)
Boot disks (Free space)	500GB (250GB)	600GB (350GB)	600GB (350GB)	600GB (350GB)
Networking	6 x 1GbE NICs 2 x 10GbE fiber NICs	4 x 10GbE Copper NICs	4 x 10GbE Copper NICs (opt public fiber interface)	4 x 10GbE Copper NICs (opt public fiber interface)
Form Factor/RU	Single 4U chassis	2 x 1RU servers & 1 x 2RU disk shelf	2 x 1RU servers & 1 x 2RU disk shelf	2 x 1RU servers & 1 x 4RU disk shelf
Shared Storage	292GB SSDs 12TB SAS raw	800GB SSDs 18TB SAS raw	800GB SSDs 18TB SAS raw	800GB SSD – REDO 1.6TB SSD – ODA Cache 64TB SAS raw
Storage Expansion	N/A	Additional Storage Shelf	Additional Storage Shelf	Additional Storage Shelf

Front Panel

Oracle Database Appliance X5-2 Hardware Front View

With Storage Expansion Shelf

1. Server Node 1
2. Server Node 0
3. Storage Shelf
4. Optional Storage Expansion Shelf

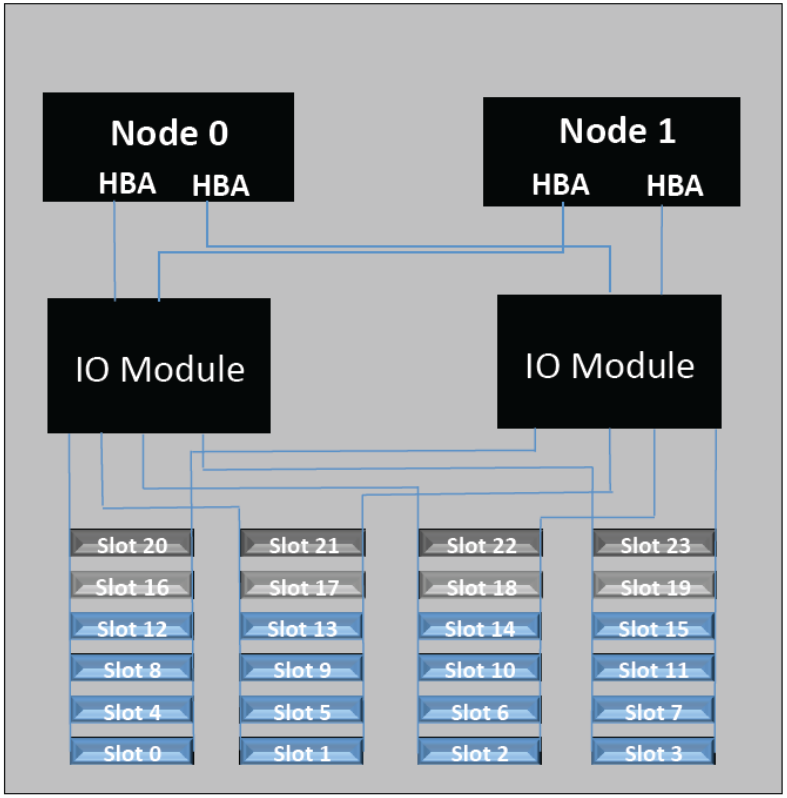


Oracle Database Appliance X5-2

- Two Compute Servers, each contain
  - 36 CPU cores (2 x 18-core 2.3 GHz Intel Xeon Processors)
  - 256GB memory (expand to 768GB)
  - 600GB mirrored boot disks
  - Redundant InfiniBand Interconnect
  - External 10GB networking
- Storage Shelf – Direct-attached
  - 1.6 TB SSD storage for database cache and files
  - 800GB SSD storage for redo
  - 64 TB HDD storage for data files, backups, etc.
    - 32/16TB usable (High/Normal Redundancy)
- Optional Storage Expansion Shelf

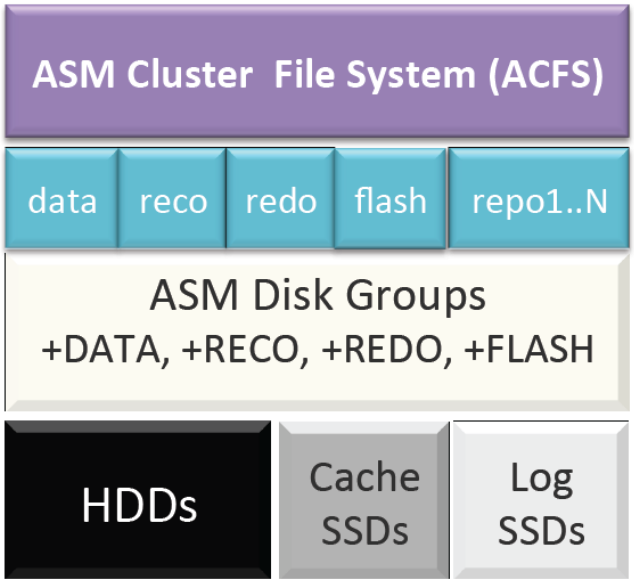
Storage - Built-in Redundancy

- Each Server Node
  - 2x HBA
  - In case of HBA failure
    - Multipath software transparently manages both paths for the database
- Storage Shelf
  - 2x IO Modules (Controllers)
    - Each connects to all 24 disks to protect against failure
  - Redundant HDDs and SSDs
    - ASM stripes data across disks to protect against failure



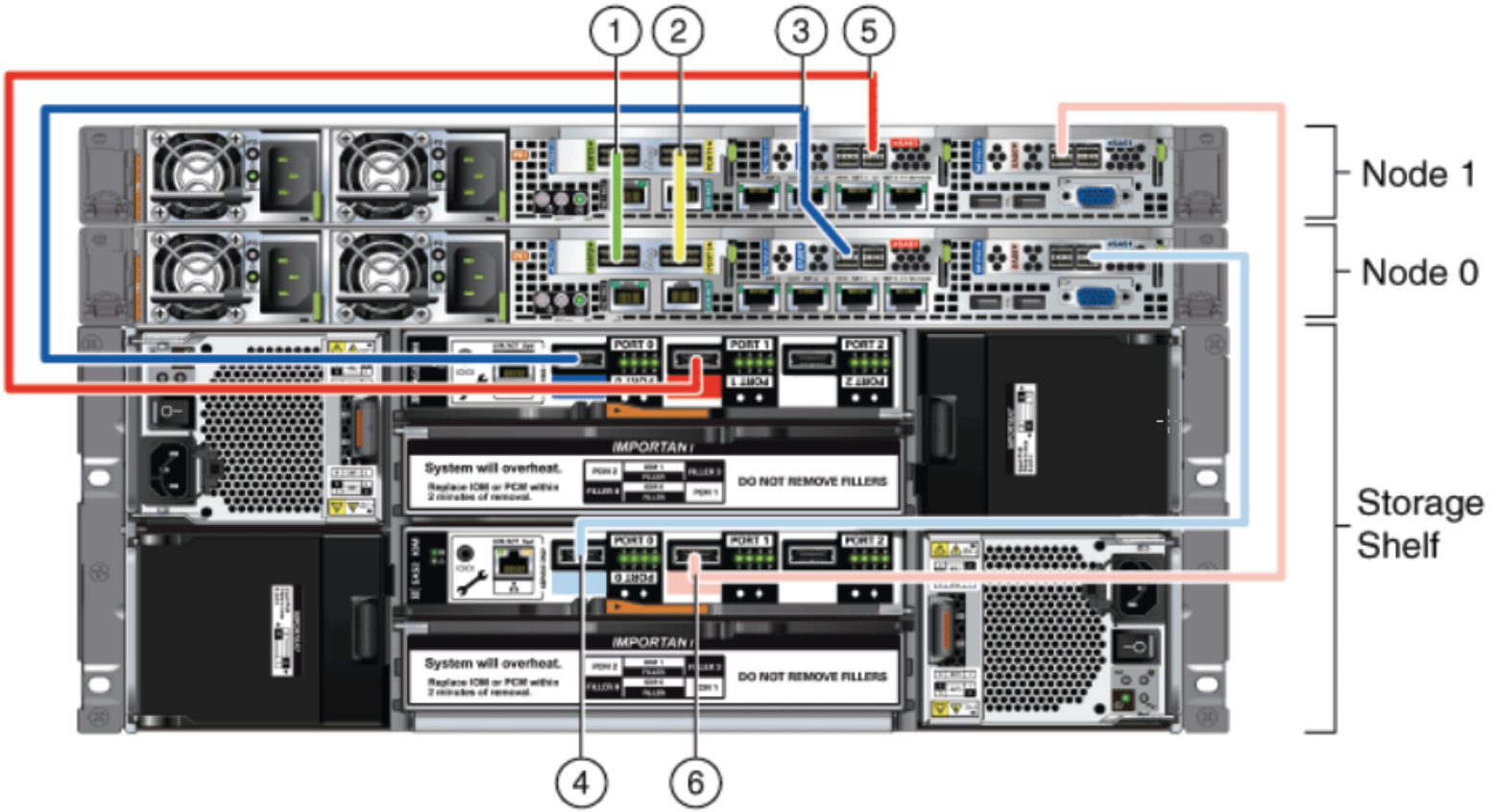
Storage Architecture

Oracle Database Appliance X5-2

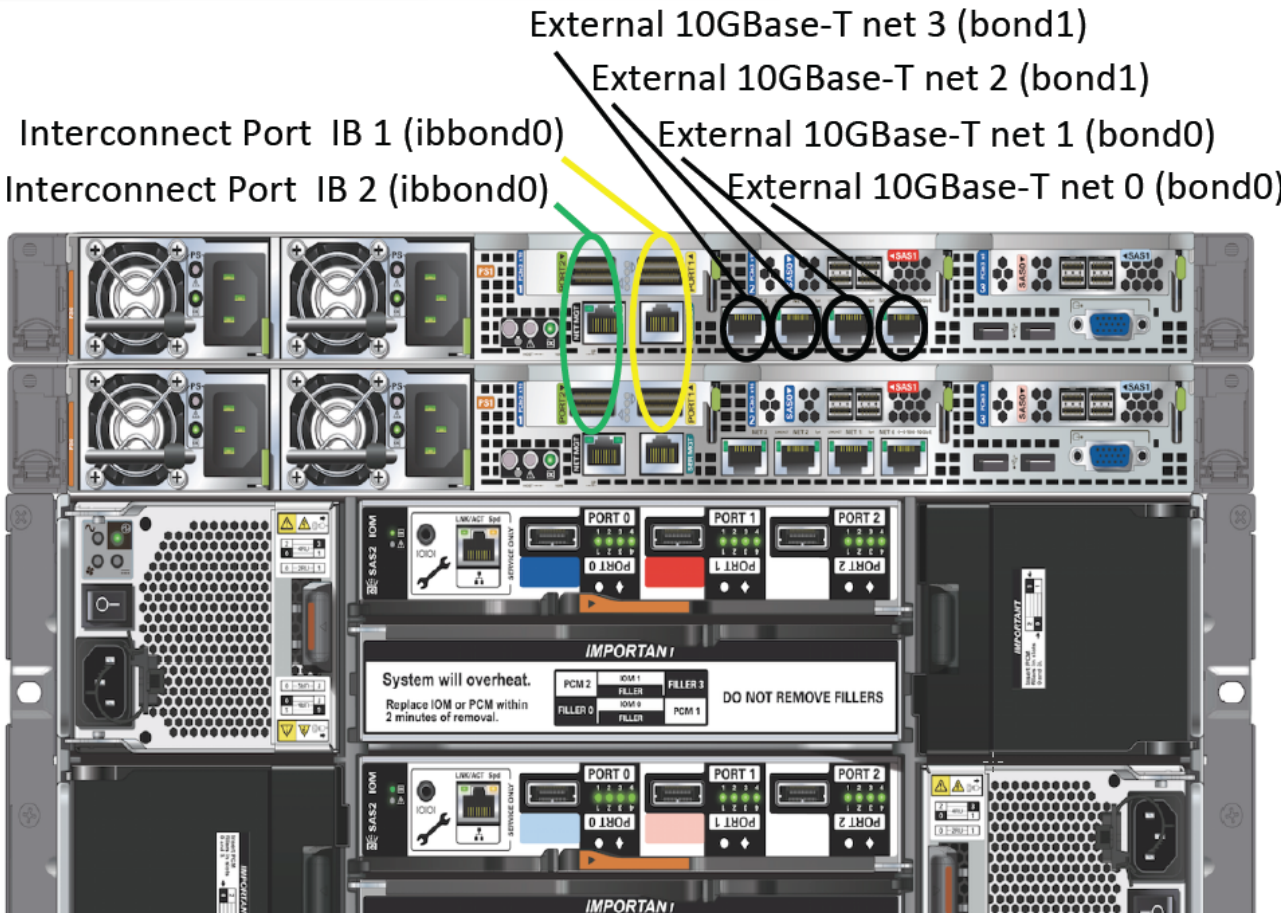


Disk	Disk Group	Volumes	Used For
HDD Outer Rings	+DATA	data	Database data files
HDD Outer Rings	+DATA	Repo1.. repoN	Shared Repository for VMs, VDisk
HDD Inner Rings	+RECO	reco	Database archive logs, RMAN backups (Fast Recovery Area)
HDD Inner Rings	+RECO	Repo1.. repoN	Shared Repository for VMs, VDisk
HDD Inner Rings	+RECO	cloudfs	Clustered file system – files that need to be accessed by either server node
SSD	+REDO	redo	Database redo logs
SSD	+FLASH	flash	Frequently accessed data

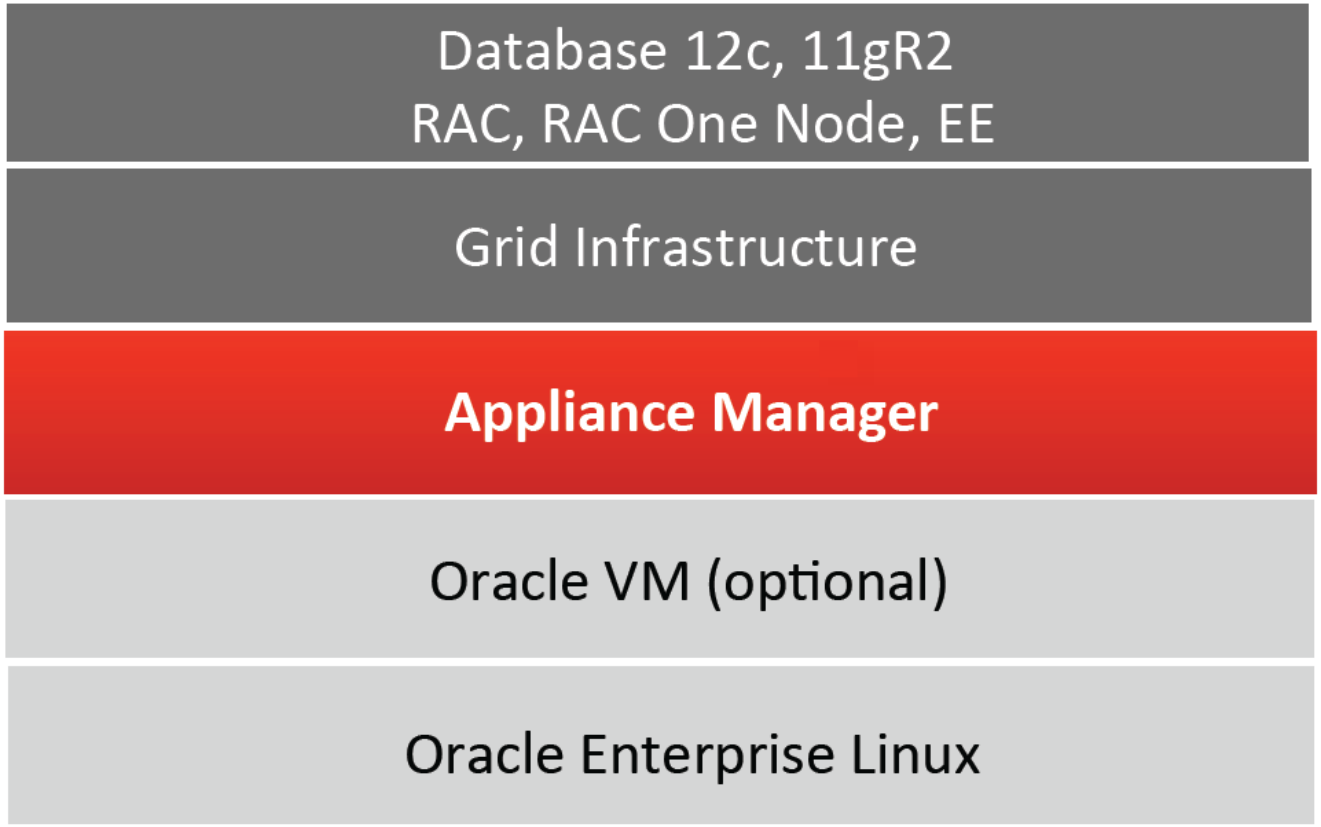
Back Panel



Back Panel


External 10GBase-T net 3 (bond1)
External 10GBase-T net 2 (bond1)
Interconnect Port IB 1 (ibbond0)
External 10GBase-T net 1 (bond0)
Interconnect Port IB 2 (ibbond0)
External 10GBase-T net 0 (bond0)
PORT 0
PORT 1
PORT 2
IMPORTANT
System will overheat.
Replace IOM or PCM within 2 minutes of removal.
DO NOT REMOVE FILLERS

Software Overview



What is the Appliance Manager

Simplifies Deployment, Management, and Support of Oracle Database Appliance

Configurator

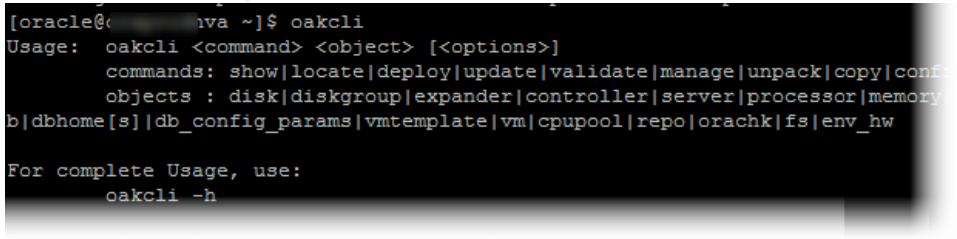
- GUI to gather ODA configuration and deploy system
  - System information
  - Network information
  - Database information
  - Option to use online at time of deployment or offline beforehand

Command Line

- OAKCLI provides simple commands to streamline ODA administration
  - Database creation
  - Patching
  - Management
  - Support

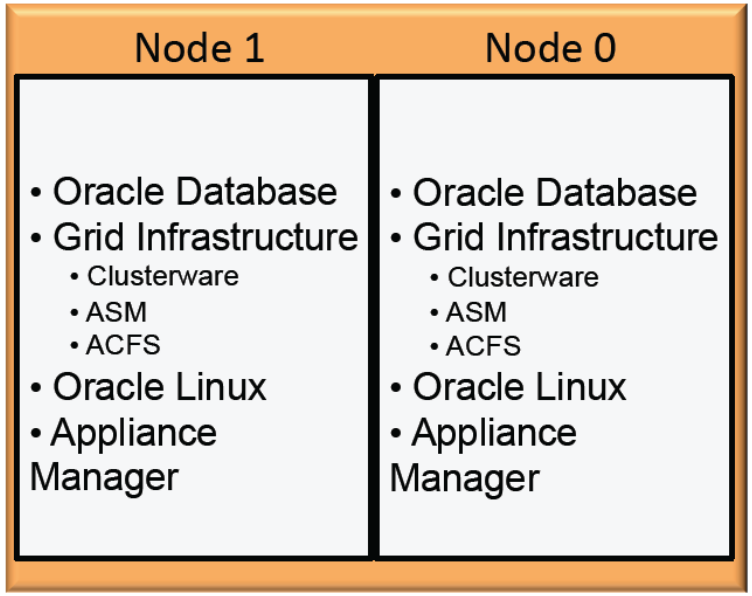
Background Processes

- Continual monitoring and management to ensure best practice compliance and optimal performance
  - Servers
  - Storage
  - Database
  - VMs

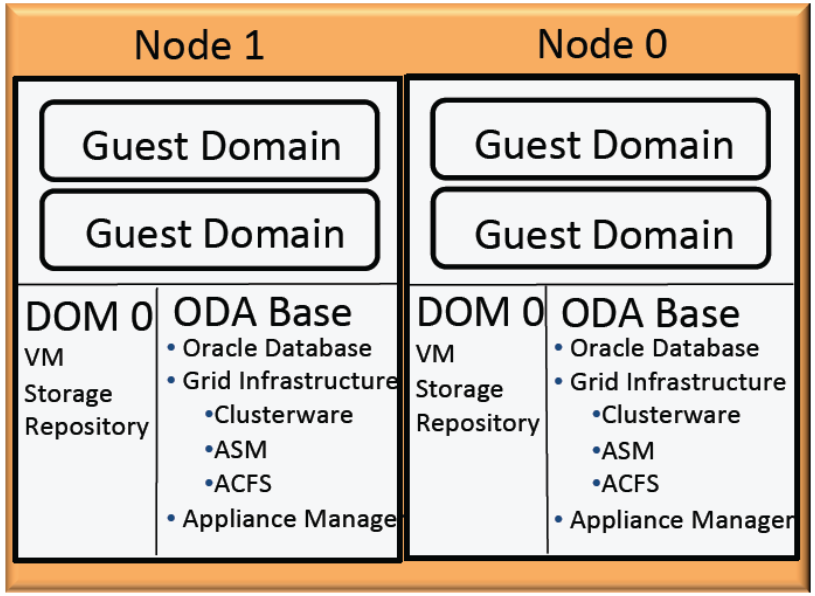


Two Deployment Options

- Bare Metal (Factory Image)
  - Optimized for Database



- Virtualized Platform (Re-image)
  - Optimized for Database and Applications

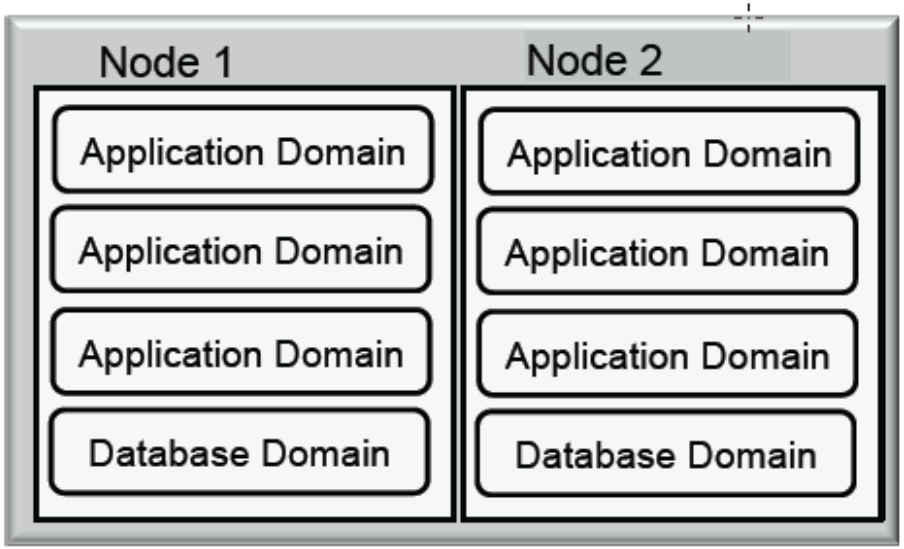


CapU and ODA

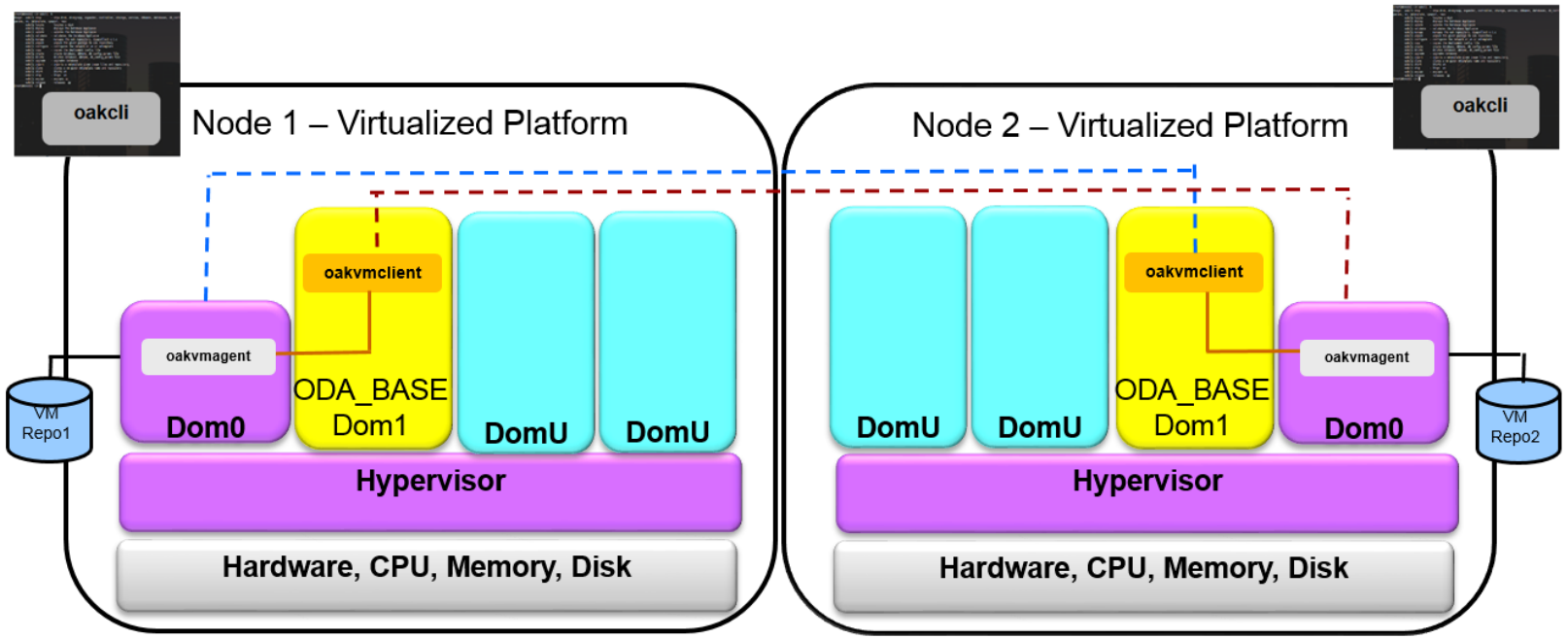
- Since 2013, Capilano University has utilized ODAs to host Banner Databases (ODA Version 1 - "Bare-metal");
- Recently these ODAs were replaced with the latest hardware and software version available at the time (X5-2) to upgrade the Components and Capacity and also reduce the cost of OS licensing (on Solaris and Redhat based Banner Application servers and Oracle Middle-wares).
- New ODAs were implemented as Virtualized Platform
- High Availability (HA)for Banner Database was met by Oracle Real Application Cluster embedded in ODA_BASE
- Database Disaster recovery (DR), Oracle Data Guard was utilized.
- HA and DR for Application VMs were met by enabling internal Failover feature in OVM for ODA.

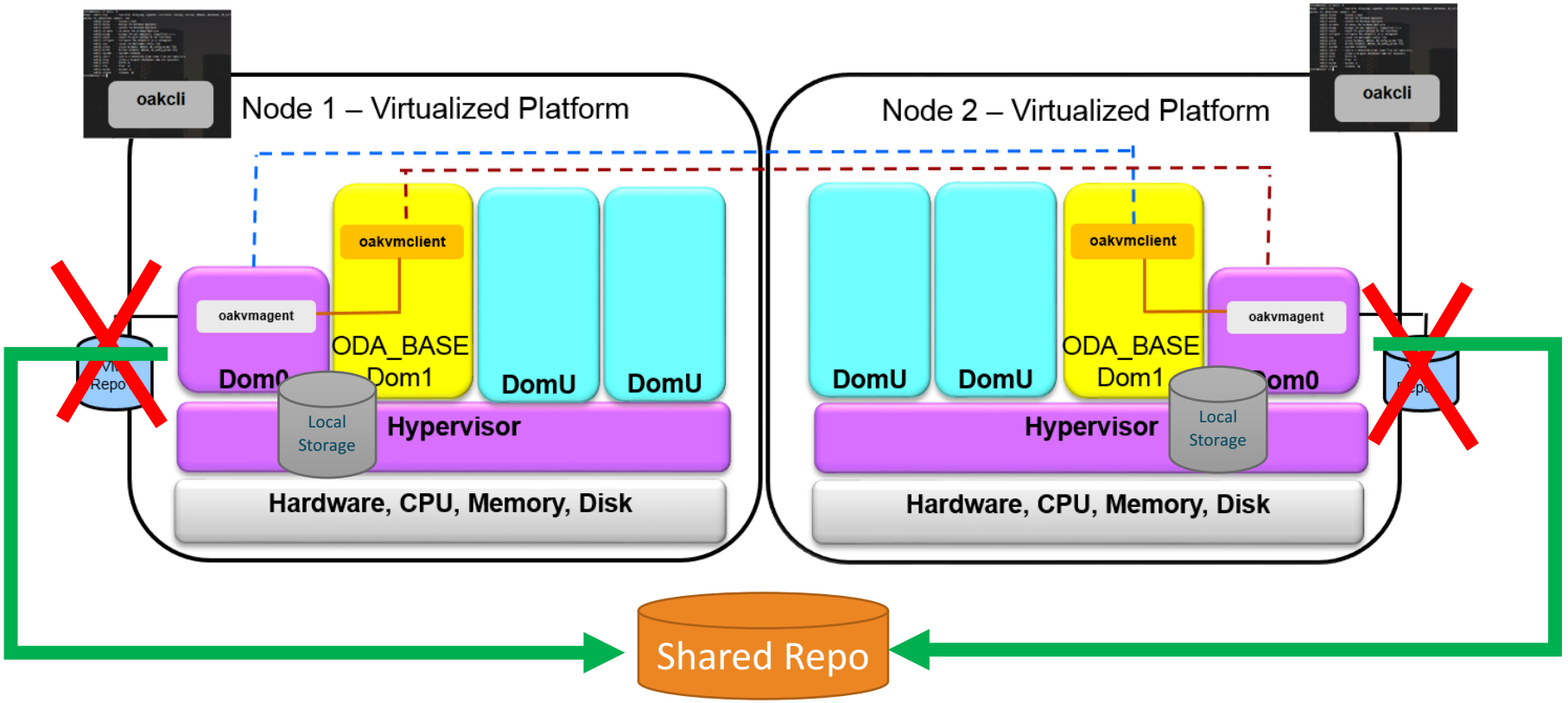
Oracle Database Appliance Virtualized Platform

Enables a Solution-in-a-Box



- Run database and applications in one box
- Minimize licensing costs with hard partitioning
- Grow/shrink with capacity-on-demand licensing


oakcli
Node 1 – Virtualized Platform
oakvmclient
oakvmagent
ODA_BASE
Dom1
Dom0
DomU
DomU
VM
Repo1
Hypervisor
Hardware, CPU, Memory, Disk
oakcli
Node 2 – Virtualized Platform
oakvmclient
oakvmagent
ODA_BASE
Dom1
Dom0
DomU
DomU
VM
Repo2
Hypervisor
Hardware, CPU, Memory, Disk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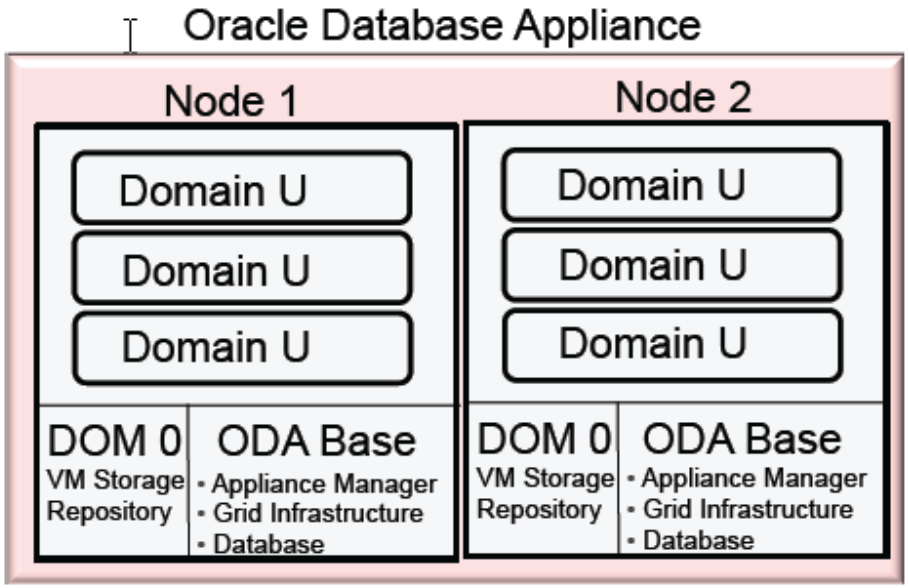
oakvmclient
oakvmagent
DomU
DomU
ODA_BASE
Dom1
Dom0
Local
Storage
Hypervisor
Hardware, CPU, Memory, Disk
Shared Repo

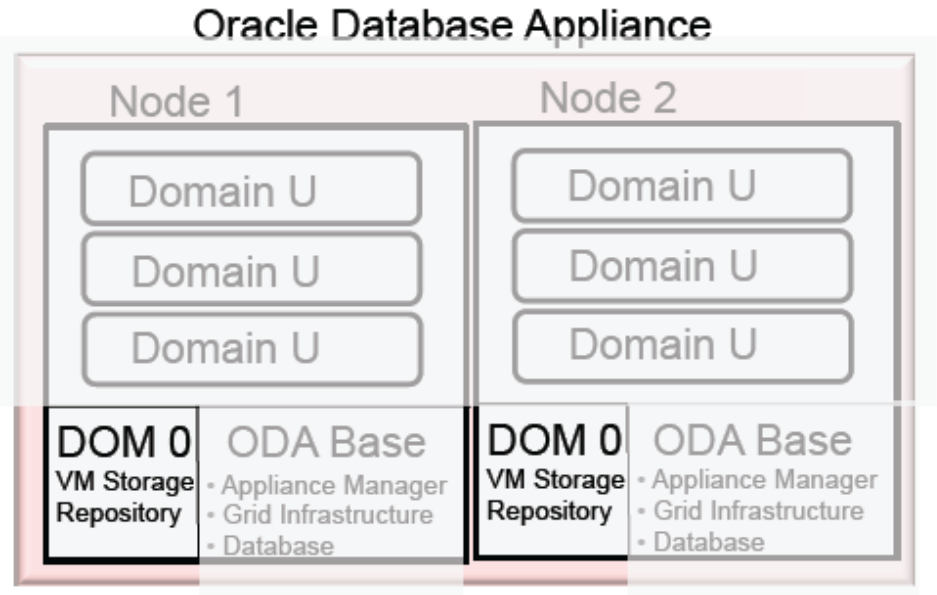
How Will the Virtualized Platform work?



- Database runs in the 'ODA Base' domain to provide native disk performance
- Domains provide application isolation
- Appliance Manager provides:
  - VM Template and Domain management

What is DOM 0?

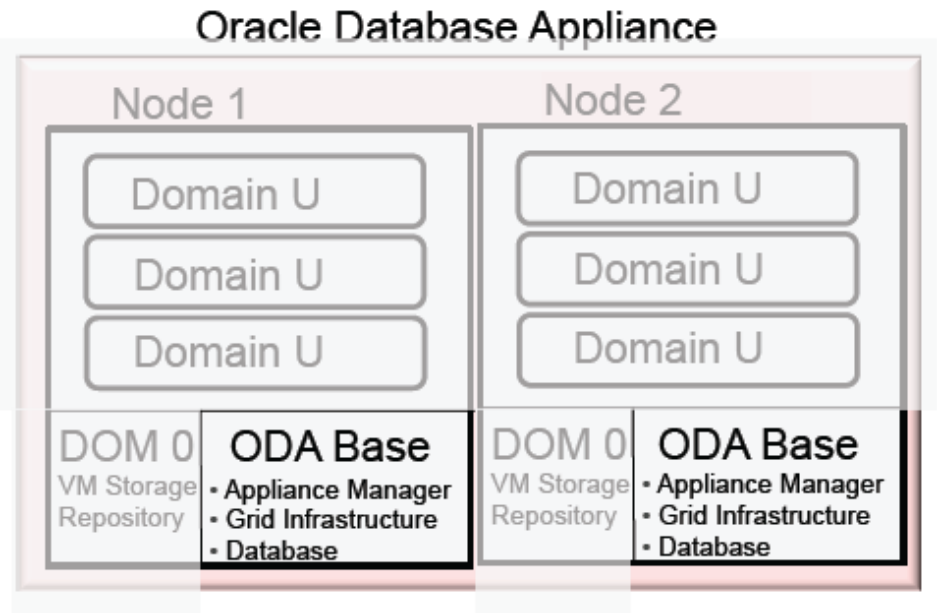
Administrative Domain for Oracle VM



- Default domain after Oracle Database Appliance Virtualized image is installed
- Bootstrap the deployment process
- Maintains the storage repository for VMs

What is ODA Base?

Same look, feel, and performance you get today



- ODA Base is a privileged VM domain
- Deploy supported databases within ODA Base just as you do today with bare metal
- SI, RAC, RAC One Node database options
- Up to 248GB of memory can be allocated

Database Templates Sized for Performance

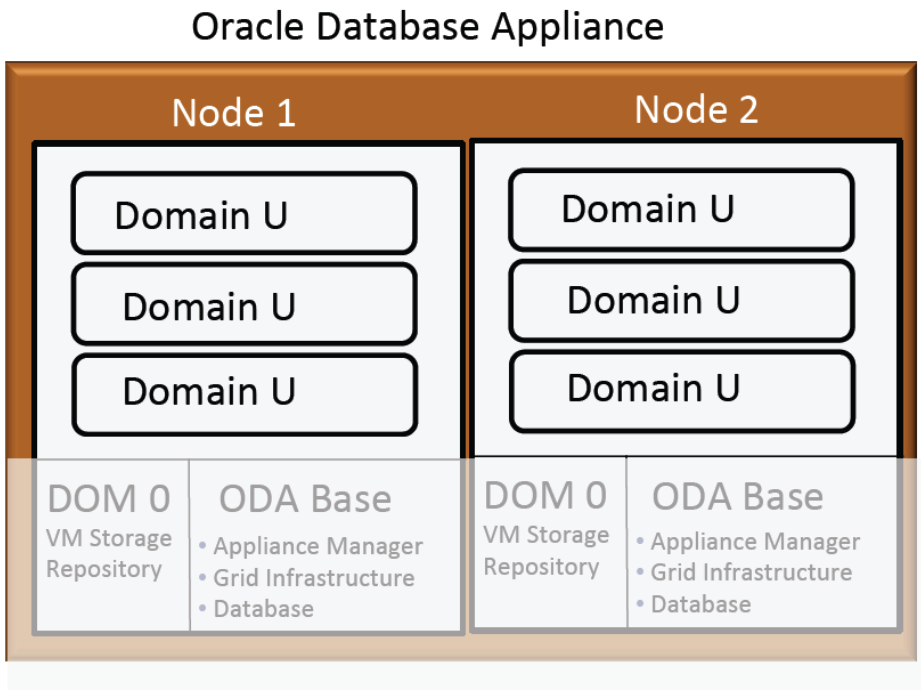
Database Class	CPU Cores	Memory	Flash	# of Databases
Odb-01s	1	4 GB	12 GB	36
Odb-01	1	8 GB	24 GB	36
Odb-02	2	16 GB	48 GB	18
Odb-04	4	32 GB	96 GB	9
Odb-06	6	48 GB	144 GB	6
Odb-12	12	96 GB	288 GB	3
Odb-16	16	128 GB	384 GB	2
Odb-24	24	192 GB	512 GB	1
Odb-32	32	256 GB	768 GB	1
Odb-36	36	256 GB	768 GB	1

Provides well defined database configuration templates …

- Sizing for CPU and Memory
  - Out of the box allocation for SGA and PGA
- Incorporates all best practice database init parameters
- Advise on the storage characteristics
- Multiple sizes to satisfy various workloads
- Auto sizes ODA flash cache

What can be deployed in DOMAIN U?

On Demand Capacity to Utilize Resources



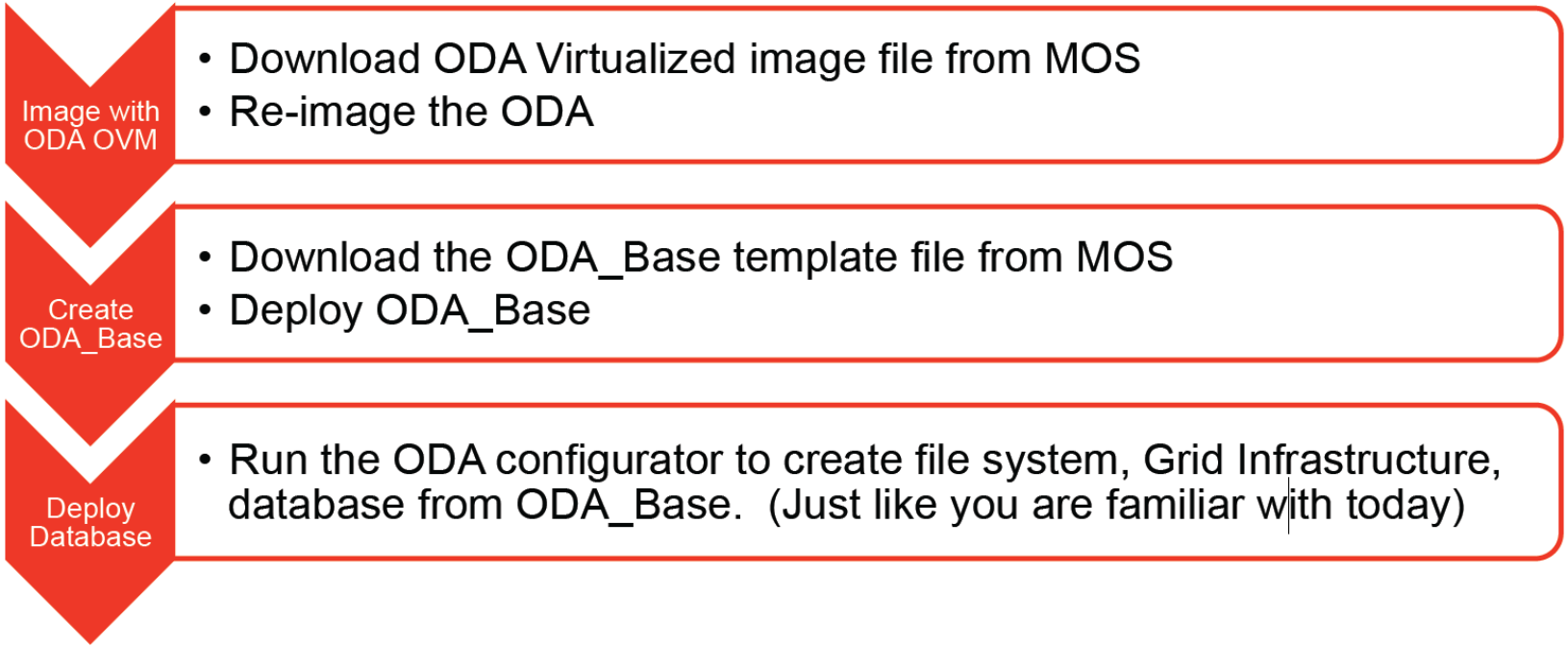
- Deploy VMs to run applications, middle tier, etc..
- Oracle VM templates supported
- Shared repository can be created and sized based on available shared storage
  - Provides VM auto restart and failover

Virtualization Management

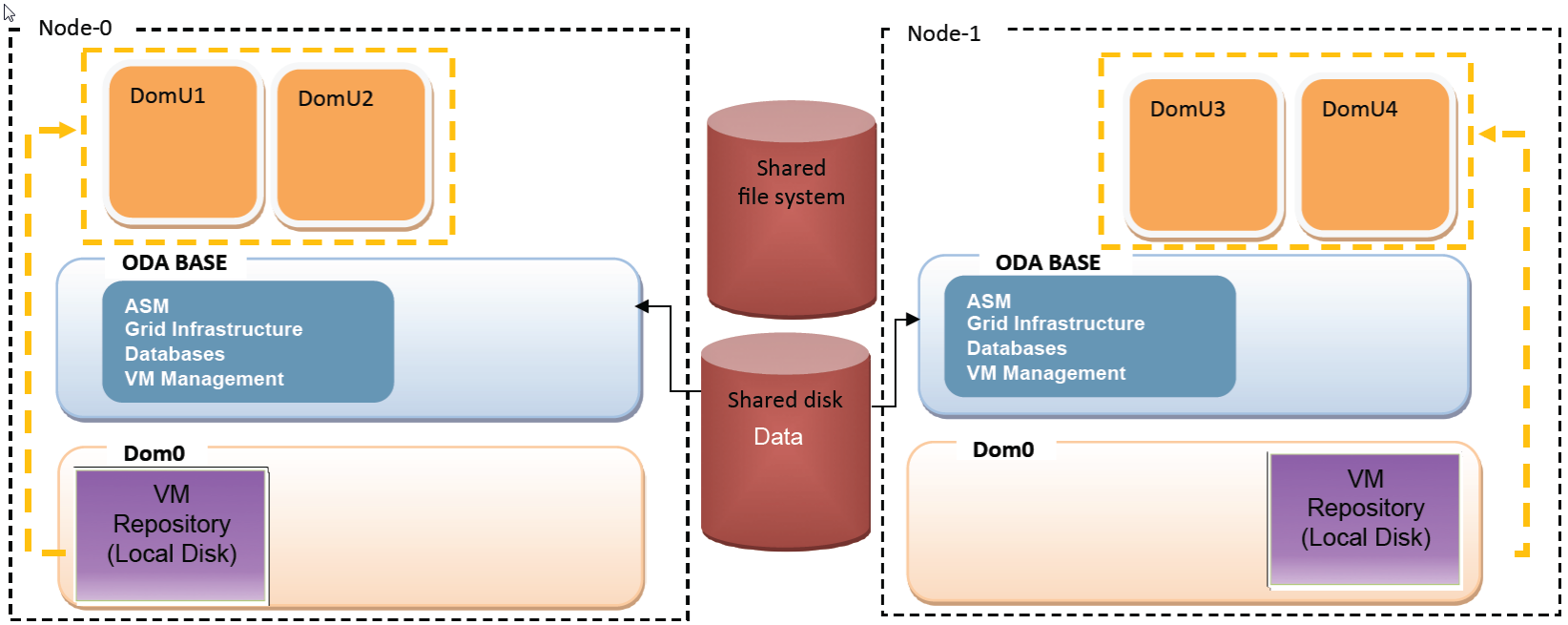
- Partition cores to VMs to isolate workloads
- Creation of shared repositories for VM and VDisk storage
- HA of Guest VMs with automatic restart and failover
- VDisk Management
- Support VLan to provide additional networks and security
- Start/Stop VMs

How do you deploy the virtualized platform?

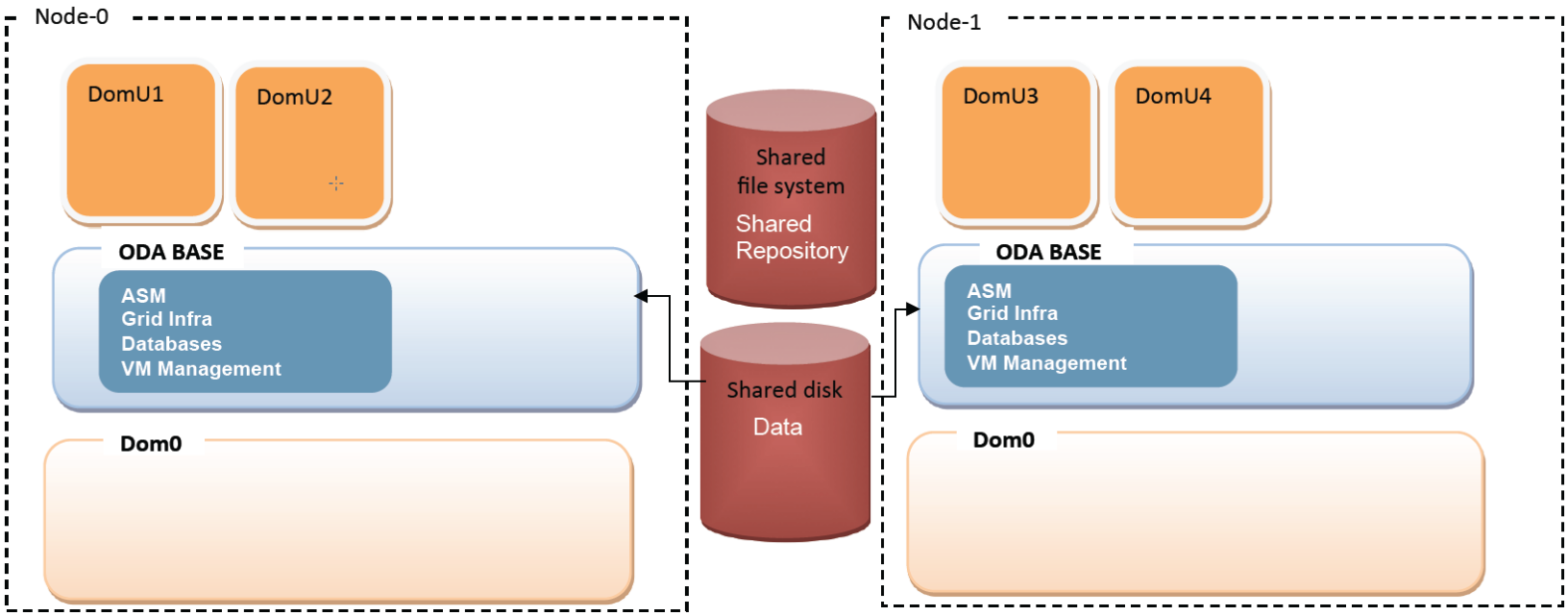
Virtualized Platform re-images the ODA



Version 2.7 Architecture



New Architecture



Creating the Shared Repository

oakcli create repo <repo_name> -size <size> -dg <diskgroup>

where:

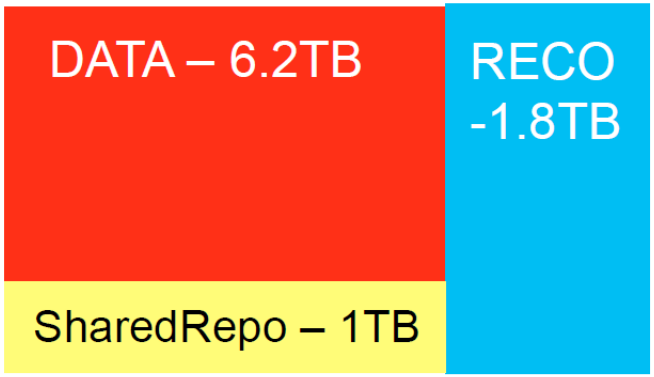
repo - shared repo name

-size - size of shared repo to be created

- Minimum Size : 500M or 1G
- Default unit is G
- size must be a whole number.

-dg - Disk Group of shared repo

- [DATA | RECO]




```
./oakcli create repo SharedRepo -size 1000G -dg DATA
```

Extend Appliance Manager Command Line

Manage the ODA Shared Repository

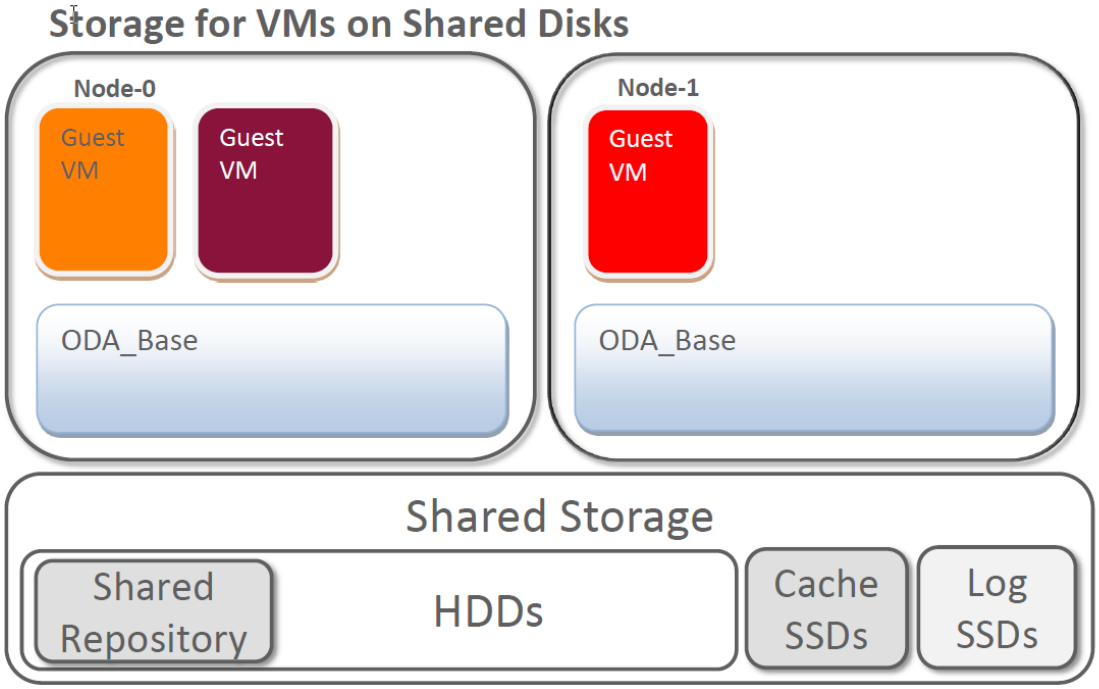
```
./oakcli show repo
```

NAME	TYPE	NODENUM	STATE
odarepo1	local	0	N/A
odarepo2	local	1	N/A
sharedrepo	shared	0	ONLINE
sharedrepo	shared	1	ONLINE

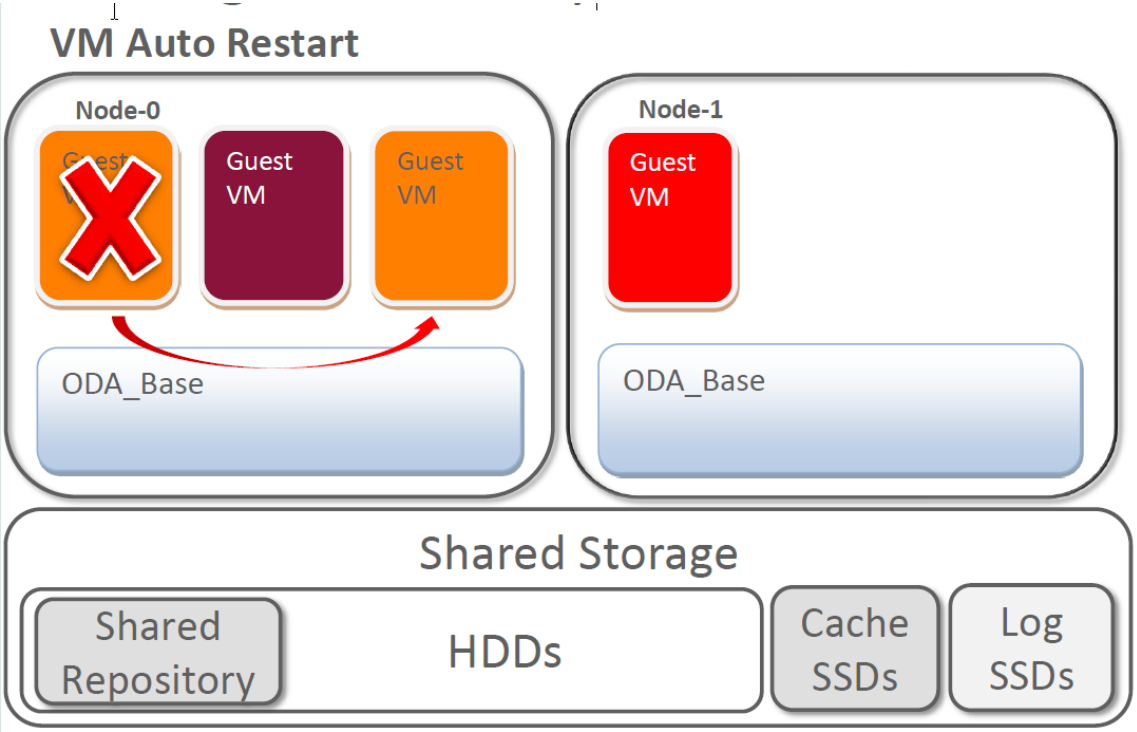
} Created by default

- Additional management commands
  - start repo
  - stop repo
  - delete repo

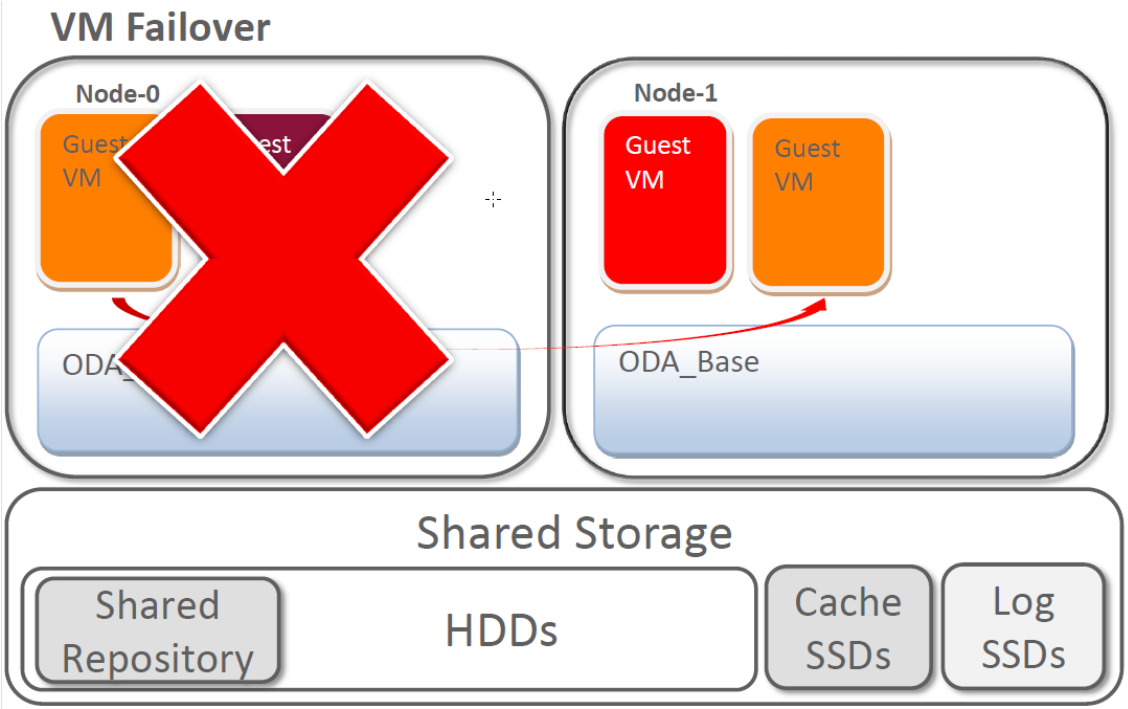
VM Auto failover and Restartability



- Shared Repository
  - Provides additional storage capacity for VMs
  - Enables VM auto restart and failover
  - Full OAKCLI integration to create and size



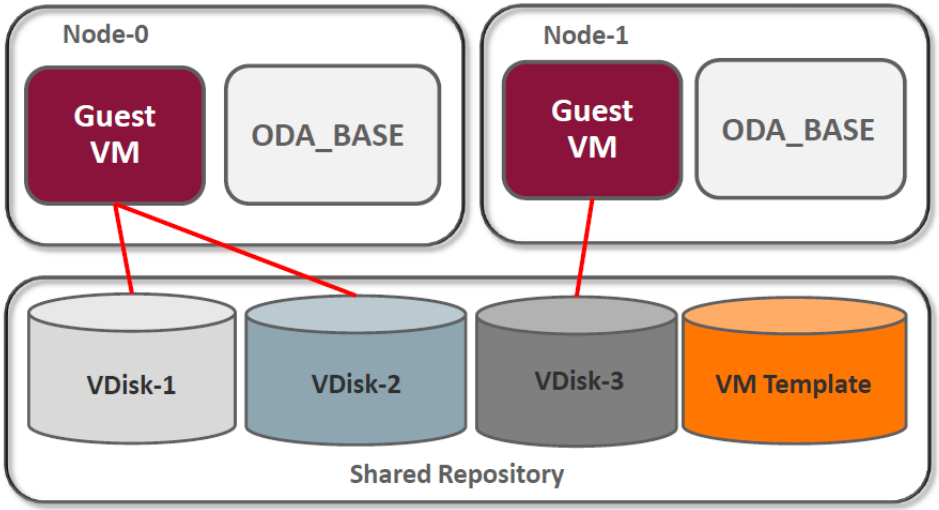
- VM Auto Restart
  - Unplanned VM failure
  - Auto restarts VM on same node with no manual intervention



- VM Failover
  - Unplanned node failure
  - Auto restarts VM on the other node with no manual intervention

VDisk

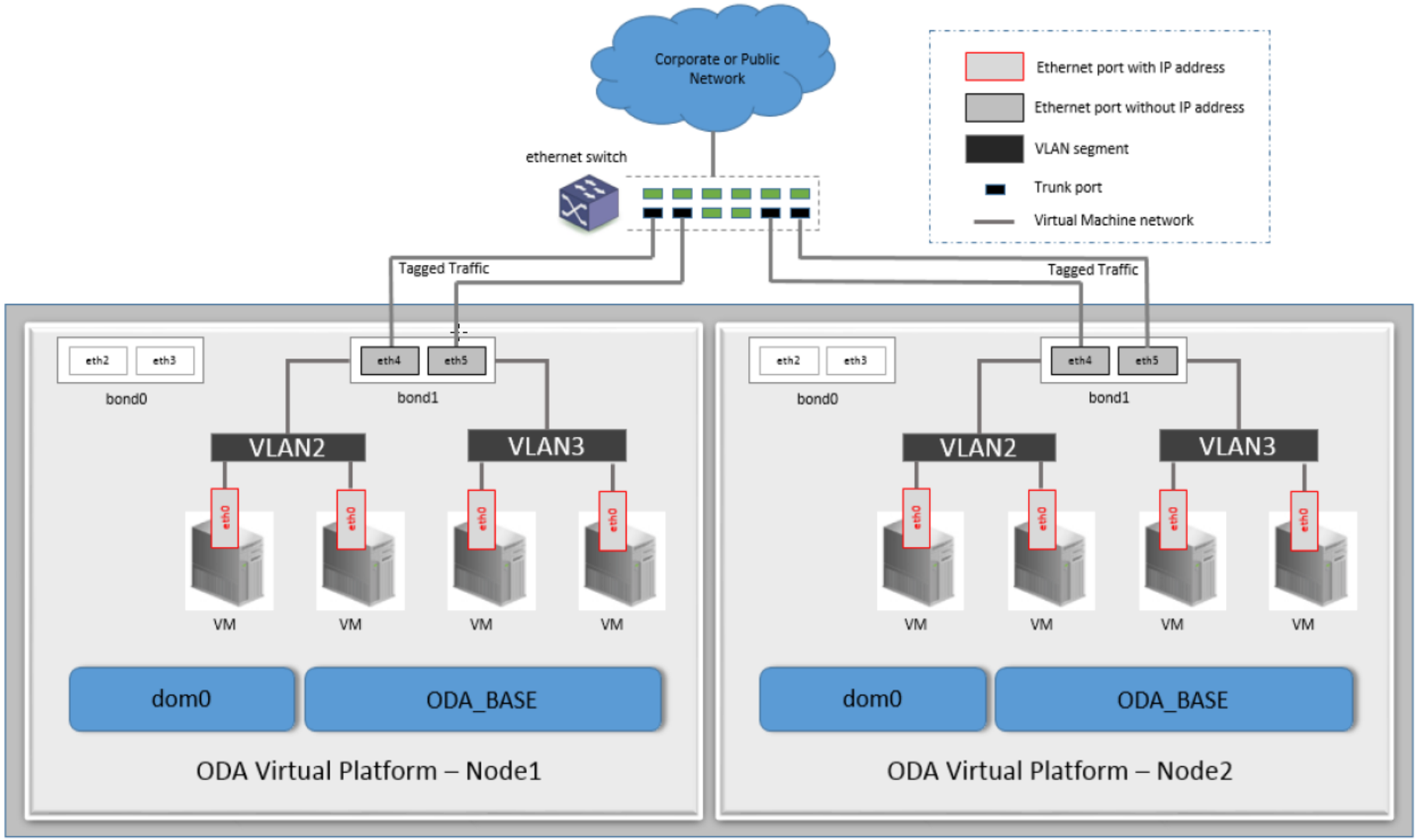
Add Additional Guest VM Storage

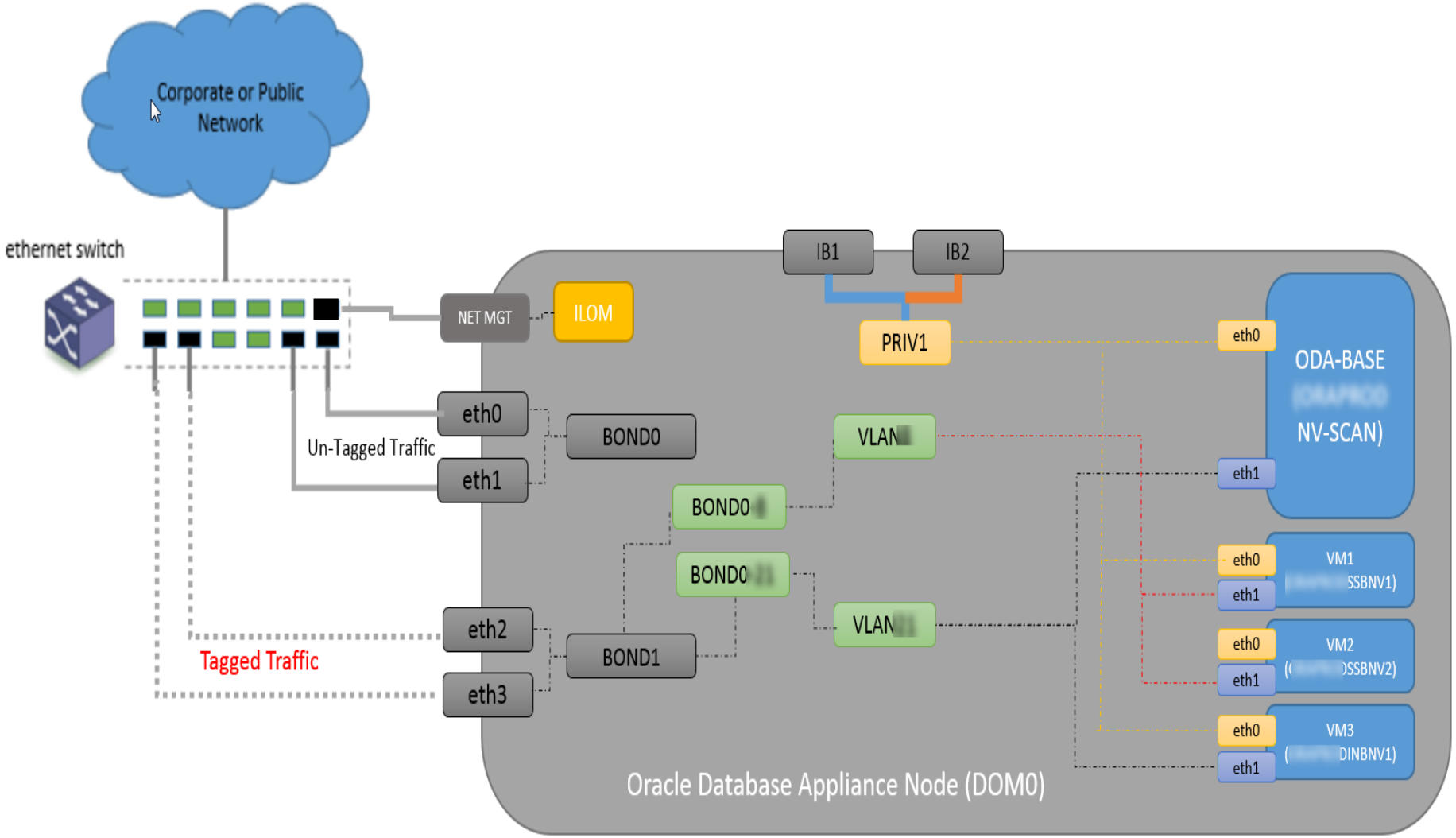


- Allows dynamic addition of storage to existing VM
- Support for VM exclusive and shared VDISK
- Full OAKCLI integration

Add VLAN Support

- Oracle Database Appliance Virtualized Platform supports multiple virtual LANs, or VLANs, on the same network port or bond.
- Each VLAN is essentially an independent logical network operating with other VLANs over the same physical connection.
- Provide Network Security Isolation for Multiple Workloads Sharing Common Network
- Having VLANs allows sharing of a common network interface and still provides security isolation i.e. cannot sniff packets of a different
  - Application, backup, management networks
- Requires a switch that supports and configured with tagged VLAN


Corporate or Public Network
ethernet switch
Ethernet port with IP address
Ethernet port without IP address
VLAN segment
Trunk port
Virtual Machine network
Tagged Traffic
Tagged Traffic
eth2
eth3
bond0
eth4
eth5
bond1
VLAN2
VLAN3
eth0
VM
VM
VM
VM
dom0
ODA_BASE
ODA Virtual Platform – Node1
eth2
eth3
bond0
eth4
eth5
bond1
VLAN2
VLAN3
eth0
VM
VM
VM
VM
dom0
ODA_BASE
ODA Virtual Platform – Node2


Corporate or Public Network
ethernet switch
NET MGT
ILOM
IB1
IB2
PRIV1
eth0
Un-Tagged Traffic
eth1
BOND0
VLAN
ODA-BASE
NV-SCAN)
eth1
BOND0
BOND0
eth0
VM1
eth1
eth2
Tagged Traffic
BOND1
VLAN
eth0
VM2
eth1
eth3
eth0
VM3
eth1
Oracle Database Appliance Node (DOM0)

Download ODA Virtualized image file from MOS

OS ISO Image / Bare Metal - Virtualized Platform

- **For Bare Metal (non-virtualized) configuration** (Please select **12.1.2.8.0** from dropdown 'Release' box or **12.1.2.8.1 iso for X6-2 HA**):

Patch 12999313 - Oracle Database Appliance 12.1.2.8.0 Bare Metal ISO Image
Patch 12978712 - Oracle Database Appliance 12.1.2.8.0 End User Bundle (GI+RDBMS)
To re-image a system to 12.1.2.8.0 will not update them. It will install the new OS on the local disks.

- **For Virtualized Platform** (Please select **12.1.2.8.0** from dropdown 'Release' box)

Patch 16186163 - Oracle Database Appliance 12.1.2.8.0 VM ISO Image. (DOM0)
Patch 16186172 - Oracle Database Appliance 12.1.2.8.0 VM Template (ODA_BASE)

End-User RDBMS Clone files

- End User RDBMS Clone file for 12.1.0.2.160719 Patch 19520042
File Name: p19520042_121280_Linux-x86-64.zip (Please select 12.1.2.8.0 from dropdown 'Release' box)

- End User RDBMS Clone file for 11.2.0.4.160719 Patch 17770873
File Name: p17770873_121280_Linux-x86-64.zip (Please select 12.1.2.8.0 release from dropdown box)

- End User RDBMS Clone file for 11.2.0.3.15 Patch 14777276
File Name: p14777276_121240_Linux-x86-64.zip (Please 12.1.2.4.0 release from dropdown box)

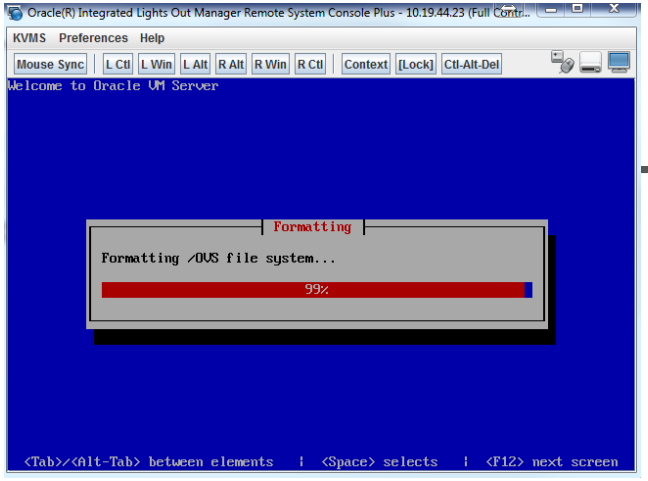
Notes
- **For X5-2, prior to 12.1.2.4 release, any 11.2.0.3.x DB release lower than 11.2.0.3.15 DBs are NOT supported**
- This Note 888888.1 info supersedes the info in the README. Please also refer to MOS Note 742060.1

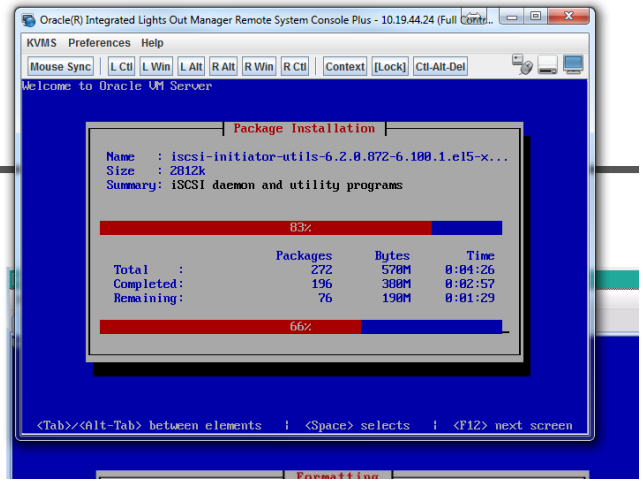
- End User RDBMS Clone file for 11.2.0.2.12 Patch 14349293
File Name: p14349293_28000_Linux-x86-64.zip (Please select 2.8.0.0.0 release from dropdown box)

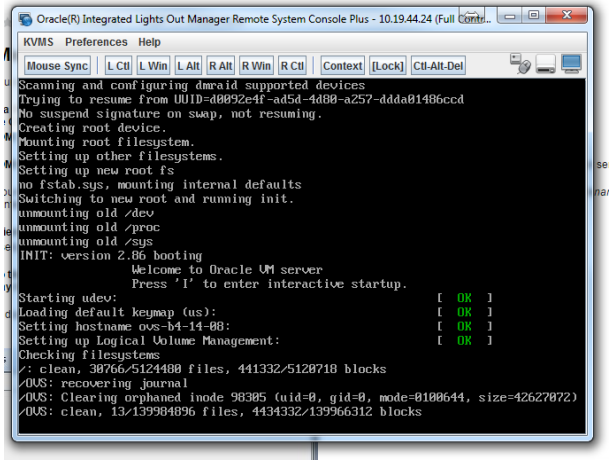
Notes:
- This RDBMS Clone file is only supported for V1, X3-2, and X4-2 (see known issue #5)
- **For X5-2, 11.2.0.2.x DBs are NOT supported at all**
- This Note 888888.1 info info supersedes the info in the README. Please also refer to MOS Note 742060.1

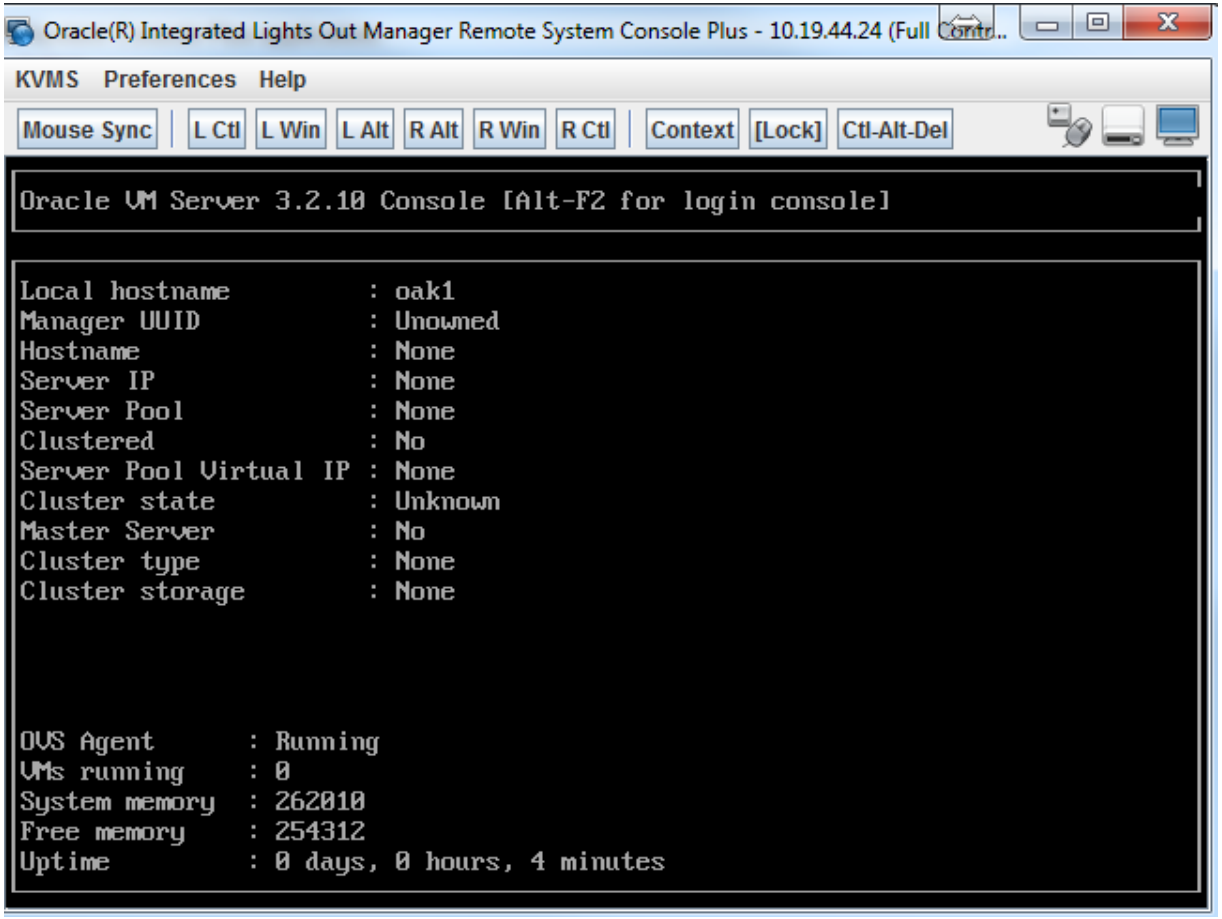
Alert NOTE
11.2.0.3.x (except 11.2.0.3.15 ACFS DBs created with 12.1.2.4 on wards) and 11.2.0.2.x databases are NOT supported on X5-2.
Use of any 11.2 database on ASM with ODA X5-2 is subject to data corruption.
If you used OAK 12.1.2.2 to create any 11.2.0.2.x or 11.2.0.3.x databases on ODA X5-2, you must immediately migrate to 11.2.0.4.x or 12.1.0.2.x on ACFS.

Reimage ODA


Oracle(R) Integrated Lights Out Manager Remote System Console Plus - 10.19.44.23 (Full Contr...
KVMS Preferences Help
Mouse Sync | L Ctl | L Win | L Alt | R Alt | R Win | R Ctl | Context | [Lock] | Ctl-Alt-Del
Welcome to Oracle VM Server
Formatting
Formatting /OVS file system...
99%
<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen


Oracle(R) Integrated Lights Out Manager Remote System Console Plus - 10.19.44.24 (Full Contr...
KVMS Preferences Help
Mouse Sync | L Ctl | L Win | L Alt | R Alt | R Win | R Ctl | Context | [Lock] | Ctl-Alt-Del
Welcome to Oracle VM Server
Package Installation
Name : iscsi-initiator-utils-6.2.0.872-6.100.1.el5-x...
Size : 2812k
Summary: iSCSI daemon and utility programs
83%
Packages Bytes Time
Total : 272 570M 0:04:26
Completed: 196 380M 0:02:57
Remaining: 76 190M 0:01:29
66%
<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen


Oracle(R) Integrated Lights Out Manager Remote System Console Plus - 10.19.44.24 (Full Contr...
KVMS Preferences Help
Mouse Sync | L Ctl | L Win | L Alt | R Alt | R Win | R Ctl | Context | [Lock] | Ctl-Alt-Del
Scanning and configuring dmraid supported devices
Trying to resume from UUID=d0092e4f-ad5d-4d80-a257-ddda01486ccd
No suspend signature on swap, not resuming.
Creating root device.
Mounting root filesystem.
Setting up other filesystems.
Setting up new root fs
no fstab.sys, mounting internal defaults
Switching to new root and running init.
unmounting old /dev
unmounting old /proc
unmounting old /sys
INIT: version 2.86 booting
Welcome to Oracle VM server
Press 'I' to enter interactive startup.
Starting udev: [OK]
Loading default keymap (us): [OK]
Setting hostname ovs-b4-14-08: [OK]
Setting up Logical Volume Management: [OK]
Checking filesystems
/: clean, 30766/5124480 files, 441332/5120718 blocks
/OVS: recovering journal
/OVS: Clearing orphaned inode 98305 (uid=0, gid=0, mode=0100644, size=42627072)
/OVS: clean, 13/139984896 files, 4434332/139966312 blocks

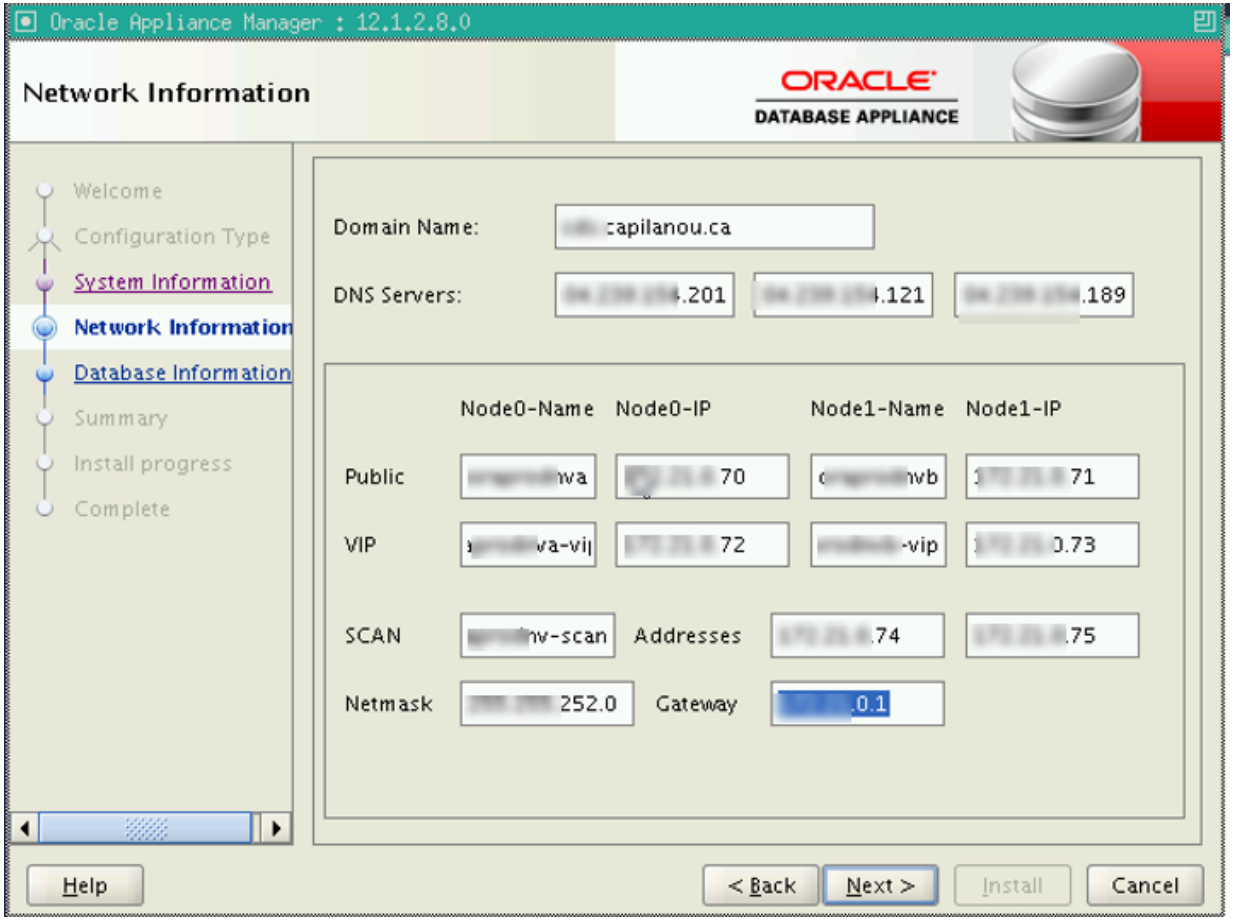

Oracle(R) Integrated Lights Out Manager Remote System Console Plus - 10.19.44.24 (Full Contr...
KVMS Preferences Help
Mouse Sync L Ctl L Win L Alt R Alt R Win R Ctl Context [Lock] Ctl-Alt-Del
Oracle VM Server 3.2.10 Console [Alt-F2 for login console]
Local hostname : oak1
Manager UUID : Unowned
Hostname : None
Server IP : None
Server Pool : None
Clustered : No
Server Pool Virtual IP : None
Cluster state : Unknown
Master Server : No
Cluster type : None
Cluster storage : None
OVS Agent : Running
VMs running : 0
System memory : 262010
Free memory : 254312
Uptime : 0 days, 0 hours, 4 minutes

Deploy the ODA_Base template from MOS and Deploy ODA_BASE

- Create VLANs
  - ODA Internal VLANs
  - Needs coordination with network admin for the trunk switch port
- Deploy ODA_BASE
  - Standing on DOM-0
  - CPU, VLAN, RAM assignment

```
[root@[redacted]rb-dom-0 OVS]# oakcli show oda_base
ODA base domain
ODA base CPU cores      :2
ODA base domain memory  :96
ODA base template       :/OVS/oda_base_12.1.2.8.tar.gz
ODA base vlans          :['net1', 'net2',vl200, 'vbr1']
ODA base current status :Running
```

- Deploy ODA_BASE software and Configuration
  - GI
    - Scan (cluster Access)
    - Public
    - VIP
  - Database


Oracle Appliance Manager : 12.1.2.8.0
Network Information
ORACLE
DATABASE APPLIANCE
Welcome
Configuration Type
System Information
Network Information
Database Information
Summary
Install progress
Complete
Domain Name:
capilanou.ca
DNS Servers:
.201
.121
.189
Node0-Name
Node0-IP
Node1-Name
Node1-IP
Public
VIP
SCAN
Addresses
Netmask
252.0
Gateway
Help
< Back
Next >
Install
Cancel

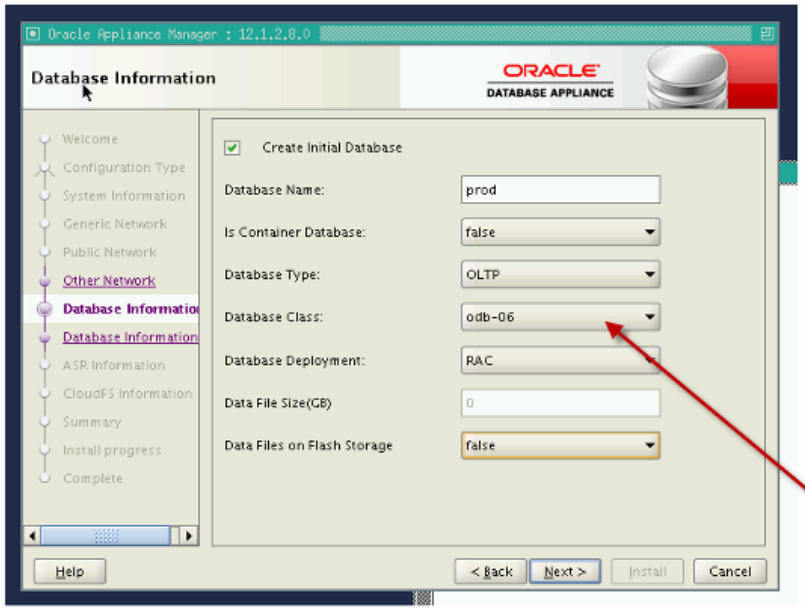
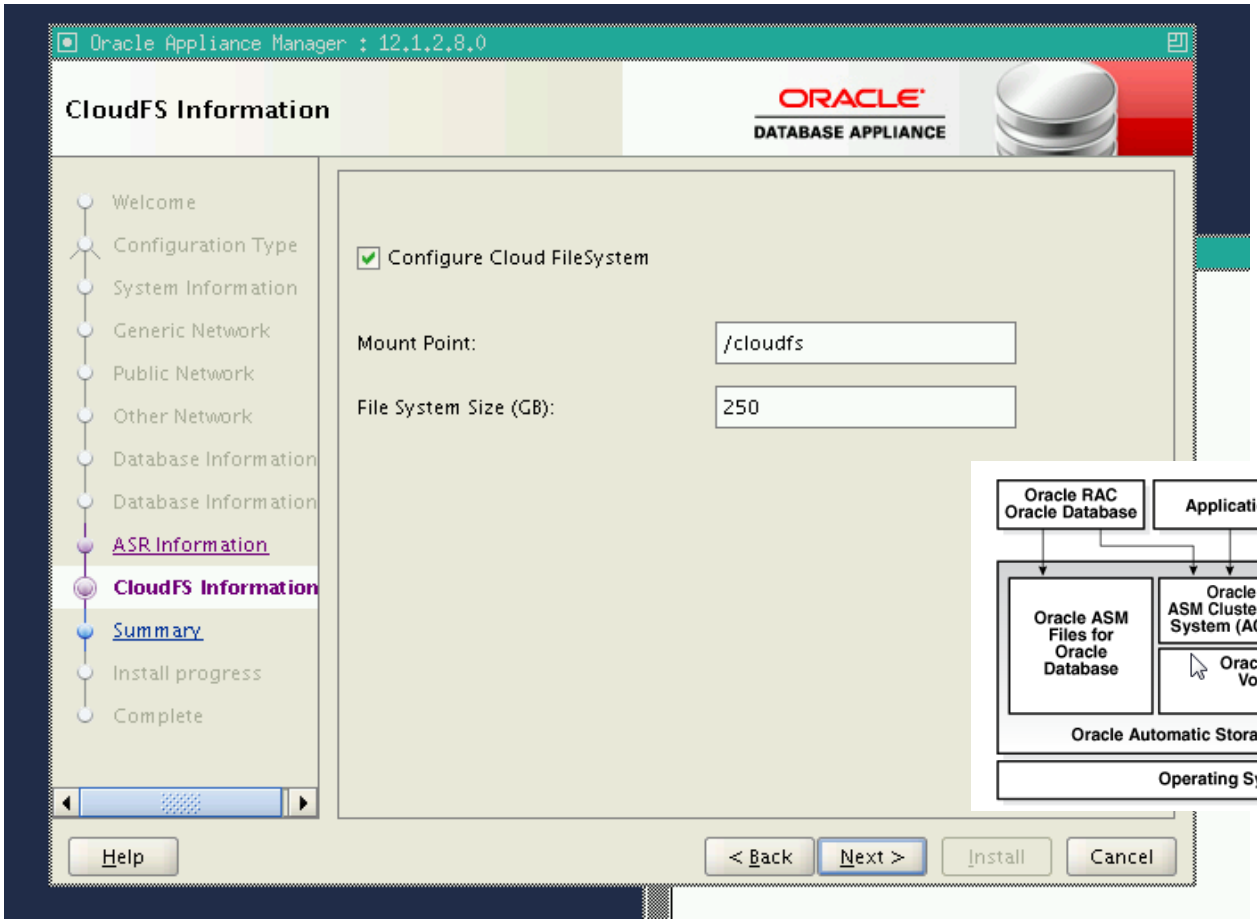


Table B–2 Oracle Database Appliance OLTP Database Template Size

Template	CPU Cores	SGA (GB)	PGA (GB)	Flash (GB)	Processes	Redo log file size (GB)	Logbuffer (MB)
odb-01s (All Hardware Versions)	1	2	1	6	200	1	16
odb-01 (All Hardware Versions)	1	4	2	12	200	1	16
odb-02 (All Hardware Versions)	2	8	4	24	400	1	16
odb-04 (All Hardware Versions)	4	16	8	48	800	1	32
odb-06 (All Hardware Versions)	6	24	12	72	1200	2	64
odb-12 (All Hardware Versions)	12	48	24	144	2400	4	64
odb-16 (X5-2, X4-2, X3-2 Only)	16	64	32	192	3200	4	64
odb-24 (X5-2, X4-2 Only)	24	96	48	192	4800	4	64
odb-32 (X5-2 Only)	32	128	64	192	6400	4	64
odb-36 (X5-2 Only)	36	128	64	192	7200	4	64

Note: Flash is applicable to Oracle Database Appliance X5-2 only.


Oracle Appliance Manager : 12.1.2.8.0
CloudFS Information
ORACLE
DATABASE APPLIANCE
Welcome
Configuration Type
System Information
Generic Network
Public Network
Other Network
Database Information
Database Information
ASR Information
CloudFS Information
Summary
Install progress
Complete
Configure Cloud FileSystem
Mount Point:
/cloudfs
File System Size (GB):
250
Help
< Back
Next >
Install
Cancel
Oracle RAC Oracle Database
Application
Application
Oracle ASM Files for Oracle Database
Oracle ASM Cluster File System (ACFS)
Third Party File System
Oracle ASM Dynamic Volume Manager (ADVM)
Oracle Automatic Storage Management
Operating System

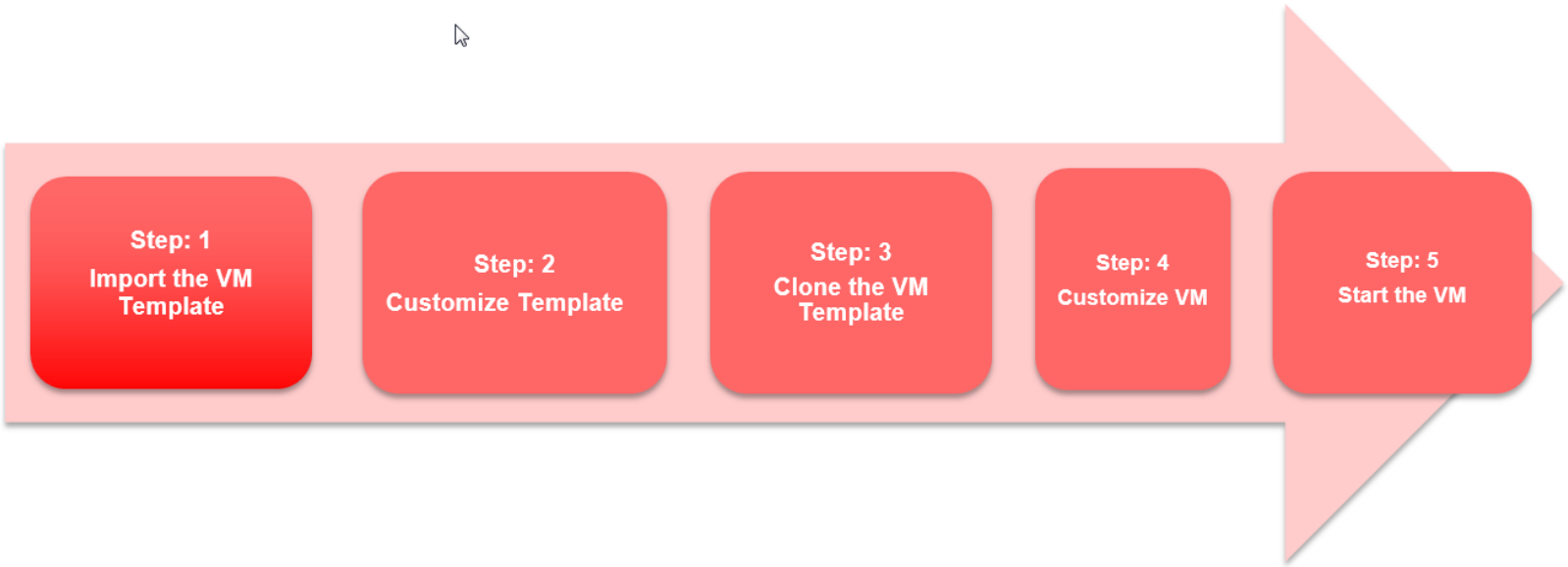
FYI : This is how the ACFS looks like after ODA_BASE was created

```
[root@ ~]# oakcli show dbstorage

All the DBs with DB TYPE as non-CDB share the same volumes

DB_NAMES        DB_TYPE    Filesystem                                  Size     Used     Available    AutoExtend Size  DiskGroup
--------        -------    ----------                                  ------   -----    ---------    ---------------  ---------
prod            non-CDB    /u01/app/oracle/oradata/datastore           31G      8.20G    22.80G       3G               REDO
                           /u02/app/oracle/oradata/datastore           3668G    2.00G    3666.00G     366G             DATA
                           /u02/app/oracle/oradata/flashdata           279G     144.69G  134.31G      27G              FLASH
                           /u01/app/oracle/fast_recovery_area/datastore 4875G   10.89G   4864.11G     487G             RECO

[root@ ~]#
```

Note : I had to resize /cloudfs because initially I had considered that as 250GB but then I thought its small so I increased it to 500GB. This is how it look like now

```
[root@ ~]# oakcli show fs
      Type      Total Space      Free Space  Total DG Space   Free DG Space  Diskgroup Mount Point
      ext3          55851M          43577M               -               -           /
      ext3            459M            398M               -               -           /boot
      ext3          93866M          68999M               -               -           /u01
      acfs        3756032M        3753983M        51544064M       40255064M       DATA /u02/app/oracle/oradata/datastore
      acfs         285696M         137531M         1526208M         954324M      FLASH /u02/app/oracle/oradata/flashdata
      acfs         512000M         510908M        68474432M       51961420M       RECO /cloudfs
      acfs        4992000M        4980847M        68474432M       51961420M       RECO /u01/app/oracle/fast_recovery_area/datastore
      acfs          31744M          23348M          763120M         622204M       REDO /u01/app/oracle/oradata/datastore
[root@ ~]#
```

Guest VM Deployment



- Create CPU Pools

```
[root@ ~]# oakcli show cpupool -node 0
                    Pool                                Cpu List
           odaBaseCpuPool                          [0, 1, 2, 3]
              bancpupool1                                [4, 5]
              bancpupool2                                [6, 7]
              bancpupool3                                [8, 9]
   default-unpinned-pool     [10, 11, 12, 13, 14, 15, 16, 1
                             7, 18, 19, 20, 21, 22, 23, 24,
                              25, 26, 27, 28, 29, 30, 31, 3
                             2, 33, 34, 35, 36, 37, 38, 39,
                              40, 41, 42, 43, 44, 45, 46, 4
                             7, 48, 49, 50, 51, 52, 53, 54,
                              55, 56, 57, 58, 59, 60, 61, 6
                             2, 63, 64, 65, 66, 67, 68, 69,
                                                    70, 71]


[root@ ~]# oakcli show cpupool -node 1
                    Pool                                Cpu List
           odaBaseCpuPool                          [0, 1, 2, 3]
              bancpupool1                                [4, 5]
              bancpupool2                                [6, 7]
              bancpupool3                                [8, 9]
   default-unpinned-pool     [10, 11, 12, 13, 14, 15, 16, 1
                             7, 18, 19, 20, 21, 22, 23, 24,
                              25, 26, 27, 28, 29, 30, 31, 3
                             2, 33, 34, 35, 36, 37, 38, 39,
                              40, 41, 42, 43, 44, 45, 46, 4
                             7, 48, 49, 50, 51, 52, 53, 54,
                              55, 56, 57, 58, 59, 60, 61, 6
                             2, 63, 64, 65, 66, 67, 68, 69,
                                                    70, 71]
```

- Download VM template and Import to Shared repository http://edelivery.oracle.com/oraclevm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V33685-01
563M
Download
Oracle Linux 6 Update 1 template (OVF) - Hardware Virtualized with PV drivers x86_64 (64 bit)
V33686-01
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Download
Oracle Linux 6 Update 2 template (OVF) - Paravirtualized x86_64 (64 bit)
V33689-01
574M
Download
Oracle Linux 6 Update 2 template (OVF) - Hardware Virtualized with PV drivers x86_64 (64 bit)
V33690-01
573M
Download
Oracle Linux 6 Update 3 template (OVF) - Paravirtualized x86_64 (64 bit)
V35123-01
576M
Download
Oracle Linux 6 Update 3 template (OVF) - Hardware Virtualized with PV drivers x86_64 (64 bit)
V35124-01
578M
Total: 6

- Configure VM Template
- Appliance Manager (oakcli) provides the ability to configure
  - CPU
  - Memory
  - CPU CAP
  - Network
  - Disk
- Create VDISKs

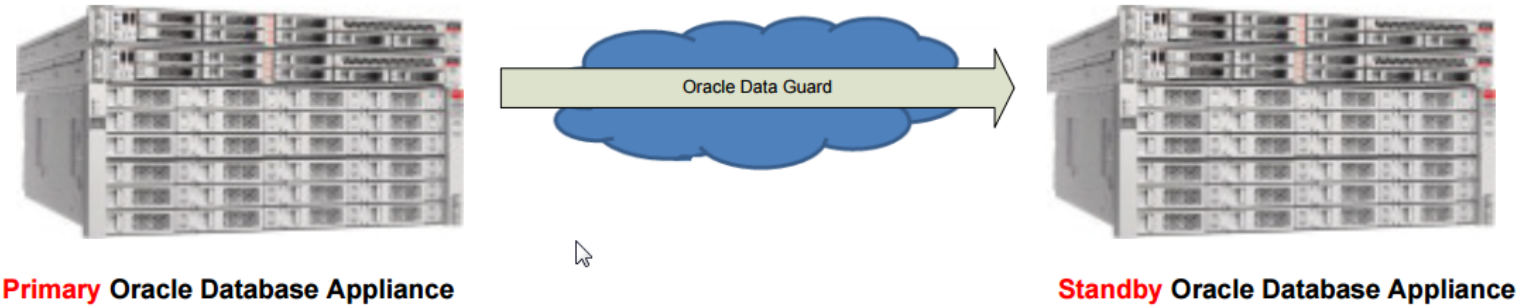
- Cloning Guest VMs from the template
  - Cloning process
    - Creates a runtime image of the VM Template
    - The image files and the configuration file are cloned
    - Both the template and cloned VM will reside in the same template
    - VM Names are Globally unique across the Repositories.
- Pin the VM to a specific Pool

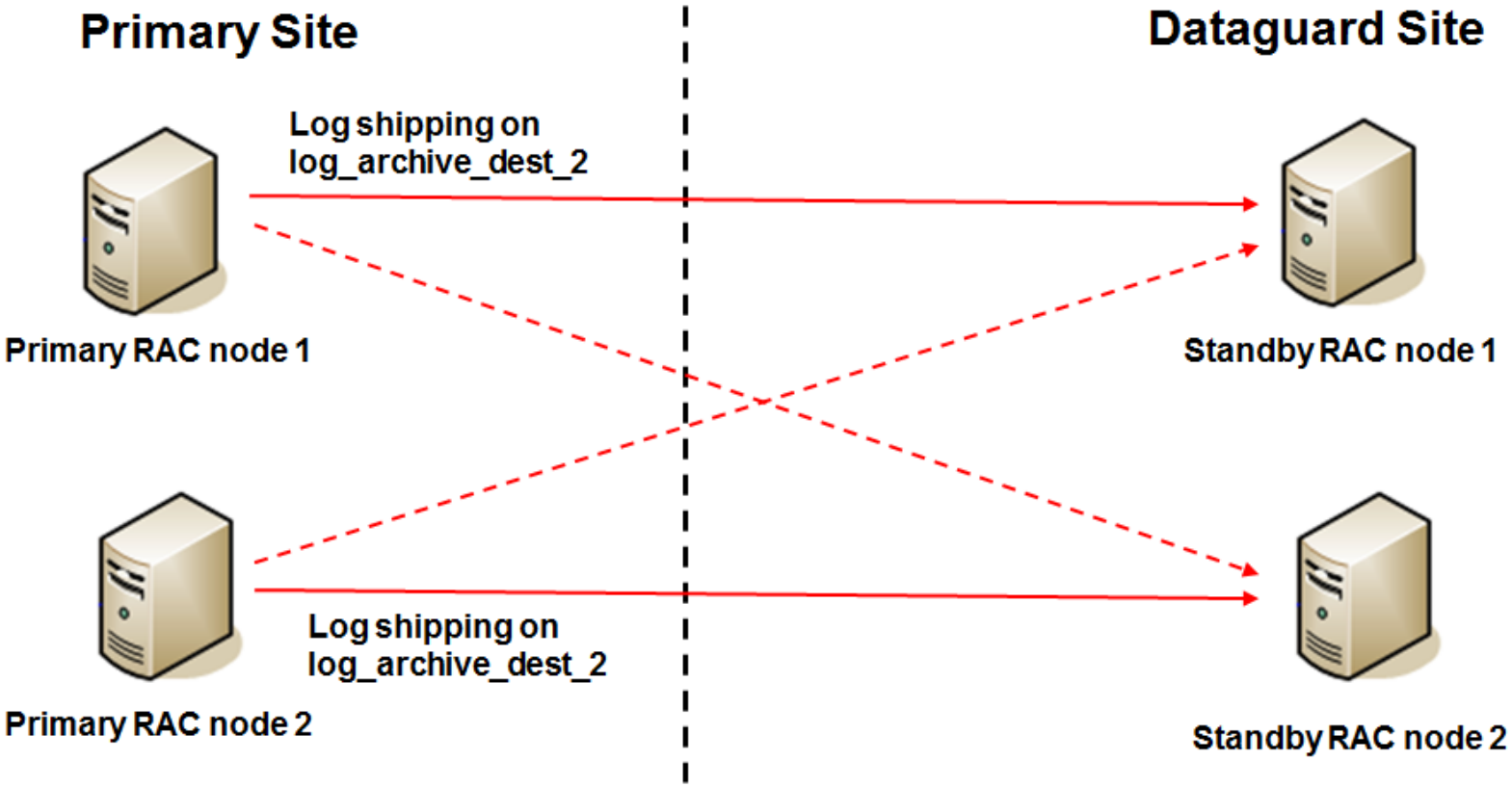
Customizing Guest VM

- Some of the other parameters that can be customized are
  - CPU
  - Memory
  - Network
  - Autostart

```
[root@ /]# oakcli show vm ORAPRODSSBNV1
The Resource is : ORAPRODSSBNV1
        AutoStart       :       restore
        CPUPriority     :       100
        Disks           :       |file:/OVS/Repositories/banrepo1/.A
                                CFS/snaps/ORAPRODSSBNV1/VirtualMach
                                ines/ORAPRODSSBNV1/16cb25e19f604d20
                                8223c808132a7f53.img,xvda,w|
        Domain          :       XEN_PVM
        DriverDomain    :       False
        ExpectedState   :       offline
        FailOver        :       true
        IsSharedRepo    :       true
        Keyboard        :       en-us
        MaxMemory       :       16384M
        MaxVcpu         :       2
        Memory          :       16384M
        Mouse           :       OS DEFAULT
        Name            :       ORAPRODSSBNV1
        Networks        :       ['bridge=VLAN
        NodeNumStart    :       0
        OS              :       OL_5
        PrefNodeNum     :       0
        PrivateIP       :       None
        ProcessorCap    :       100
        RepoName        :       banrepo1
        State           :       Offline
        TemplateName    :       otml_OL6U8
        VDisks          :       |oakvdk_vdisk1_banrepo1|
        Vcpu            :       2
        cpupool         :       bancpupool1
```

DB DR with DataGuard




Primary Site
Dataguard Site
Log shipping on
log_archive_dest_2
Primary RAC node 1
Standby RAC node 1
Log shipping on
log_archive_dest_2
Primary RAC node 2
Standby RAC node 2

- Thank You!
- Questions?