

**NUTANIX**®



## Albert Chen / Nutanix APJ System Specialist -BCA



- Experience

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- Certification

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**NUTANIX**

# What are Business Critical Applications

Any application that is mission critical to your business.

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- ERP systems and supporting databases and middleware
- Manufacturing, Process Automation and Control Systems – SCADA
- Financial systems, payment processing, online banking
- Middleware and ESB systems
- Billing systems
- Customer facing online systems
- What else?



# When to Virtualize that App?

- **n a y**
  - Hardware or software refresh
  - Uptime and compliance issues
  - Mergers or rapid business transformation
- **a n**
  - Exchange 2010 upgrade cycle (no in-place upgrade from either 2003 or 2007)
  - Issues with DAG or clustering
- - SQL version upgrade (e.g. 2005, 2008, 2012)
  - Changing Microsoft licensing from Enterprise to Datacenter
- **a n**
  - SharePoint version upgrade (e.g. 2007 to 2010)
  - Migration from other collaboration platforms/applications
- **a**
  - Creating cost-effective development and testing environments quickly
  - Underutilized Oracle database servers that need consolidation
- **A**
  - New SAP install
  - SAP upgrade cycle
  - Migration to 64-bit NetWeaver
  - New SAP modules (e.g. CRM, BW, SCM)
- **n a n**
  - Cost-cutting or end of mainframe lease
  - Changing database platform (e.g. DB2 to Oracle)
- **a a**
  - Scalability issues (e.g. parallelism or data latency)
  - Application downtime due to frequent software and system upgrades





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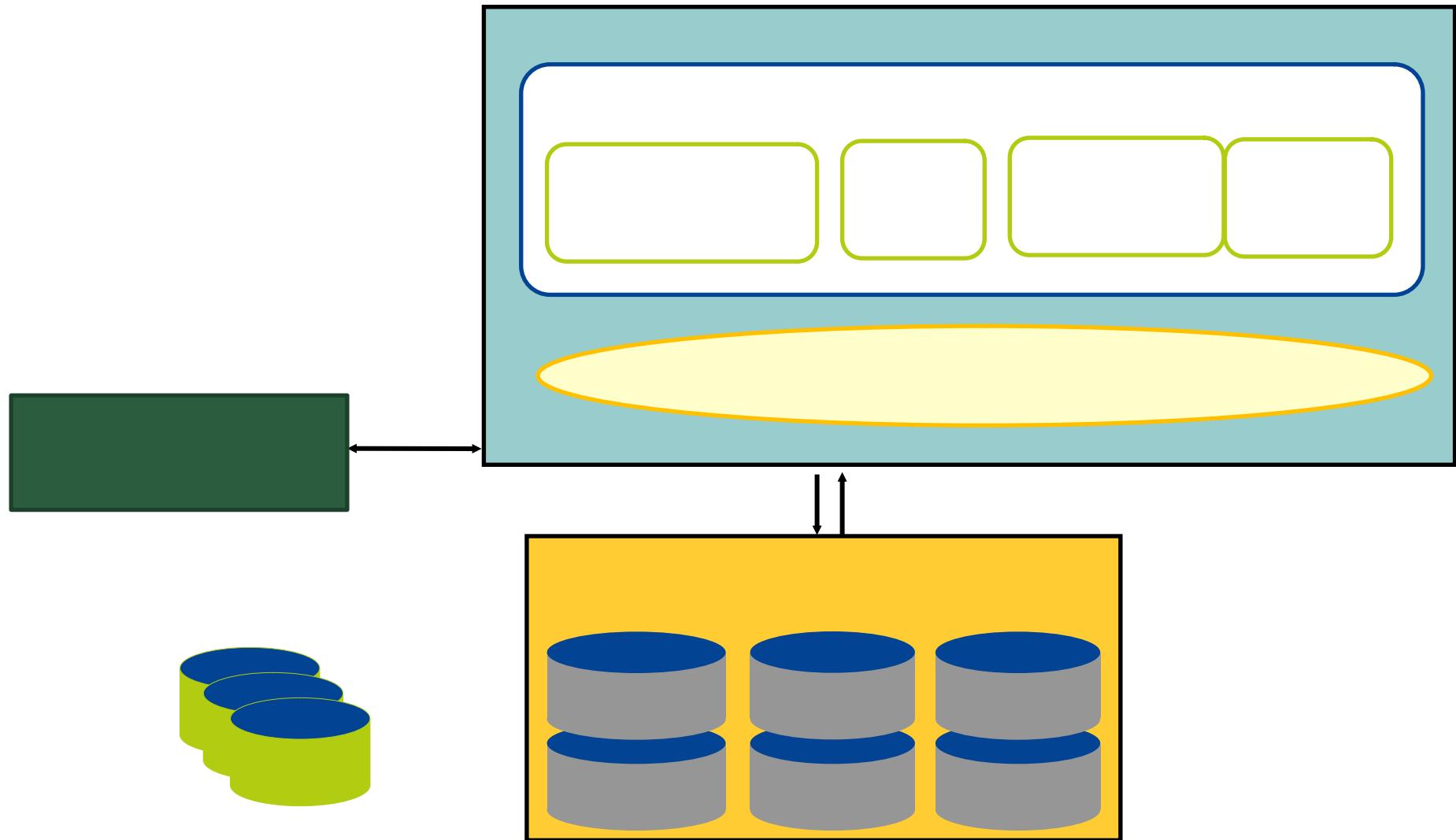
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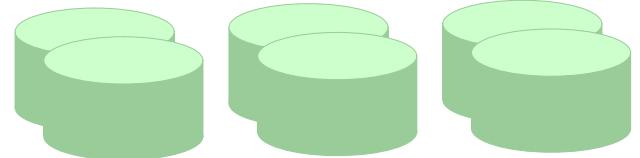
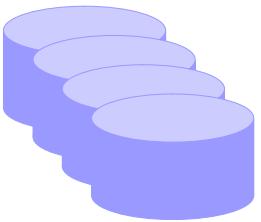
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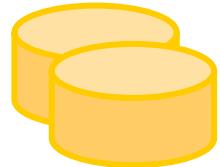
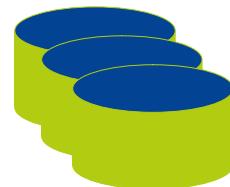
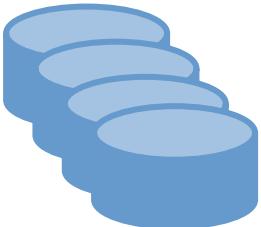
**ORACLE®**







Control files





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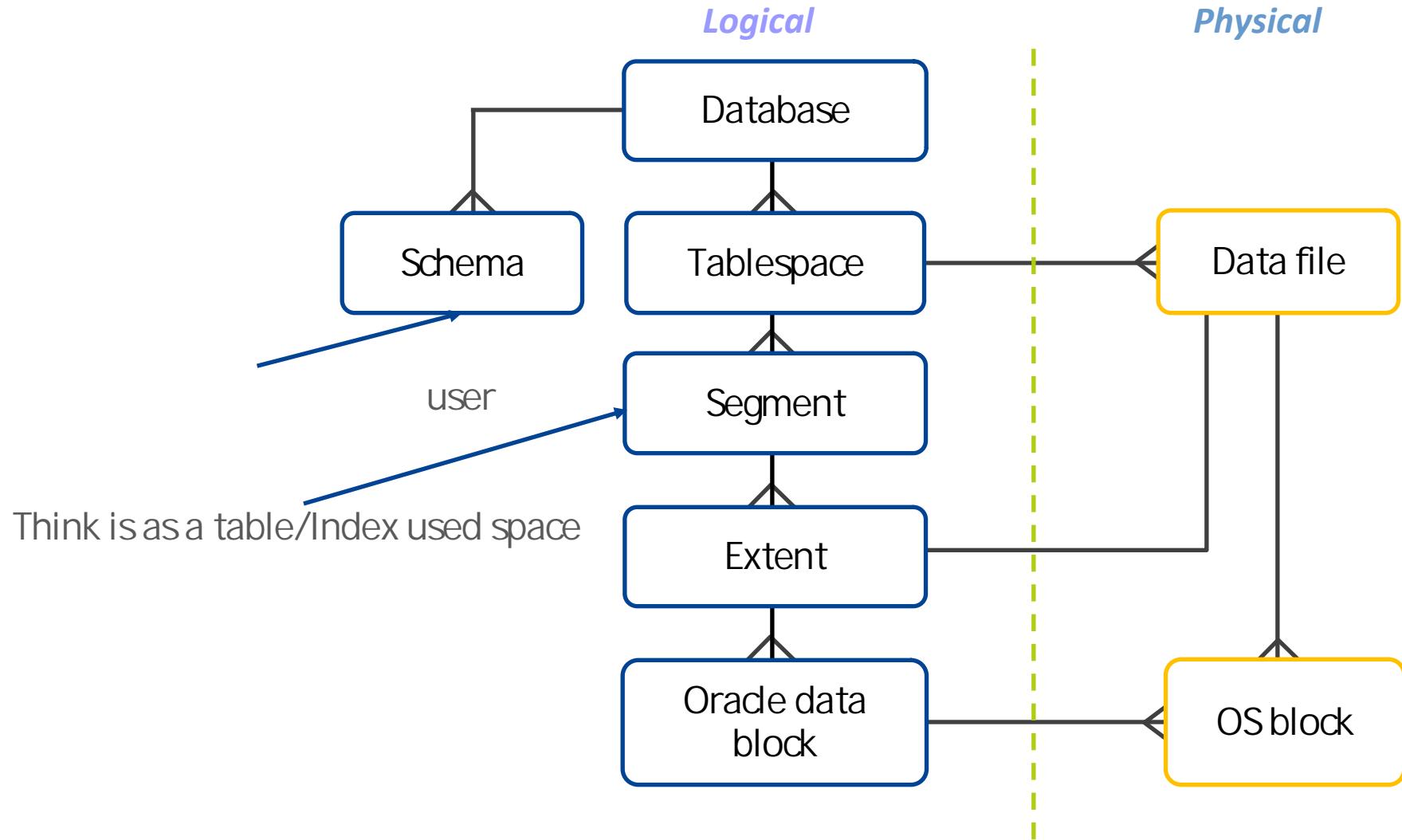
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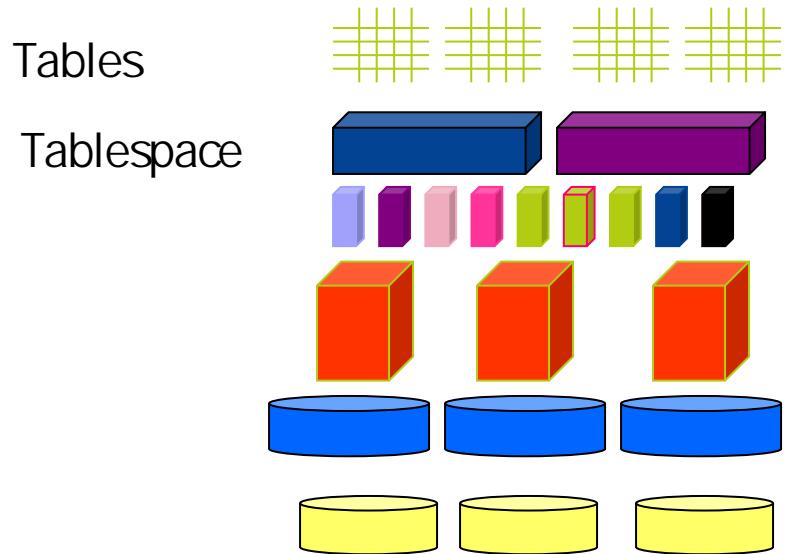
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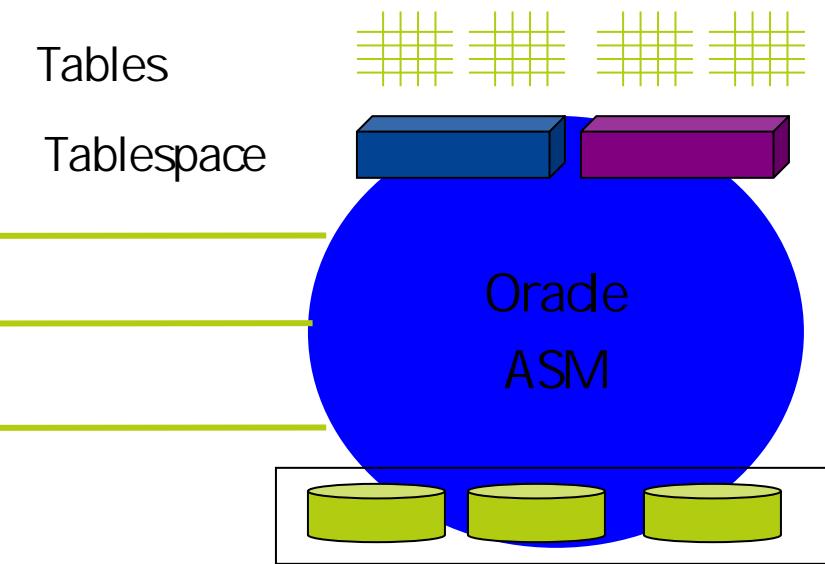
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## OLD UNIX Oracle DB

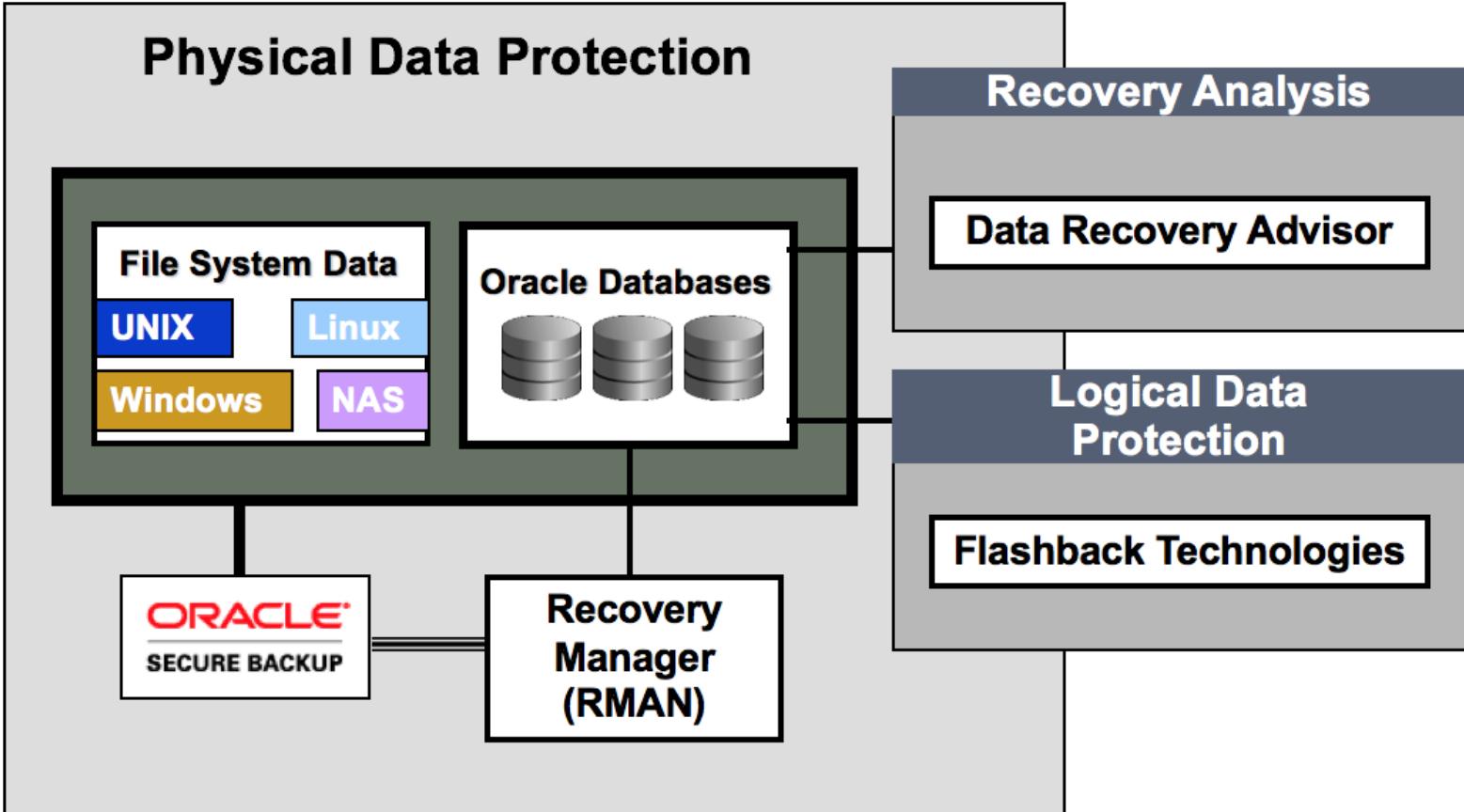


## ASM





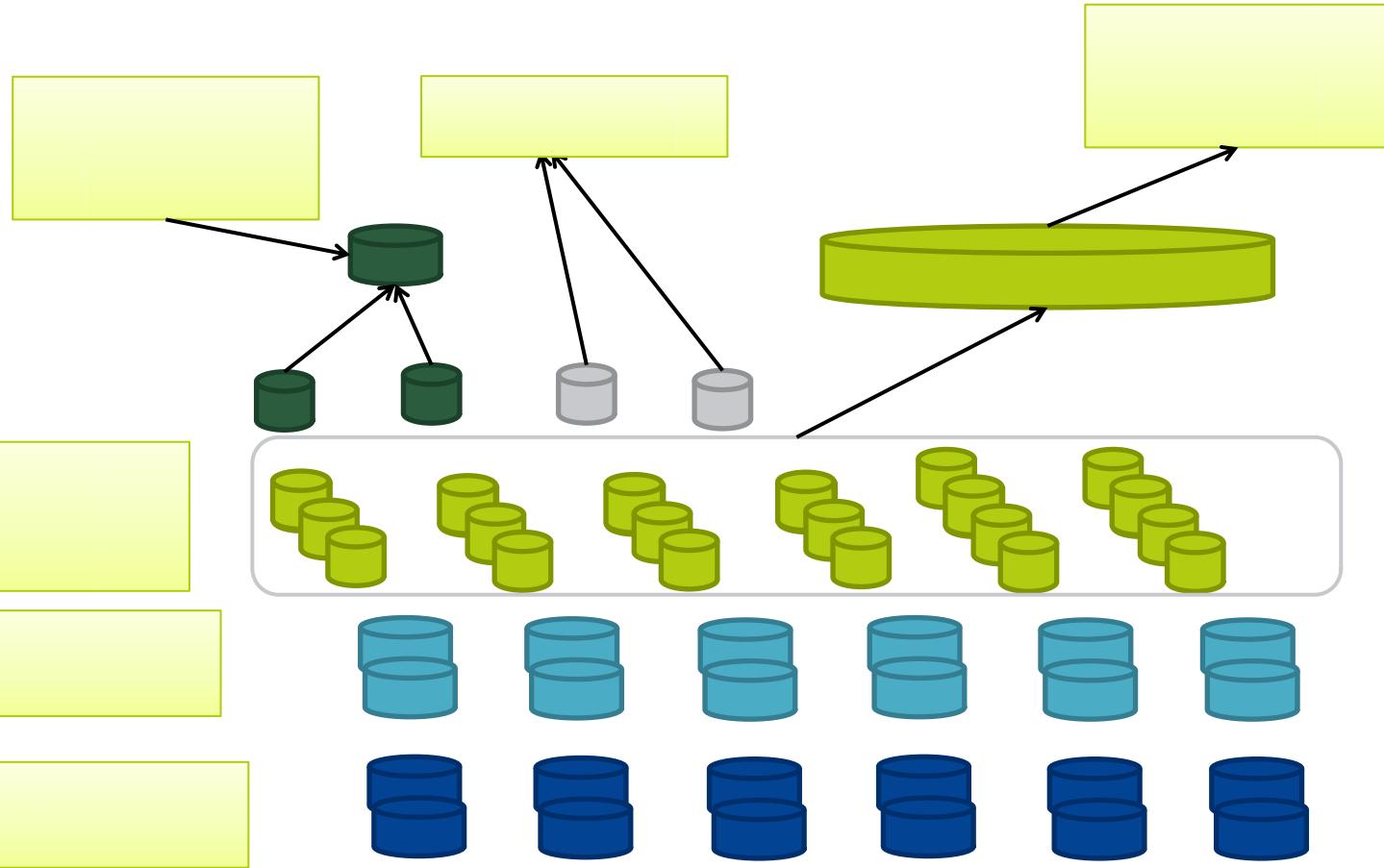
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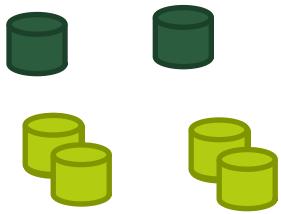


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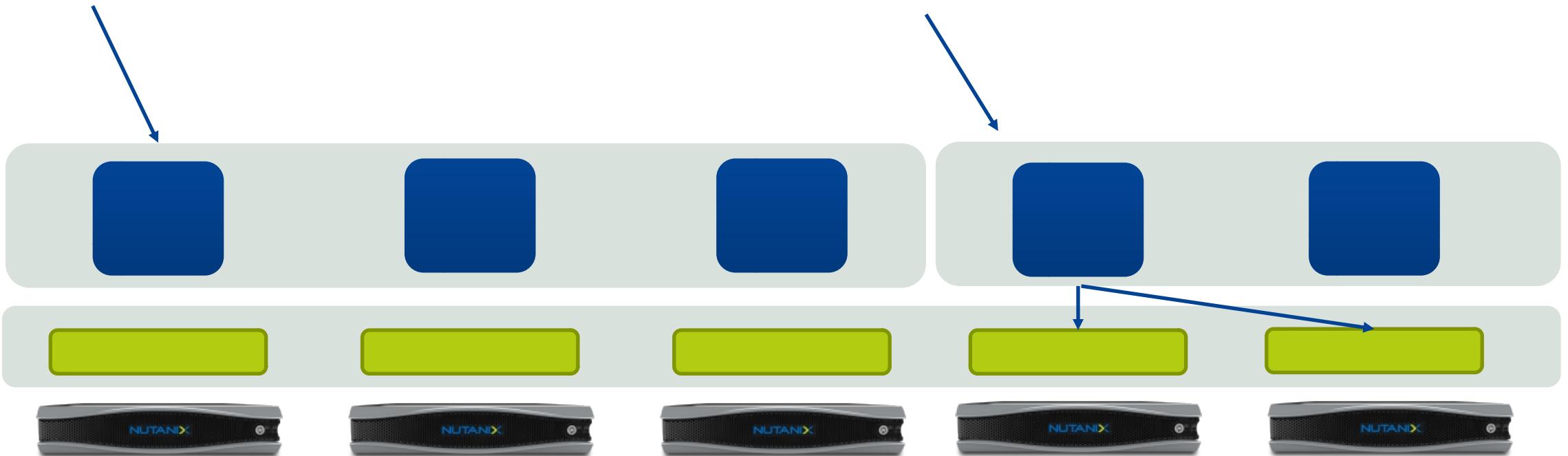


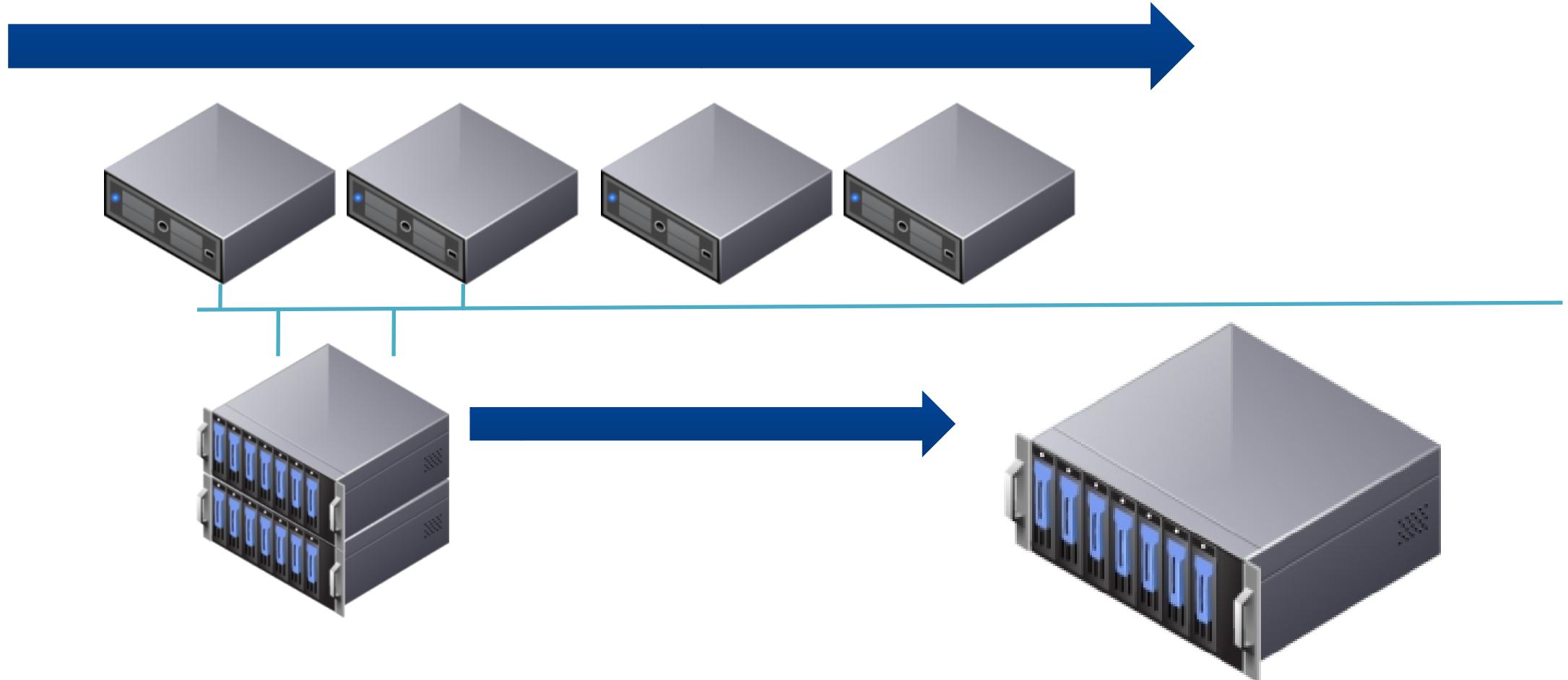


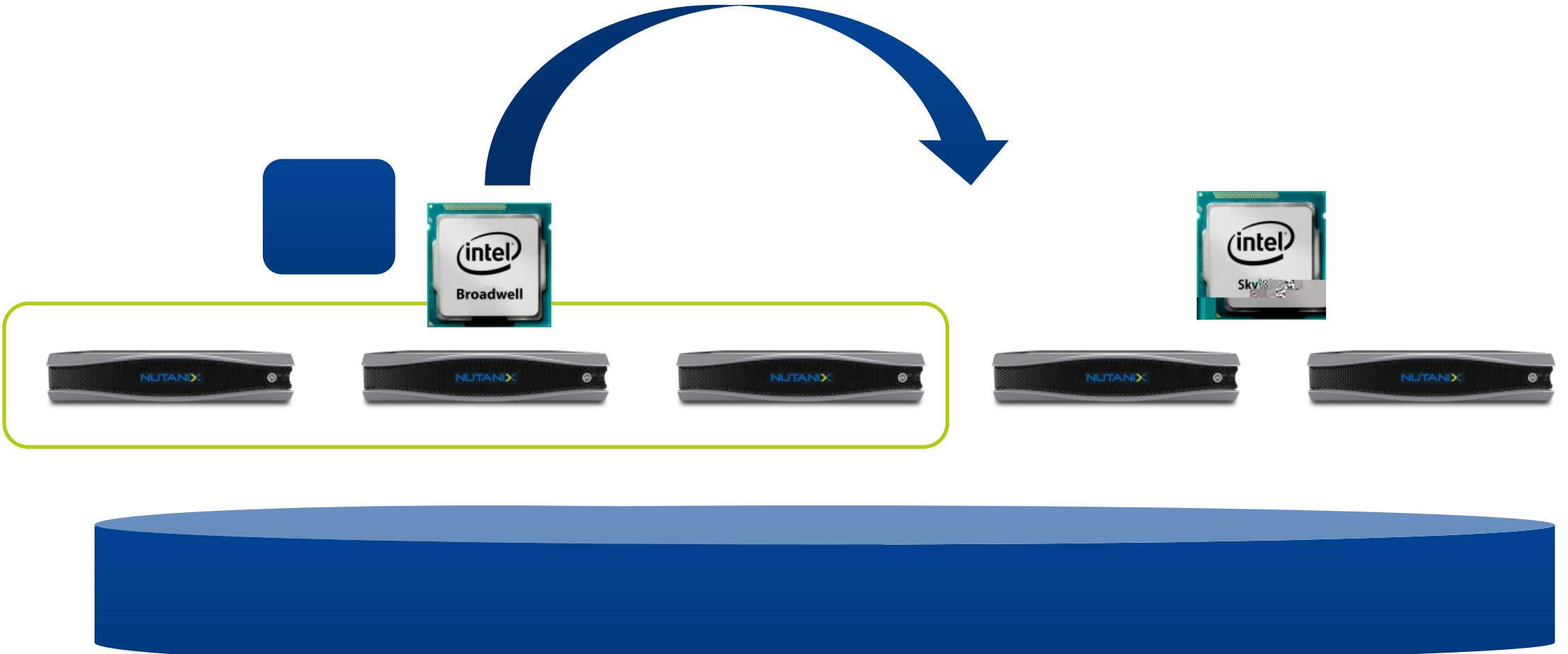
Key Question to customer



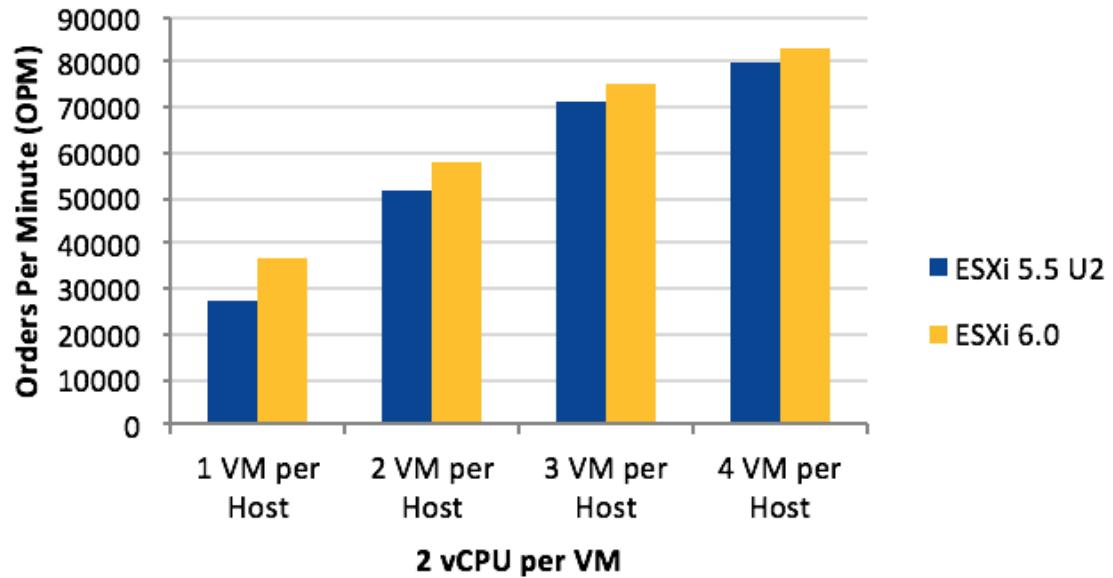




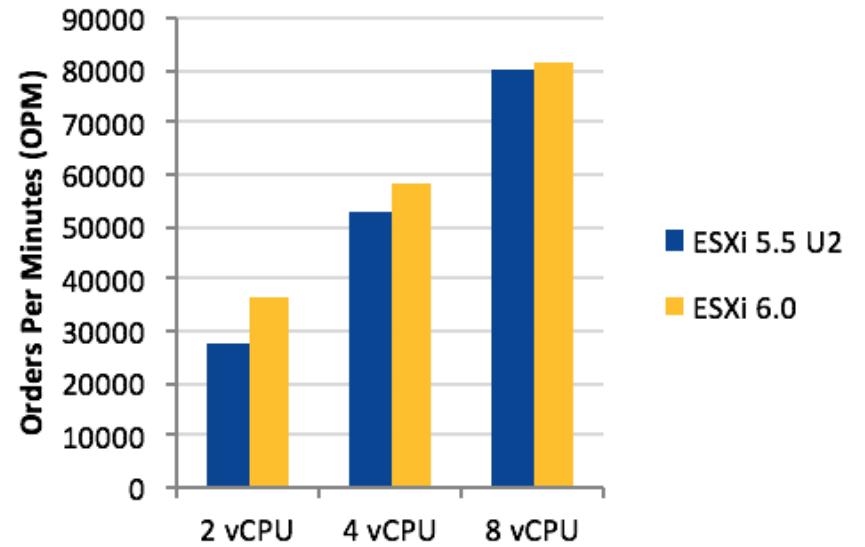




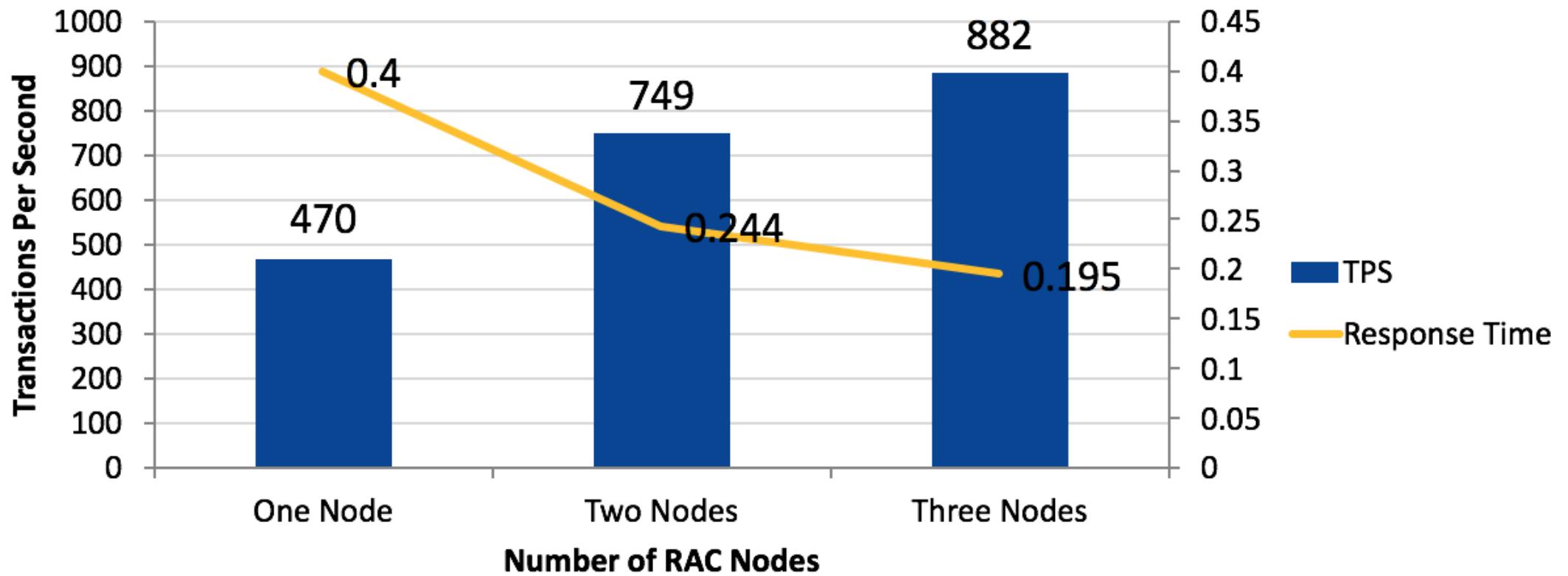
## SQL Performance Scalability



## One VM Per Host Scale Up

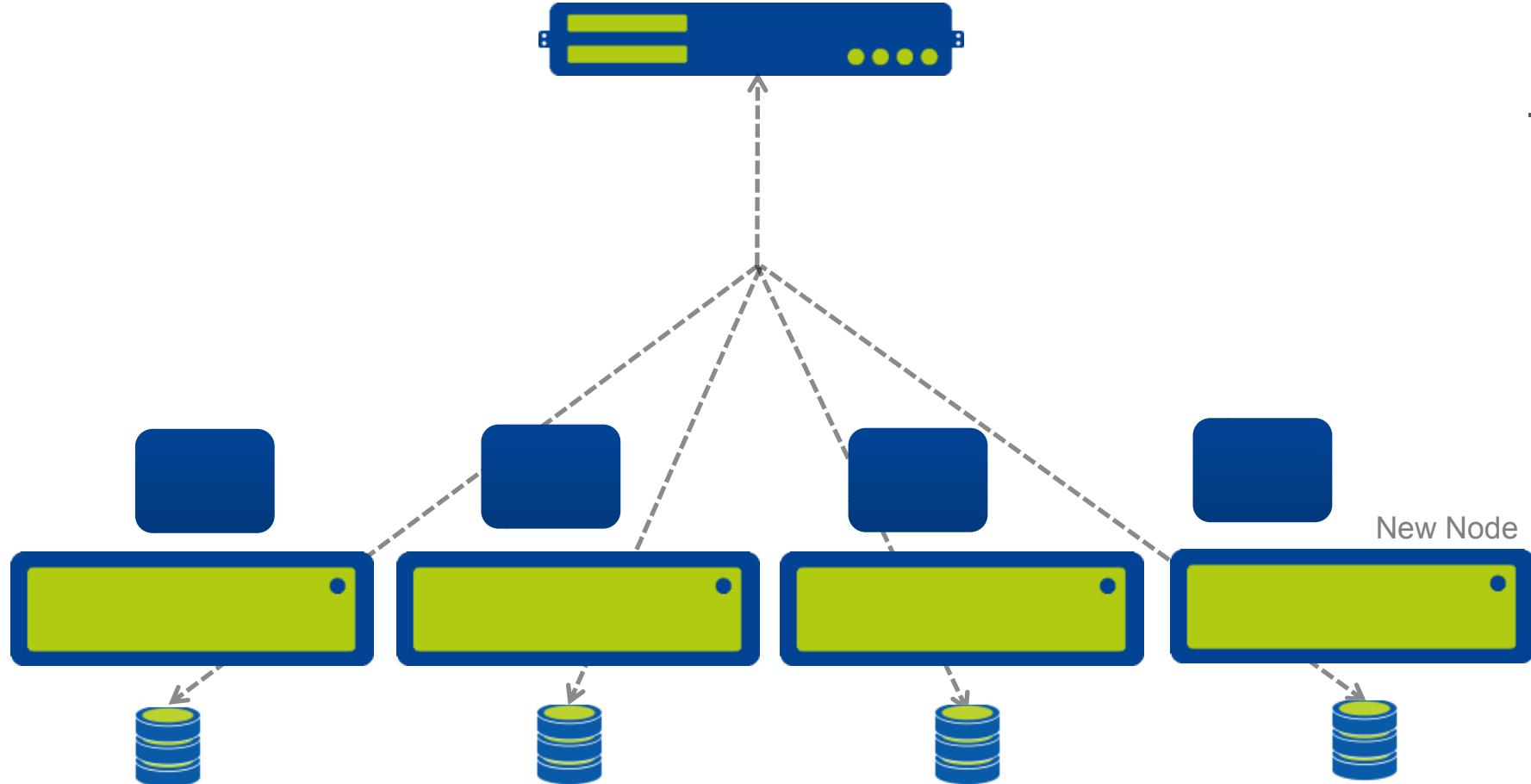


## Oracle RAC TPC-C 'Like' Scale Out





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## Hardware Certification List for Oracle Linux and Oracle VM

Server Systems Storage Systems

**Storage Details**

Vendor **Nutanix**  
Storage array **NX Series**  
Oracle VM Release **Oracle VM 3.4**  
Status **Certified for Joint Support**  
Product Information [Vendor web site](#)  
Certification Date **2016-11-04**

**Done**

**Storage Connect: Vendor Plugins**

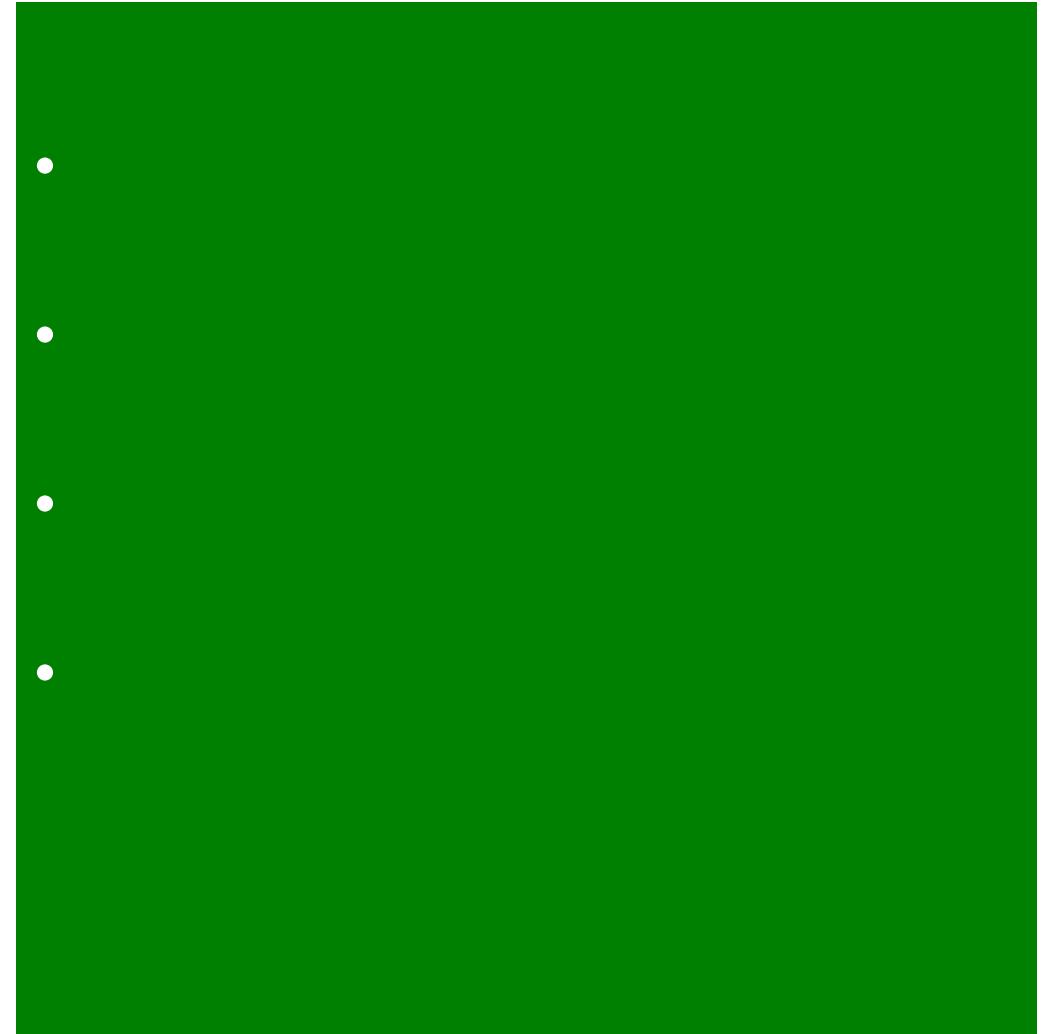
Access Type	Single Path
FC	<input type="checkbox"/>
NFS	<input type="checkbox"/>
iSCSI	<input type="checkbox"/>

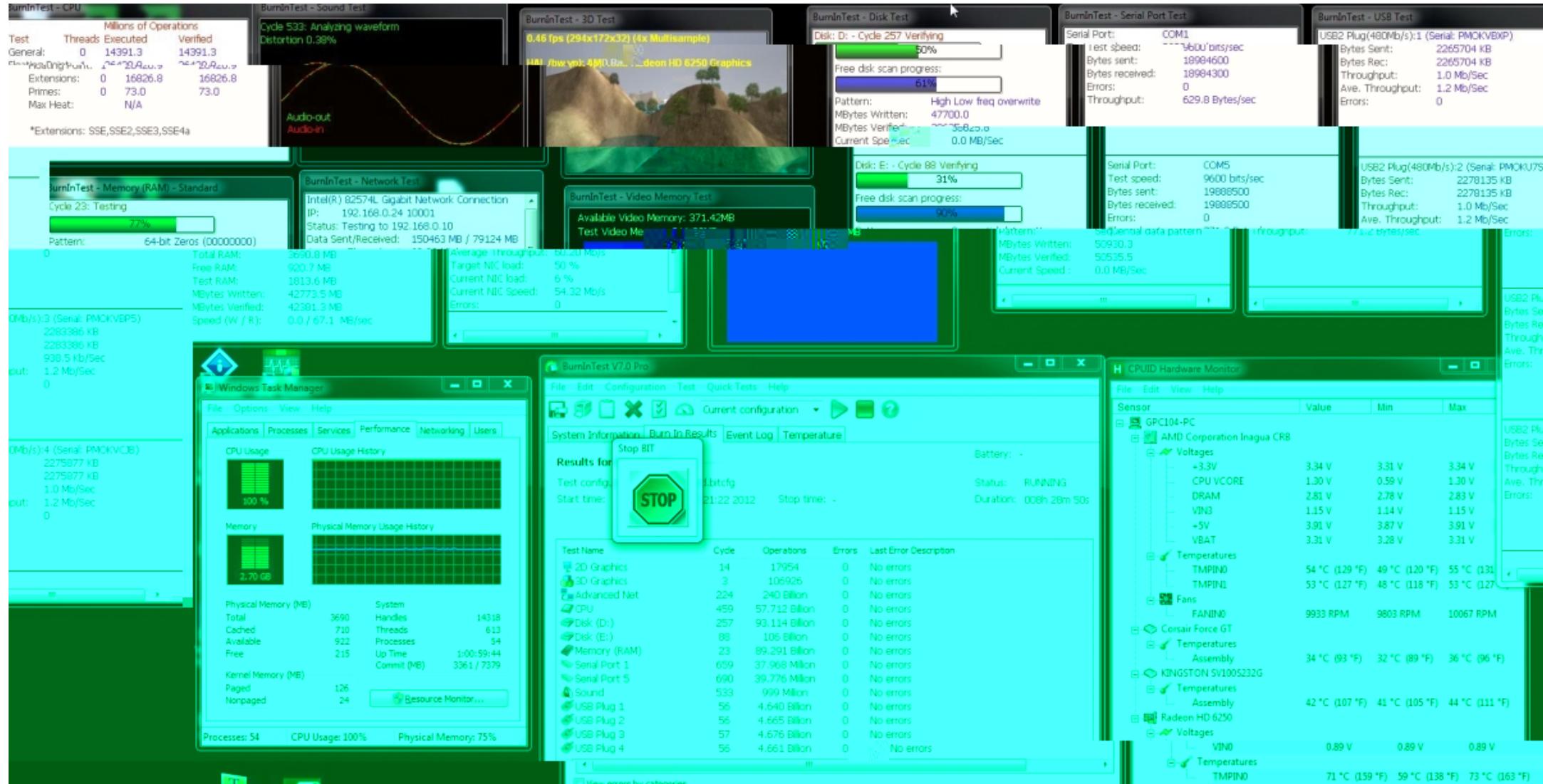
**Storage Connect: Generic Plugins**

Access Type	Single Path
FC	<input type="checkbox"/>
NFS	<input type="checkbox"/>
iSCSI	<input checked="" type="checkbox"/>

Storage Connect Plugin Note [\(i\)](#)

▶ [Expand for Multi-path configuration details](#)







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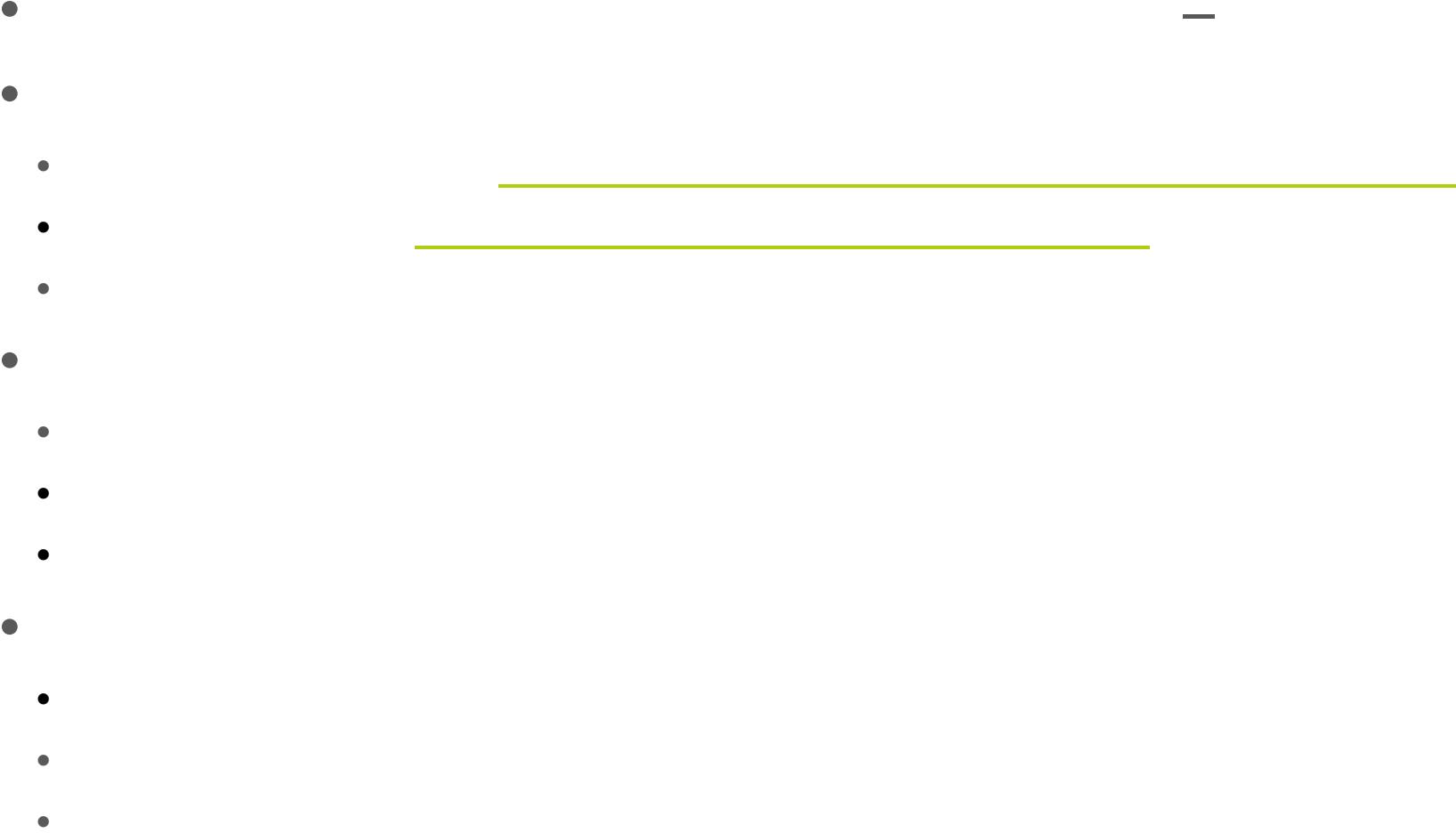
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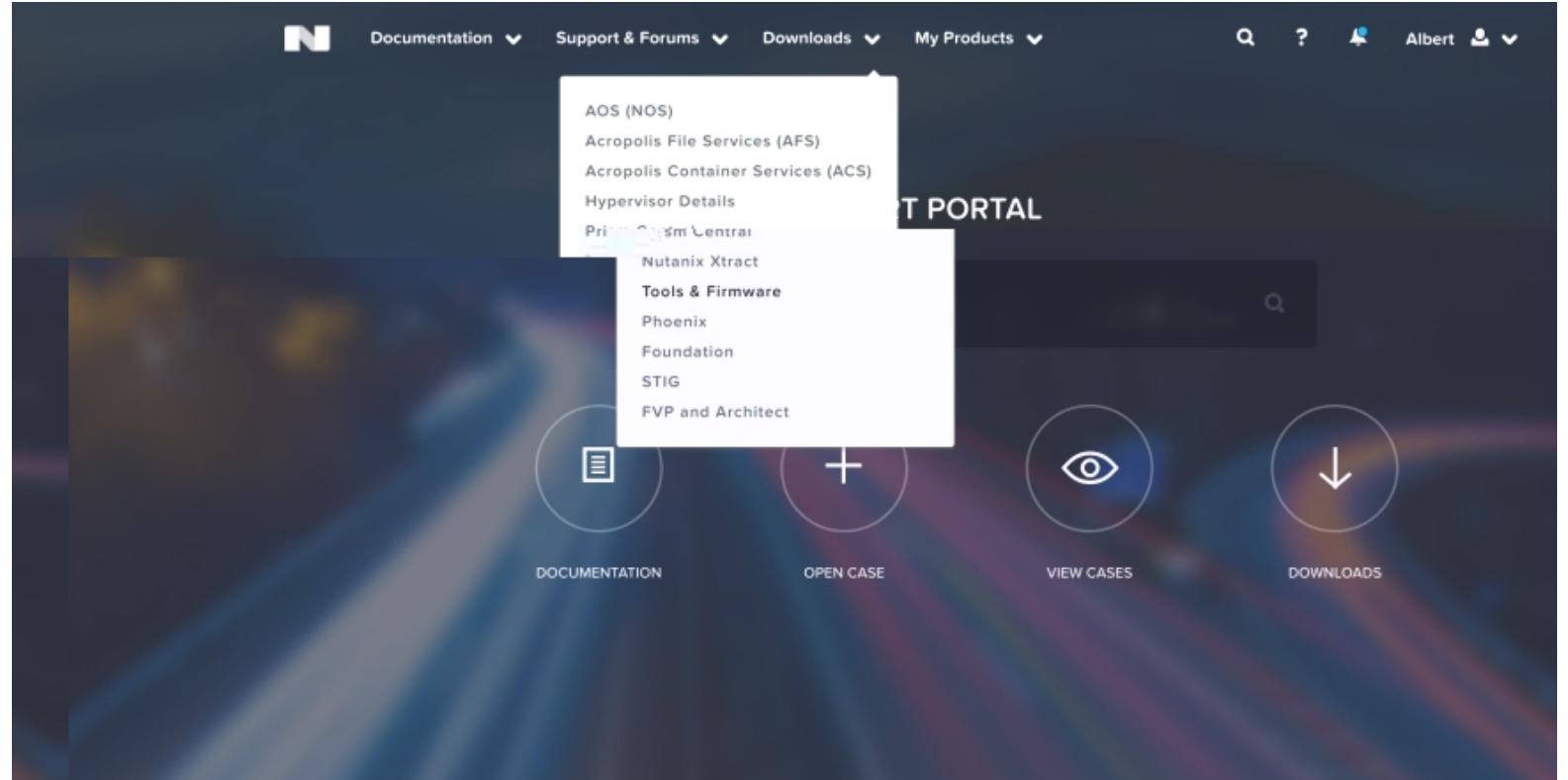
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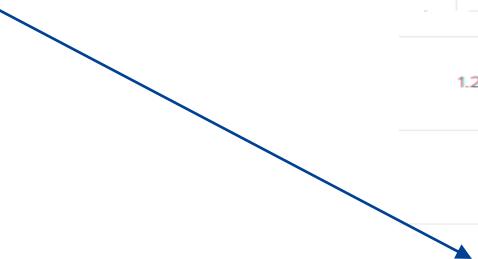




# X-Ray 2.0



# How to download X-Ray source



Downloads						
Category		Version	Date	Size	Release Notes	File
Nutanix VirtIO	1.1.1	July 17, 2017	8.3MB	<a href="#">Release Notes</a>	<a href="#">Nutanix-VirtIO-1.1.1-x86.msi</a>	<b>md5:</b> 4f7d5efdeb02d53543c1cddbea2a699e
Dell Firmware	3	July 13, 2017	71.4MB	<a href="#">Release Notes</a>	<a href="#">nfw-firmware-dell-v3.zip</a>	<b>md5:</b> 2d2eaa8f5811f9c53cb9b2fe10a2d33f
Nutanix Cluster Check	3.0.4	June 27, 2017	111.7 MB	<a href="#">Release Notes</a>	<a href="#">nutanix-ncc-el6-release-ncc-3.0.4-stable-installer.sh</a>	<b>md5:</b> bd43bc087f705f5350e56166041d1c46
Nutanix Cluster Check	3.0.4	June 27, 2017	82.7 MB	<a href="#">Release Notes</a>	<a href="#">nutanix-ncc-el6-release-ncc-3.0.4.tar.gz</a>	<b>md5:</b> 856232ca0c40b85cd07afca5f90da633
Nutanix Cluster Check Metadata JSON	3.0.4	June 27, 2017	-	<a href="#">Release Notes</a>	<a href="#">ncc3.0.4.json</a>	<b>md5:</b> -
Nutanix VirtIO 1.1.1 for Windows (iso)	1.1.1	May 31, 2017	45MB	<a href="#">Release Notes</a>	<a href="#">Nutanix-VirtIO-1.1.1.iso</a>	<b>md5:</b> 33cc43a32a65f99d7f8abe2aa5ebfa70
Nutanix VirtIO 1.1.1 for Windows (installer)	1.1.1	May 31, 2017	13MB	<a href="#">Release Notes</a>	<a href="#">Nutanix-VirtIO-1.1.1.msi</a>	<b>md5:</b> 33cc43a32a65f99d7f8abe2aa5ebfa70
Documentation		LCM_1.1.tgz				
Documentation		<a href="#">NutanixSRA.msi</a>				
X-Ray						
Life Cycle Manager(LCM) Version 1.1		1.1	May 25, 2017			
SRA		2.2	May 24, 2017			
X-Ray tool		2.0	May 16, 2017			

# Create X-Ray VM

Note:

Recommend install this VM  
outside the testing cluster

**Create VM**

**General Configuration**

NAME: XRAY-SRV

DESCRIPTION: Optional

Use this VM as an agent VM

**Compute Details**

VCPU(S): 2

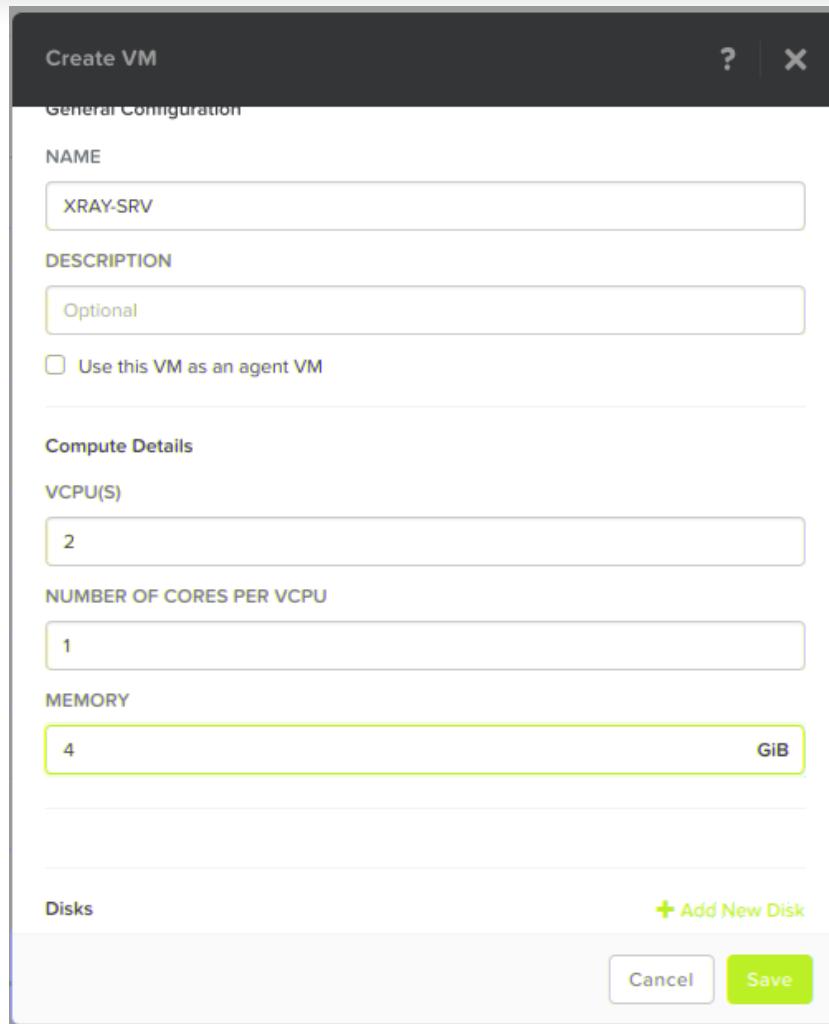
NUMBER OF CORES PER VCPU: 1

MEMORY: 4 GiB

**Disks**

+ Add New Disk

Cancel Save



**Add Disk**

TYPE: DISK

OPERATION: Clone from Image Service

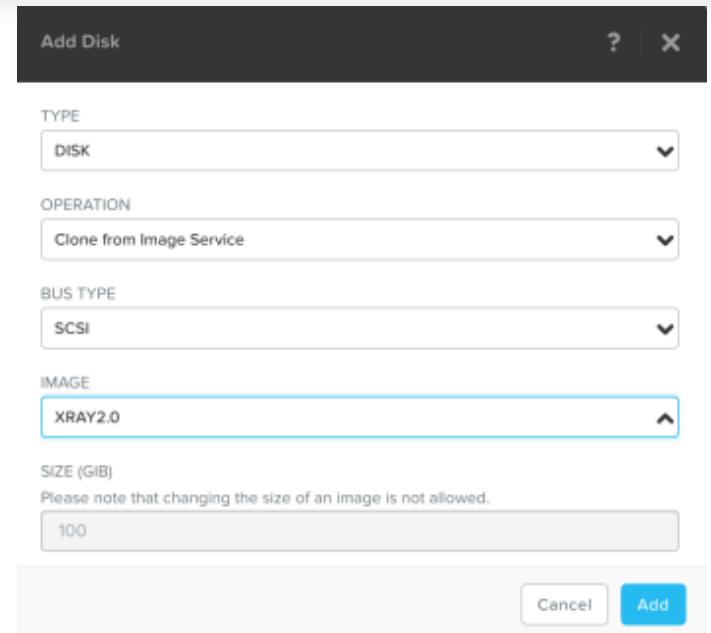
BUS TYPE: SCSI

IMAGE: XRAY2.0

SIZE (GiB): 100

Please note that changing the size of an image is not allowed.

Cancel Add



# Test Scenario

X-Ray    Tests    Analyses    Targets    ⚙️

COMPLETE

- BCA**  
Database Colocation: All-Flash  
06/29/17 06:58:07
- BCA**  
Database Colocation: All-Flash  
06/29/17 04:45:24
- Sample: NX-8150**  
Database Colocation: All-Flash  
06/08/17 01:32:05
- Sample: NX-3060**  
Database Colocation: Hybrid  
06/08/17 01:32:04
- Sample: NX-3060**  
Extended Node Failure  
06/08/17 01:32:03
- Sample: NX-3060**  
HCI Workflow  
06/08/17 01:32:02

**BCA** Actions Add Note PERFORMANCE NETWORK MIXED WORKLOADS

Test type: Database Colocation: All-Flash [See Test Details](#)  
Version: Prism : 5.11.3 | AHV : 20160925.71 | Nutanix : 5.11.3

Start time: 06/29/17 04:56:49  
Runtime: 3 h

Status: Completed [See Status Details](#) Platform: Nutanix [See Target Information](#)

**OLTP IOPS** Reset Zoom

**DSS IOPS (VM 0)** Reset Zoom

Contrast: Normal • High X

# Choose Hybrid/ All Flash Scenario

New Test Package

SELECT TEST

**Database Colocation**  
Impact of running colocated DB workloads [...]  
Estimated Duration: 2 h

**Snapshot Impact**  
Impact on OLTP sustained performance with...  
Estimated Duration: 9 h - 13 h

**Rolling Upgrade**  
VM performance and availability during seq...  
Estimated Duration: 10 h

**VDI Simulator**  
Sustained, fixed-rate performance with VDI ...  
Estimated Duration: 3 h

**HCI Workflow**  
A day in the life of a hyperconverged syste...  
Estimated Duration: 8 h

**OLTP Simulator**  
Sustained, fixed-rate performance with OLT...  
Estimated Duration: 2 h - 3 h

**Database Colocation**

Estimated Duration: 2 h

**Summary**  
Impact of running colocated DB workloads (OLTP+DSS)

**Test Objectives**  
This test is designed to show the effects of running two different database workloads (OLTP and DSS) on three different nodes within the same cluster.

**Setup**

1. Deploy the OLTP DB VM on node 1, and a DSS DB VM on nodes 2 and 3.
2. Pre-fill the VMs with data.
3. Warm up the OLTP DB for 30 minutes.

**Measurement**

1. Start the OLTP workload with a runtime of 60 minutes.
2. Wait 30 minutes while OLTP workload runs alone.
3. Start the DSS workload with a runtime of 30 minutes.

**Test Requirements**

- vCPUs: 4 vCPUs on nodes 1-3
- RAM: 4 GB on nodes 1-3
- Cluster Storage: 348 GB
- IP Addresses: 3

Test Variants	Estimated Time
<input checked="" type="radio"/> Hybrid	2 h
<input type="radio"/> All-flash	2 h

**MIXED WORKLOADS** **NETWORK** **PERFORMANCE**

**Add to Queue**

# Add Target

Create Target X

1. General    2. Cluster    3. Node

**General Config**

**NAME**

**MANAGER TYPE**

**CLUSTER TYPE**

**HYPervisor**

**vCenter Config**

**ADDRESS**

**USERNAME**

Cancel Next

# Result Analysis

X-Ray    Tests    Analyses    Targets    ⚙️

IN PROGRESS

- BCA**  
OLTP Simulator: Medium  
Estimated Time: 3 h

COMPLETE

- BCA**  
Database Colocation: All-Flash  
08/29/17 06:58:07
- BCA**  
Database Colocation: All-Flash  
08/29/17 04:45:24

**BCA**    Actions ▾    Add Note    PERFORMANCE    NETWORK    MIXED WORKLOADS

Test type: Database Colocation: All-Flash [See Test Details](#)    Start time: 08/29/17 04:56:49    Platform: Nutanix  
Version: Prism : 5.1.1.3 | AHV : 20160925.71 | Nutanix : 5.1.1.3    Runtime: 3 h    [See Target Information](#)

Status: Completed [See Status Details](#)

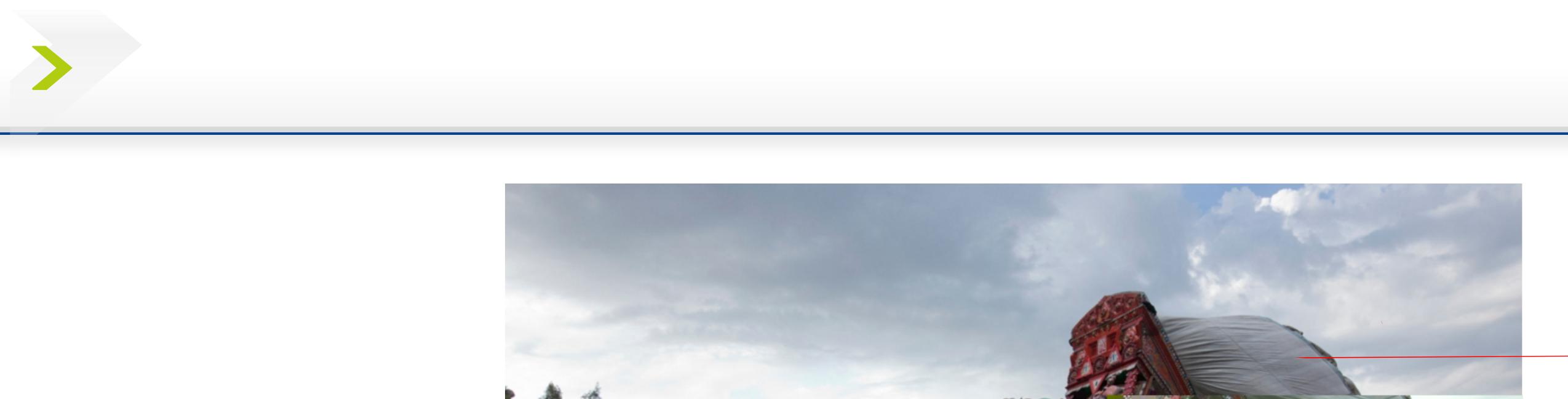
OLTP IOPS

Reset Zoom

# Result Analysis







When you sizing wrong in the beginning  
Then you need all the experts help you  
But we may not rescue you because It's  
Overload !!!









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[capture\\_awr\\_stats.sql](#)

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[7424-7627.out](#) (Corp VPN is needed)

Step 3- Nutanix SE

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[awr-hist-2505896440-PPTL1-](#)

[AEBPD01-40055-40852-1-plot.pdf](#)



# Oracle AWR Analyzer

## Steps to use this tool

- Request the customer to run the AWR Capture SQL to capture the data. Run this [capture\\_awr\\_stats.sql](#)
- Upload the output file in either awr-hist\*.out format or a zip file format (in case of multiple files)
- Once you upload the file the parser will parse the output and generate a PDF output multiple output files at once. Sample PDF here [AEBPD01-40055-40852-1-plot.pdf](#)

### Select a file to upload:

選擇檔案 awr-hist-14237...ORCL-0-155.out

Upload & Parse File

Once the file has been uploaded the tool will parse the file and generate multiple output files.

with the tool

Contact [murali.sriram@nutanix.com](mailto:murali.sriram@nutanix.com) for any questions or help with the tool



← → C 10.20.13.52:8080/RProjectData/253953264/

## Directory Listing For /253953264/ - Up To /

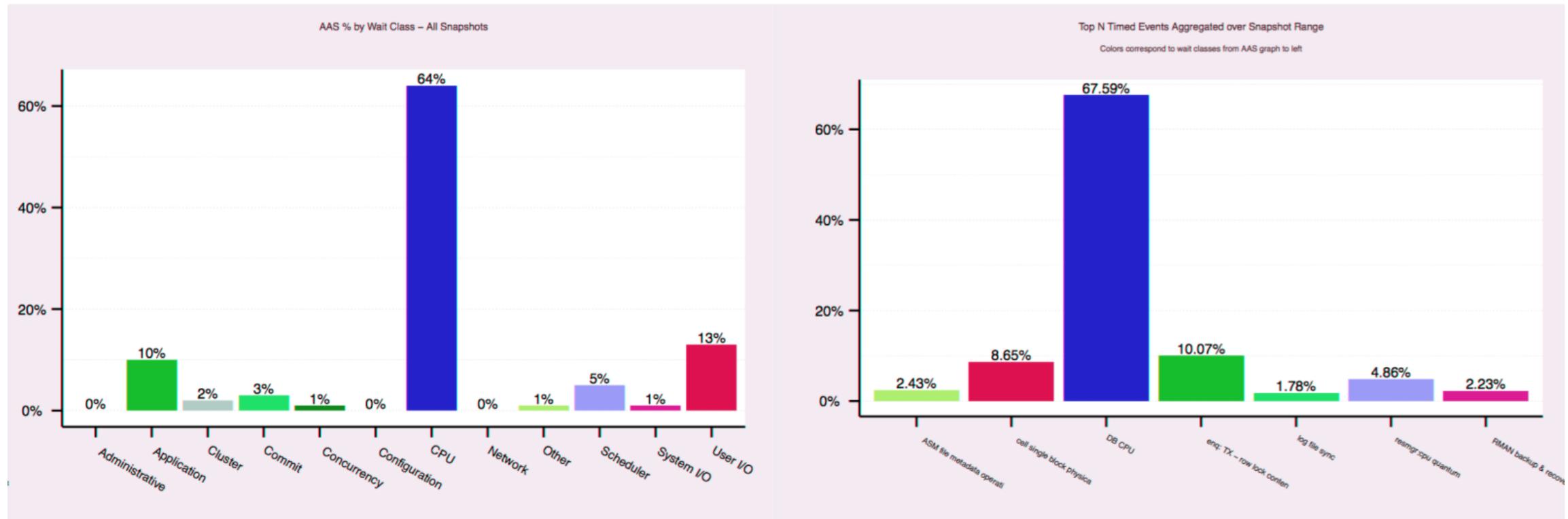
Filename	Size
<a href="#"><u>ORCL-1-155-1-plot.pdf</u></a>	139.7 kb
<a href="#"><u>OverallSummary.csv</u></a>	0.3 kb
<a href="#"><u>awr-hist-1423744458-ORCL-0-155.out</u></a>	1090.3 kb
<a href="#"><u>readme.html</u></a>	0.4 kb

Apache Tomcat/7.0.64

name	nodes	platform	version	sockets	cores	threads	mem	days	days.shown
IR4PRD	6	Linux_x86_64-bit	11.2.0.3.0	12	96	192	1511.94	28.8	28.8

cpu	r_iops	w_iops	r_mb_s	w_mb_s	logons_total	logons/core	exec_s	commits_s	aas	sqa	pqa	memused	sizeqb
98.1	89571.2	7872.4	10837.3	1353.3	3722.8	39	55448.9	1479	105.2	258	51	308	13624

HOSTS exp1dbadm01,exp1dbadm02,exp1dbadm03,exp1dbadm04,exp3dbadm05,e.

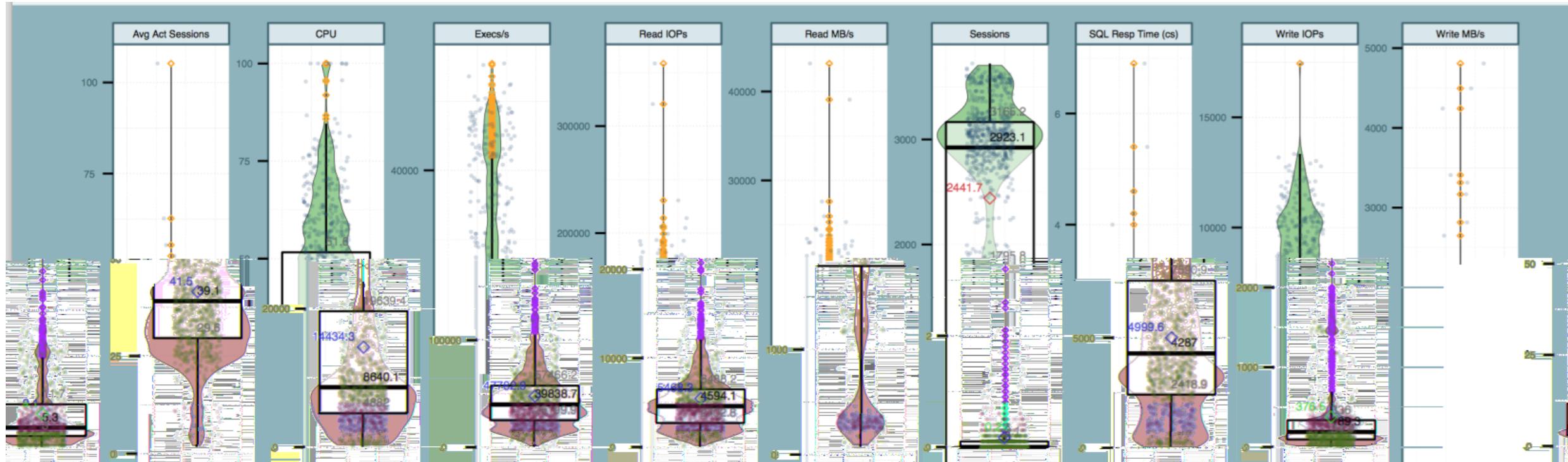




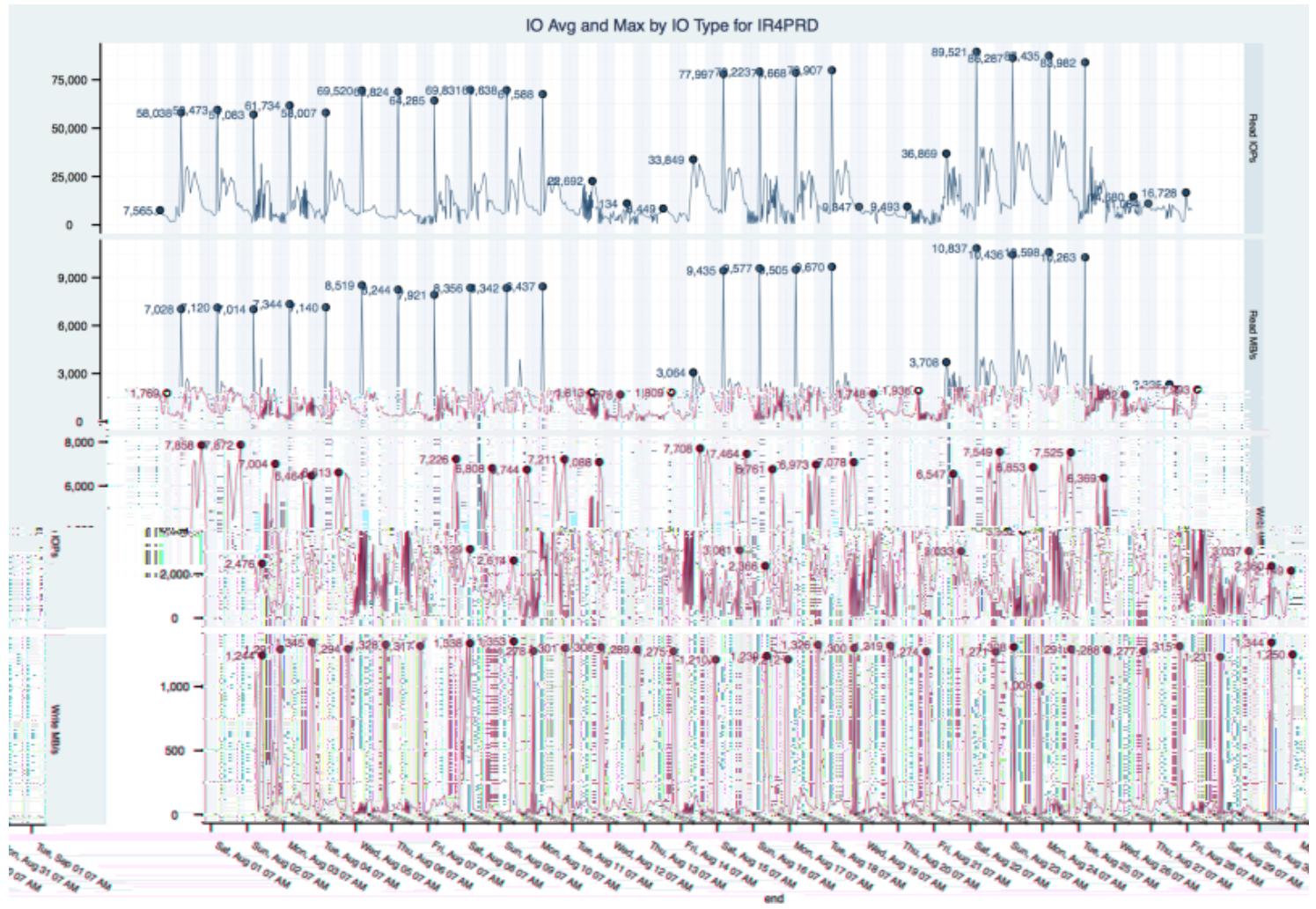
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# Customer I – Using SPEC CPU 2006

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SPEC CPU™ 2006

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Performance Comparison of Dell PowerEdge R720 and SuperMicro SuperServer 6028R-WTRT								Processor Configuration	
Benchmark	Hardware Vendor	System	Result	Baseline	# Cores	# Chins	# Cores.Per.Chip	# Threads.Per.Core	Processor
CINT2005	Dell Inc.	PowerEdge R720 (Intel Xeon E3-1295 v2, 2.80 GHz)	46.0	40.4	24	6	4	16	1 Intel Xeon E3-1295 v2
CINT2006	Dell Inc.	PowerEdge R720 (Intel Xeon E5-2603 v2, 1.80 GHz)	29.4	27.9	8	2	4	4	1 Intel Xeon E5-2603 v2
CINT2006	Dell Inc.	PowerEdge R720 (Intel Xeon E5-2620 v2, 2.10 GHz)	47.0	40.6	12	3	6	6	1 Intel Xeon E5-2620 v2

Benchmark	Hardware Vendor	System	Result	Baseline	# Cores	# Chins	# Cores.Per.Chip	# Threads.Per.Core	Processor
CINT2006	Supermicro	SuperServer 6018R-TDTP (X10DRD-LTP , Intel Xeon E5-2660 v3)	60.7	58.2	20	2	10	10	1 Intel Xeon E5-2660 v3
CINT2006	Supermicro	SuperServer 6028R-WTRT (X10DRW-iT , Intel Xeon E5-2660 v3)	60.8	58.1	20	2	10	10	1 Intel Xeon E5-2660 v3

# > Customer II – Using SAPs as calculation

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SAP Application Performance Standard

SAPS

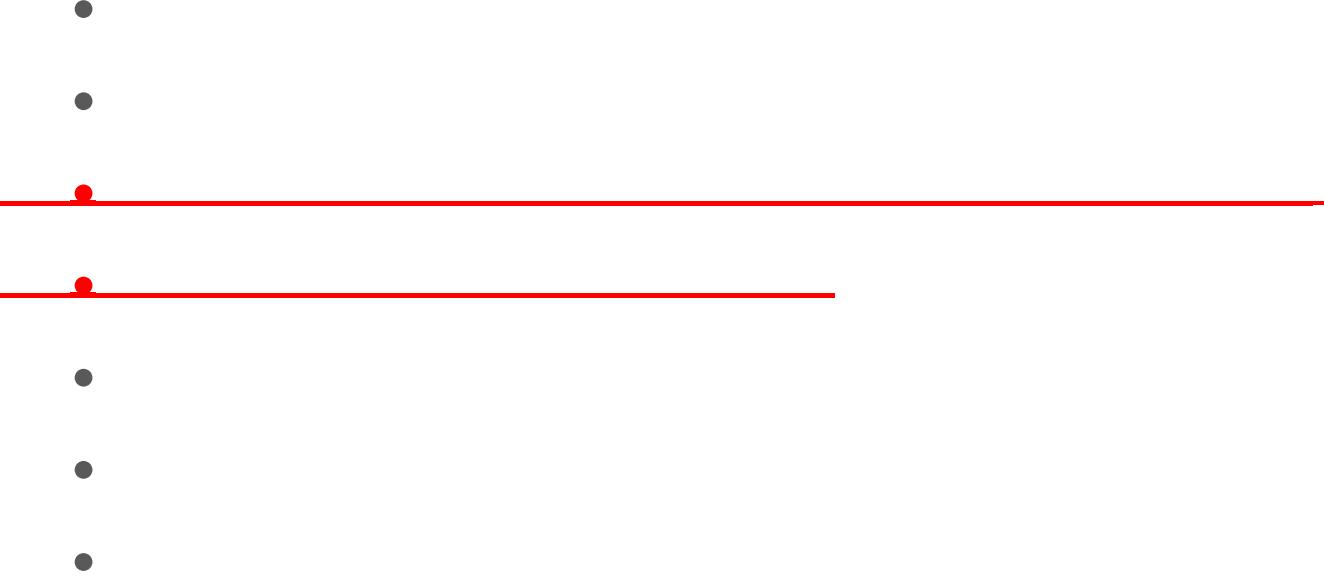
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Average Dialog Response Time (sec)	Dialog Steps Per Hol	SAPS	Operating System - Release	RDBMS Release	Process	Con	Thread	Cpu Type
0.97	3084000	51400	Red Hat Enterprise Linux 6.5 on VMware ESXi 5.5	SAP ASE 16	2	24	48	Intel Xeon Processor E5-2697 v2
0.93	3276000	54600	Windows Server 2012 Datacenter Edition	SQL Server 2012	2	24	48	Intel Xeon Processor E5-2697 v2
0.99	3358000	55970	Red Hat Enterprise Linux 6.5	SAP ASE 16	2	24	48	Intel Xeon Processor E5-2697 v2
0.99	3090000	51650	Windows Server 2012 Datacenter Edition	SQL Server 2012	2	24	48	Intel Xeon Processor E5-2697 v2
0.98	3225000	52030	Red Hat Enterprise Linux 6.5	SAP ASE 16	2	24	48	Intel Xeon Processor E5-2697 v2
0.98	3251000	52060	Windows Server 2012 Datacenter Edition	SQL Server 2012	2	24	48	Intel Xeon Processor E5-2697 v2
0.95	3207000	52040	Windows Server 2012 Datacenter Edition	SQL Server 2012	2	24	48	Intel Xeon Processor E5-2697 v2
0.98	3249000	52100	Red Hat Enterprise Linux 6.5	SAP ASE 16	2	24	48	Intel Xeon Processor E5-2697 v2
0.98	3270000	53620	Red Hat Enterprise Linux 6.5	SAP ASE 16	2	24	48	Intel Xeon Processor E5-2697 v2
0.96	3151000	52580	Red Hat Enterprise Linux 6.5	SAP ASE 15.7	2	24	48	Intel Xeon Processor E5-2697 v2
0.98	3287000	54480	Windows Server 2012 Datacenter Edition	SQL Server 2012	2	24	48	Intel Xeon Processor E5-2697 v2
0.96	3962000	56030	Windows Server 2012 Standard Edition	SQL Server 2012	2	24	48	Intel Xeon Processor E5-2697 v2
0.93	3167000	52780	Windows Server 2012 Standard Edition	DB2 10	2	24	48	Intel Xeon Processor E5-2697 v2
0.96	3043000	52880	Red Hat Enterprise Linux 6.5	MySQL 5.6.10	2	24	48	Intel Xeon Processor E5-2697 v2



	<b>Database Backup Size</b>	<b>Delta</b>
Month 1	110 GB	10 GB
Month 2	125 GB	15 GB
Month 3	150 GB	25 GB
Month 4	180 GB	30 GB
Month 5	200 GB	20 GB
Month 6	230 GB	30 GB





➤

### Add Workload

Workload Name

Workload Name Oracle Database

Workload Type RAW input ▲

Next

Workload Name  RAW Input

Add Workload x

Size by GHz

vCPUs

vCPU:pCore ratio

RAM (GiB)

HDD Storage (TiB)

SSD Storage (TiB)

Core Overhead per CVM

RAM Overhead per CVM (GiB)

A diagram illustrating the configuration of a workload. It shows a central vertical bar with a yellow top section and a pink bottom section. To the left of the bar, there is a 'vCPUs' input field containing '96'. A diagonal arrow points from this field towards the 'RAM (GiB)' input field, which contains '1150'. Another diagonal arrow points from the 'vCPUs' field towards the 'HDD Storage (TiB)' input field, which contains '13'. A third diagonal arrow points from the 'vCPUs' field towards the 'SSD Storage (TiB)' input field, which contains '3.9'. A fourth diagonal arrow points from the 'vCPUs' field towards the 'RAM Overhead per CVM (GiB)' input field, which contains '32'. The 'Core Overhead per CVM' input field, which contains '4', is positioned above the 'SSD Storage' field.

Back  Next

Workload Name

RAW Input

Resiliency and Availability

Add Workload

Container Replication Factor  ⓘ

Pre-Compressed (Disable Compression)  No  Yes

Enable Compression on  Hybrid  All Flash

Container Compression  50% Savings

Deduplication  0% Savings

Erasure Coding  ⓘ

Back

Next

## Add Workload



Workload Name

RAW Input

Resiliency and Availability

Advanced Options

Create a dedicated cluster for the workload

No

Yes



Encrypted storage for VM data



Back

Next

➤

## Add Workload

X

Workload Name RAW Input Resiliency and Availability Advanced Options Data Protection

Protect VMs and other Entities  No  Yes [i](#)

Back Save

Use All flash models at only 24% premium over Hybrid models.

[Use All Flash Storage](#) [Close](#)

## Workloads

### Oracle Database



CPU (GHz)

268.8

RAM (GiB)

1150

HDD (TiB)

13

SSD (TiB)

3.9

## Sizing Summary

Specification:

Buy

Homogenous

Standard

Any

4

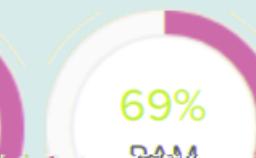
Rack Space

8

Nodes

1.81

kW



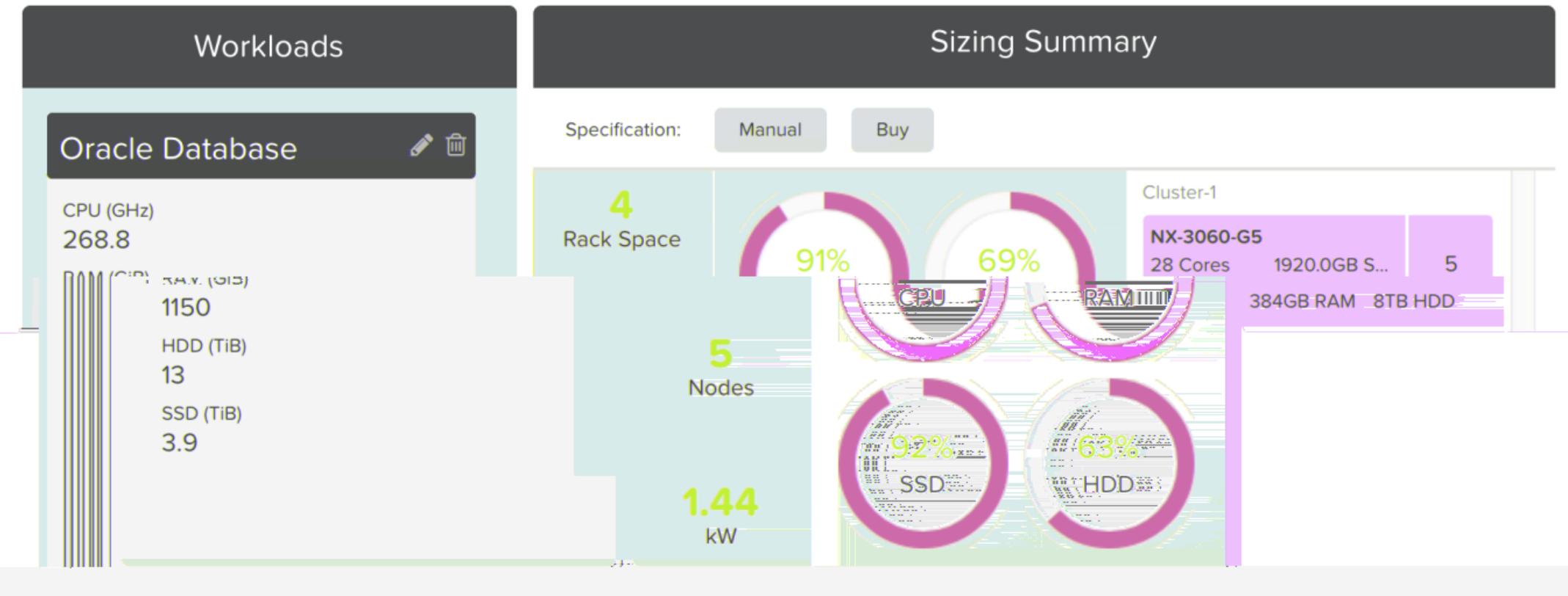
Cluster-1

NX-1065-G5

20 Cores 1920.0GB S...

8

256GB RAM 4TB HDD





## Workloads

Oracle Database Edit Delete

CPU (GHz)	268.8
RAM (GiB)	1150
HDD (TiB)	13
SSD (TiB)	3.9

## Sizing Summary

Specification: Manual Buy

<b>4</b> Rack Space	<b>97%</b> CPU	<b>84%</b> RAM
<b>4</b> Nodes	<b>58%</b> SSD	<b>43%</b> HDD
<b>1.24</b> kW		

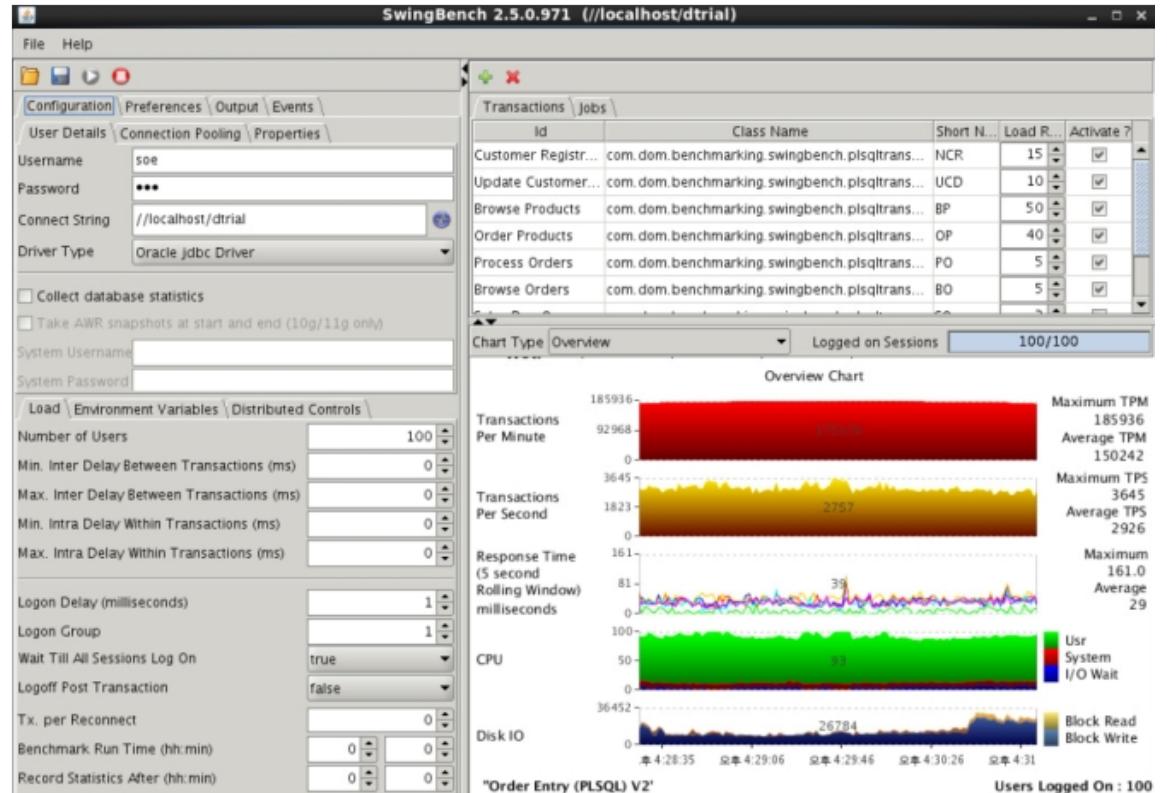
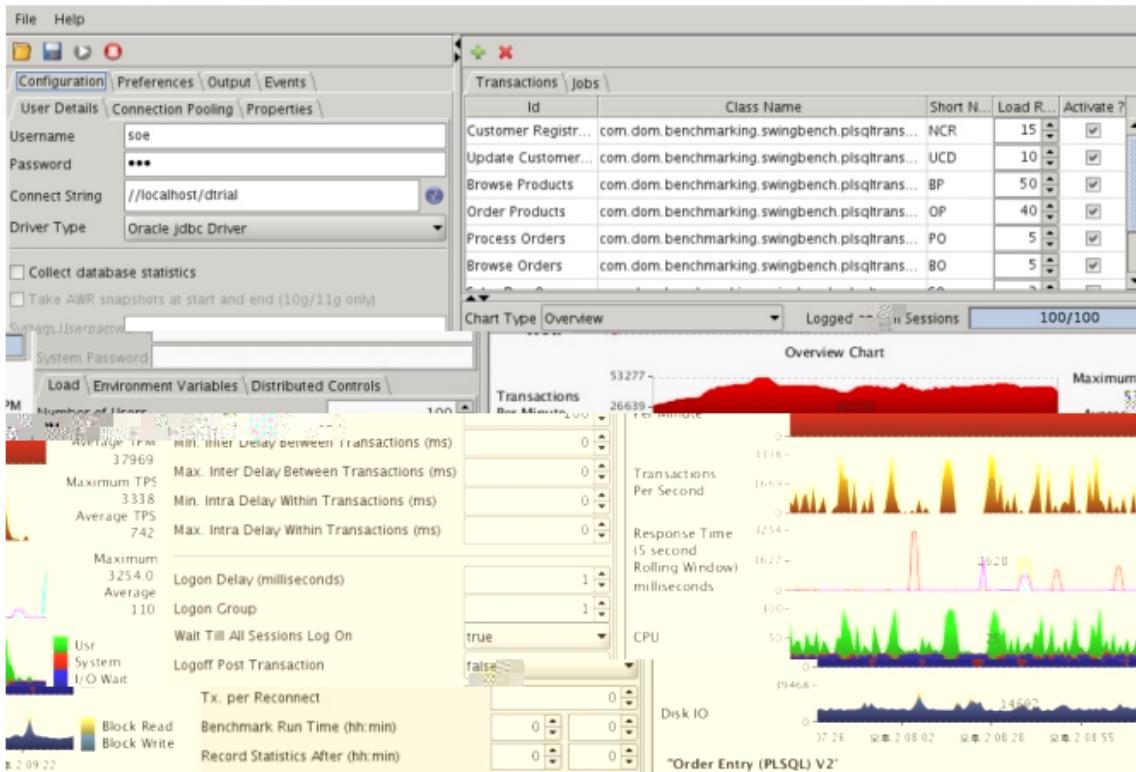
Cluster-1

<b>NX-8035-G5</b>		
36 Cores	3840.0GB S...	4
384GB RAM	16TB HDD	

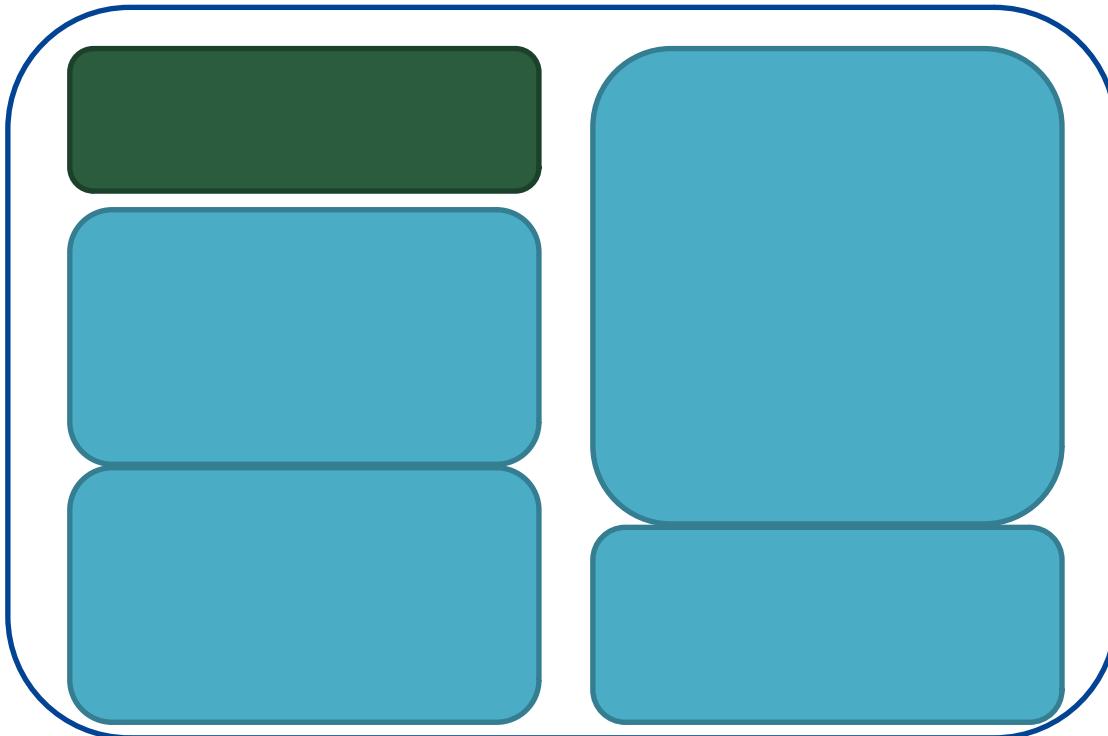




# Read the Best Practice then applied

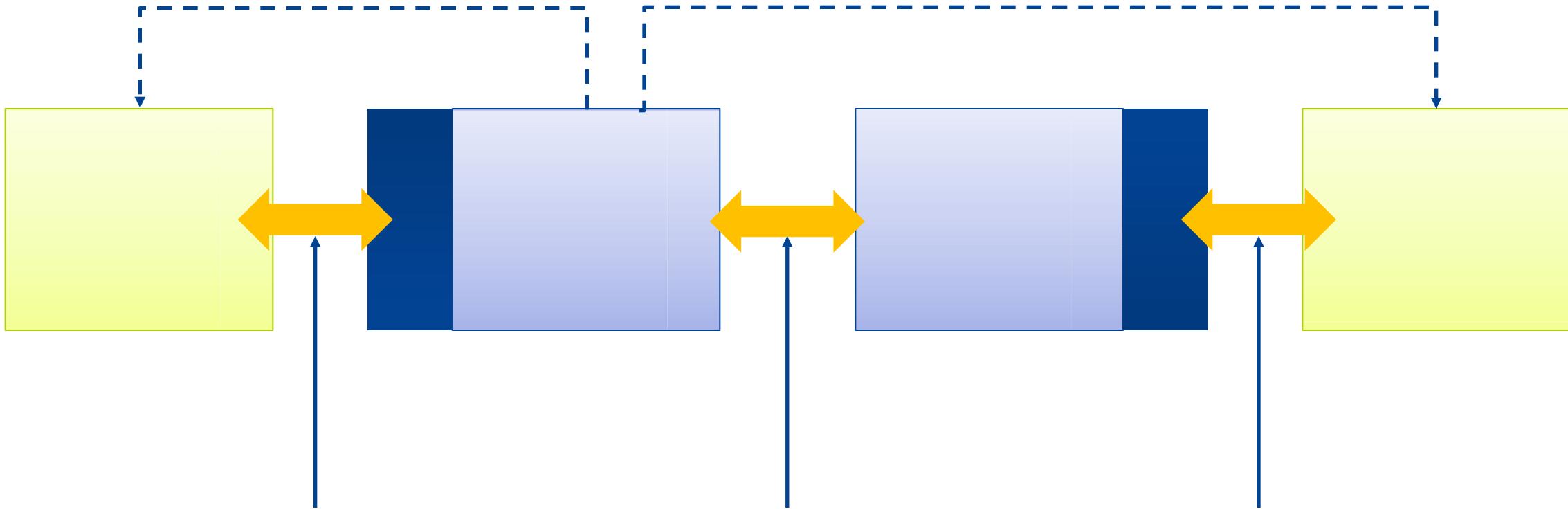


## ➤ Design your critical database like “Partition”



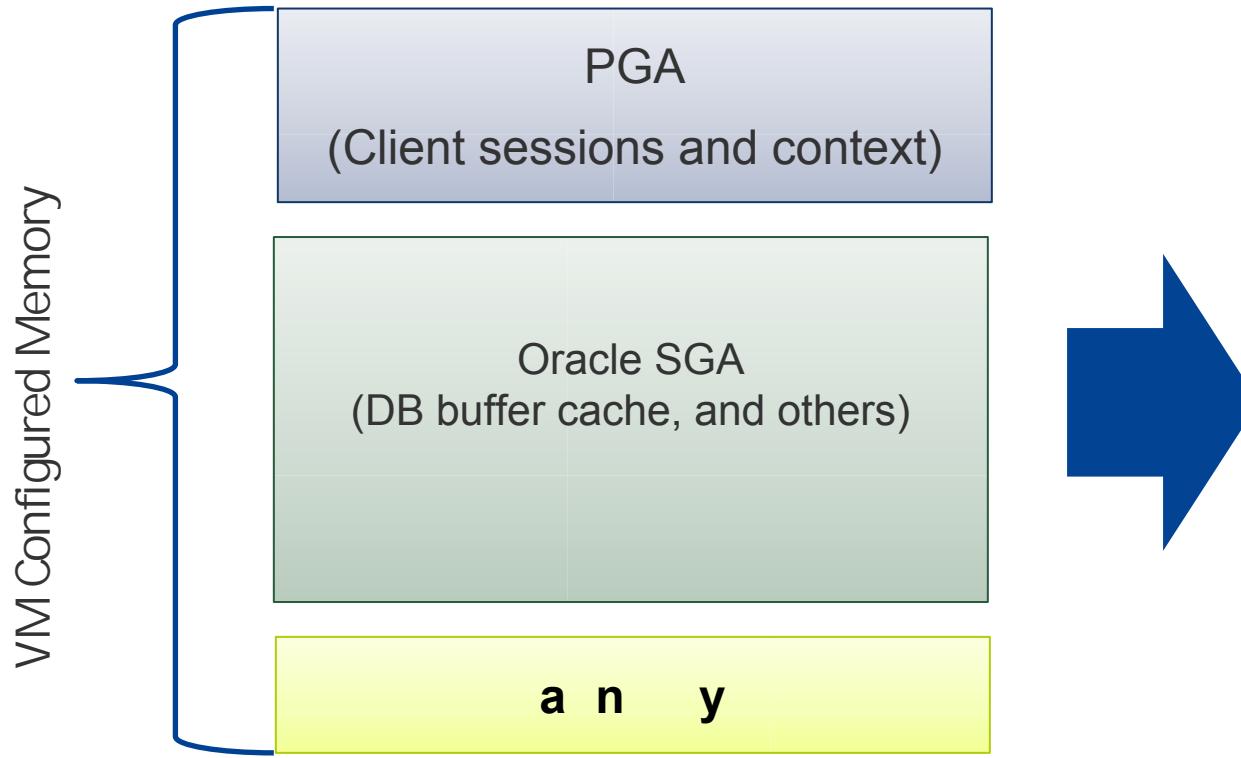


Nutanix Node – 2 sockets, 12 physical cores





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OLTP

DSS (OLAP)

## PGA Memory Advisory

- When using Auto Memory Mgmt, minimally choose a pga\_aggregate\_target value where Estd PGA Overalloc Count is 0

PGA Target Est (MB)	Size Factor	W/A MB Processed	Estd Extra W/A MB Read/ Written to Disk	Estd PGA Cache Hit %	Estd PGA Overalloc Count	Estd Time
199	0.13	201.16	8.05	96.00	7	416,110
399	0.25	201.16	8.05	96.00	6	416,110
798	0.50	201.16	8.05	96.00	6	416,110
1,196	0.75	201.16	0.00	100.00	2	400,097
1,595	1.00	201.16	0.00	100.00	0	400,097
1,914	1.20	201.16	0.00	100.00	0	400,097
2,233	1.40	201.16	0.00	100.00	0	400,097
2,552	1.60	201.16	0.00	100.00	0	400,097
2,871	1.80	201.16	0.00	100.00	0	400,097
3,190	2.00	201.16	0.00	100.00	0	400,097
4,785	3.00	201.16	0.00	100.00	0	400,097
6,380	4.00	201.16	0.00	100.00	0	400,097
9,570	6.00	201.16	0.00	100.00	0	400,097
12,760	8.00	201.16	0.00	100.00	0	400,097

## SGA Target Advisory

SGA Target Size (M)	SGA Size Factor	Est DB Time (s)	Est Physical Reads
13,824	0.25	1,007,908	152,824,745
20,736	0.38	857,878	114,026,841
27,648	0.50	735,078	82,277,076
34,560	0.63	638,568	57,329,648
41,472	0.75	601,338	47,690,932
48,384	0.88	545,464	33,249,428
55,296	1.00	523,668	27,618,098
62,208	1.13	493,569	19,824,271
69,120	1.25	484,251	17,421,496
76,032	1.38	474,250	14,828,157
82,944	1.50	472,105	14,379,557
89,856	1.63	469,070	13,485,917
96,768	1.75	467,763	13,154,500
103,680	1.88	466,718	12,883,843
110,592	2.00	466,720	12,883,843

# Running AWR report

SQLPLUS> @?/rdbms/admin/awrrpt.sql

```
WORKLOAD REPOSITORY report for

DB Name      DB Id   Instance  Inst Num Startup Time  Release  RAC
-----  -----  -----  -----  -----  -----  -----
ANSBAMC      3373345194  ansbamc_1        1 22-Aug-16 17:22  11.2.0.3.0  YES

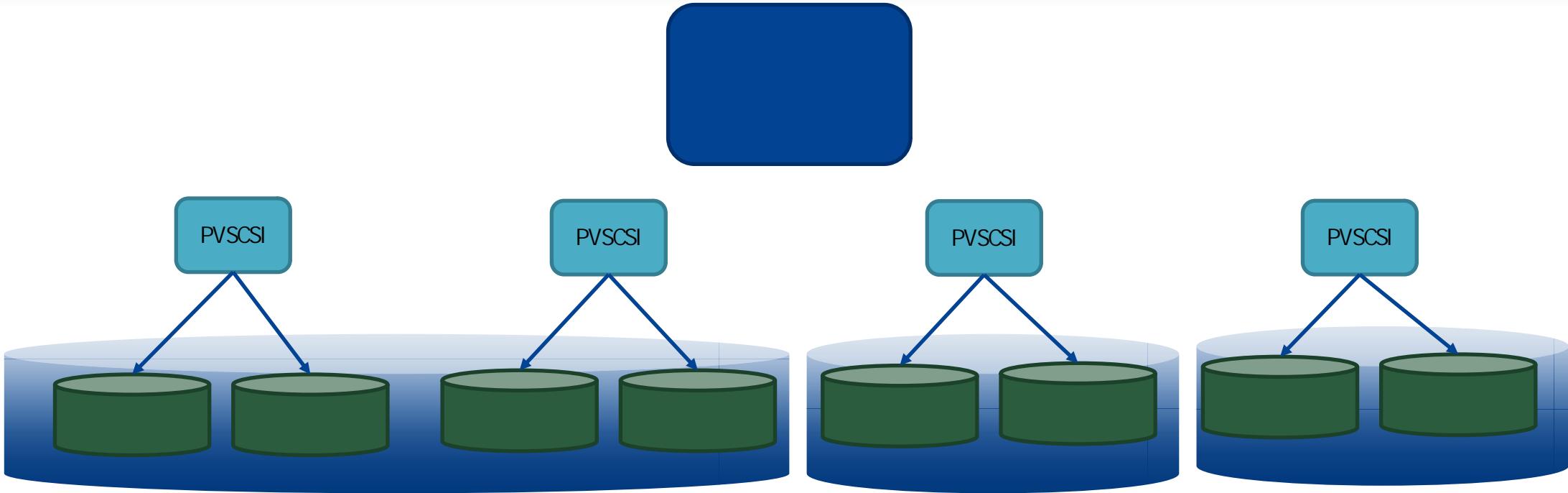
Host Name    Platform          CPUs Cores Sockets Memory(GB)
-----  -----  -----  -----  -----  -----
prdbdb01.softcel Linux x86 64-bit           24     12       2    94.27

          Snap Id   Snap Time      Sessions Curs/Sess
-----  -----  -----  -----  -----
Begin Snap:  22952 16-Nov-16 00:30:07      56      1.4
End Snap:   22975 16-Nov-16 23:30:46      56      1.5
Elapsed:    1,380.64 (mins)
DB Time:    6.85 (mins)

Cache Sizes          Begin      End
~~~~~  -----  -----  -----
          Buffer Cache:  88M      88M  Std Block Size:  8K
          Shared Pool Size: 504M    504M  Log Buffer:  5,412K

Load Profile          Per Second  Per Transaction  Per Exec  Per Call
~~~~~  -----  -----  -----  -----  -----
          DB Time(s):    0.0      0.0      0.00      0.01
          DB CPU(s):    0.0      0.0      0.00      0.00
          Redo size:   3,230.9    29,057.1
          Logical reads: 185.5    1,668.4
          Block changes: 23.6     212.5
```

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- memory reservation=allocated memory (avoid ballooning/swapping)
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# Storage Best Practices

- Use multiple PVSCSI adapters to evenly distribute target devices
- Format database VMDK files as Eager Zeroed Thick for demanding workload database
- Follow same guidelines as physical
  - Separate vmdk with different IO characteristics i.e. datafile, log files, temporary
- Using Oracle ASM , otherwise make sure datafile size equally and load balance them
- Disable Nutanix Shadow Clone Function
- Enable Container Level Compression
- Sizing Working set size correctly



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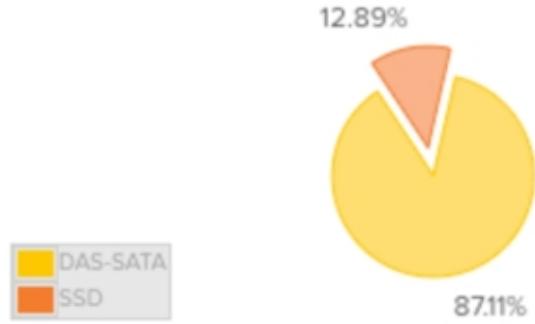
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## Tier-Wise Usage



## Capacity Optimization

**3.99 : 1**

Data Reduction

## Tier-Wise Usage



# Best Practice to Leverage

## Oracle on Nutanix Papers

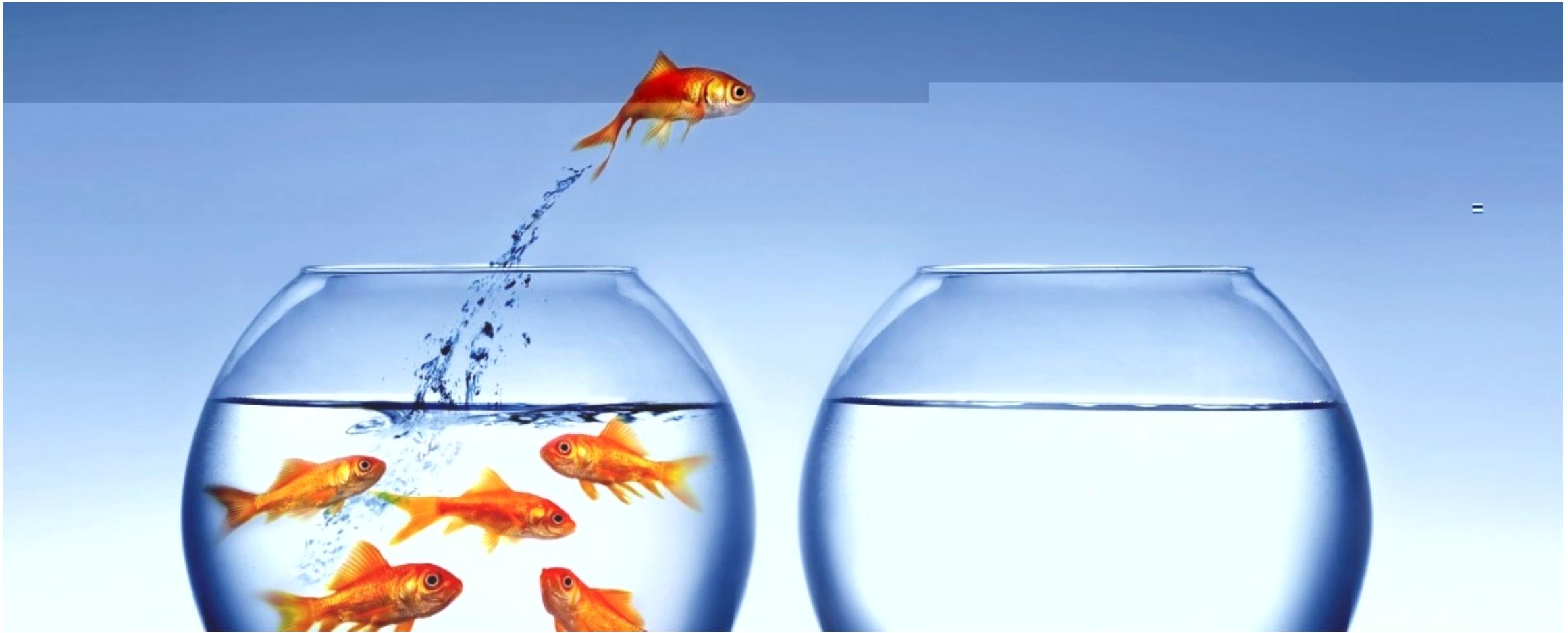
- Oracle Solution Brief
- Virtualizing Oracle with Web Scale Solution Note
- Oracle on Nutanix Best Practices Guide
- Oracle on AHV Best Practice Guide

## Microsoft SQL Server on Nutanix Papers

- Microsoft SQL Server Solution Brief
- Virtualizing SQL Server on HCI Solution Note
- Microsoft SQL Server on Nutanix Best Practices

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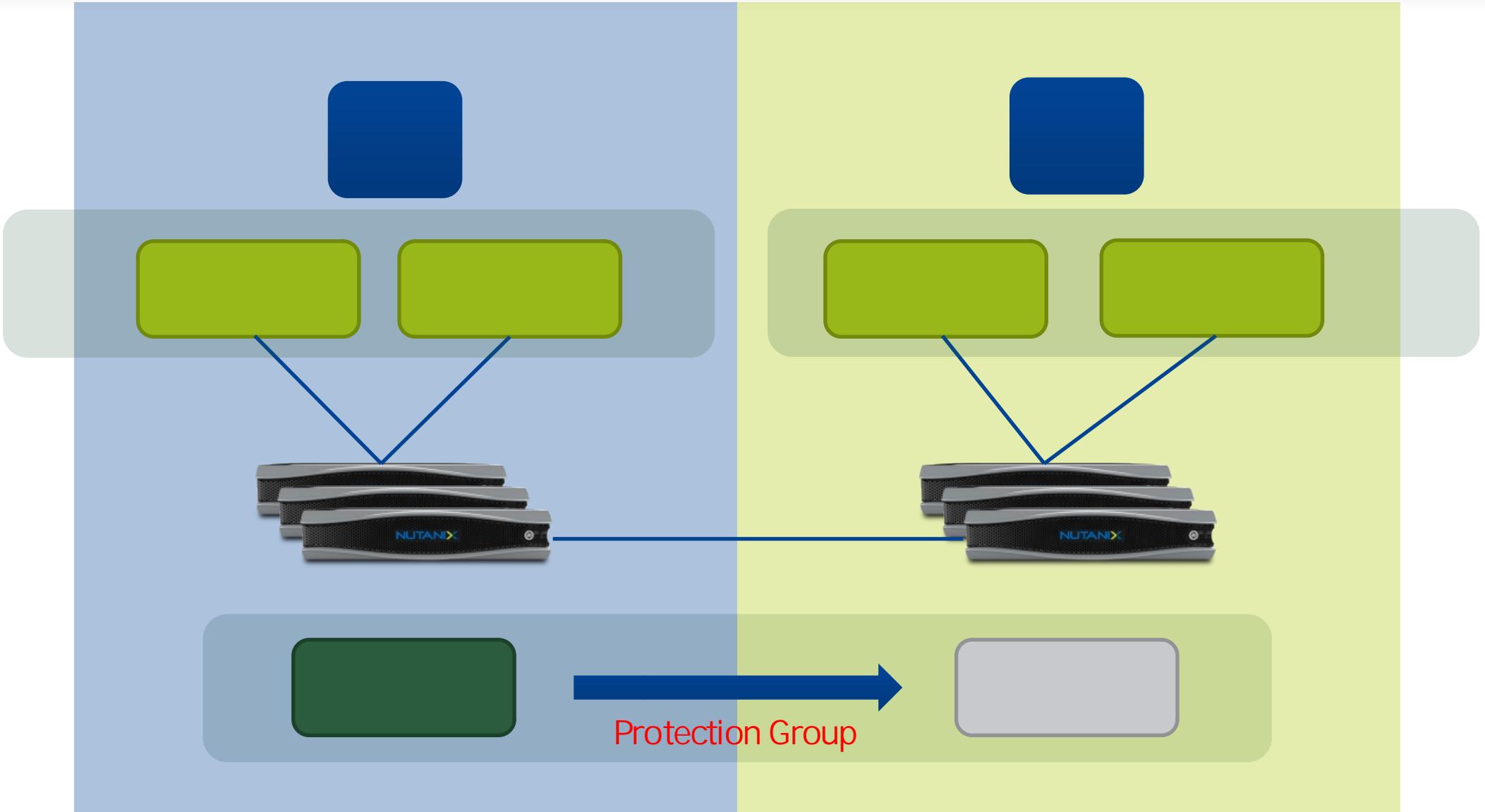




Hypervisor	Guest OS Supported	Remarks / Notes
	 Windows Server  Linux	
 Microsoft Hyper-V	 Windows Server  Linux	
	 Windows Server  Linux	

- Type I: Unix Server to Nutanix Platform (Oracle)
  - 
  - 
  -
- Type II : Physical X86 to Nutanix Platform (Oracle, SQL)
  - 
  - SQL Export/Import
  - , SQL Mirroring
- Type III: ESXi X86 to Nutanix Platform with (Oracle/SQL on ESXi Server)
  - 
  -
- Type IV: ESXi X86 to Nutanix Platform with (Acropolis HyperVisor)
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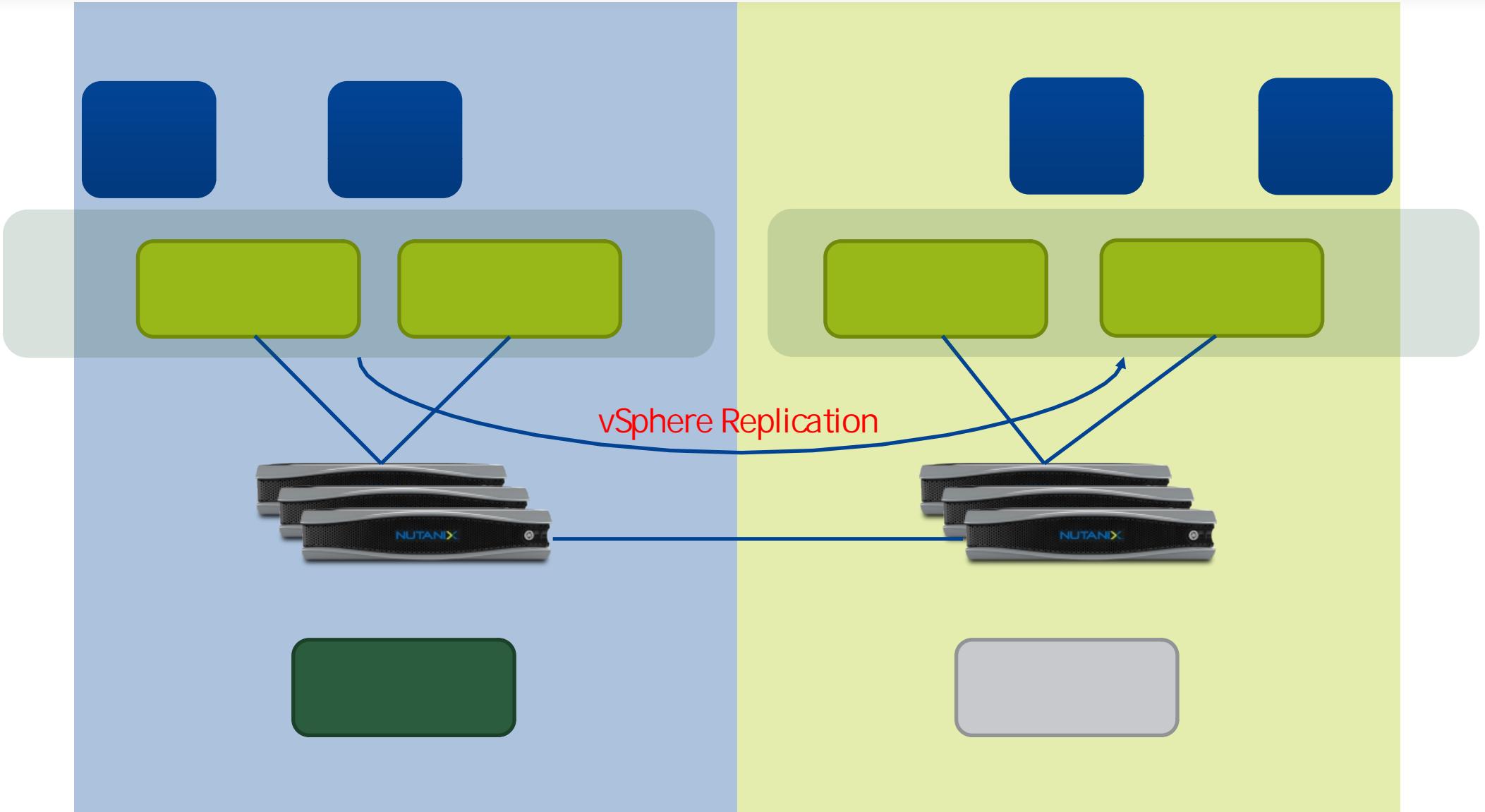
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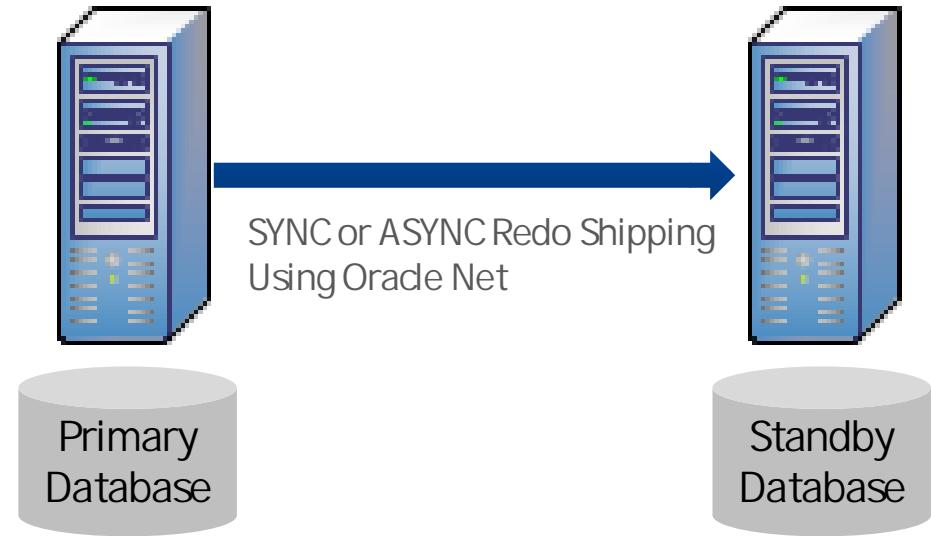
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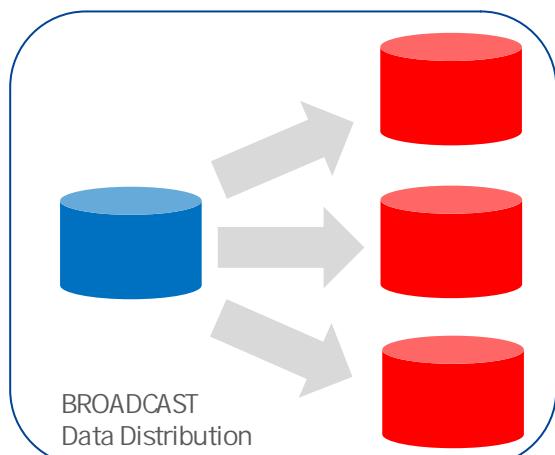
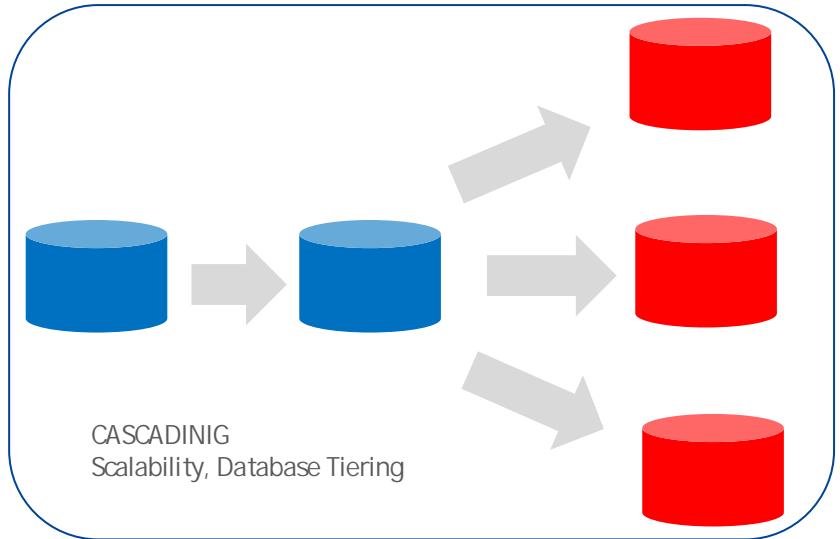
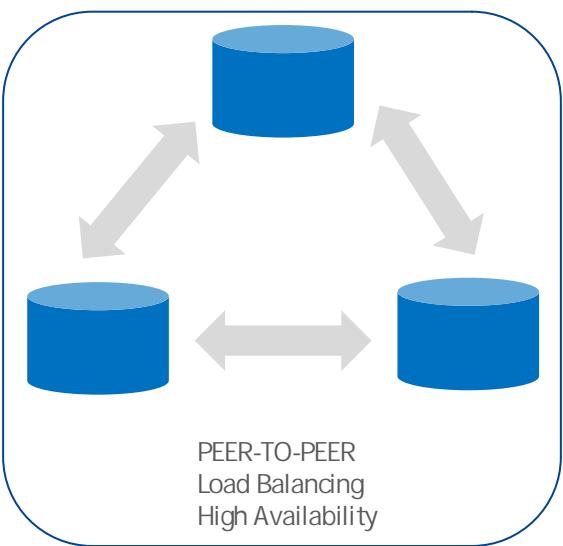
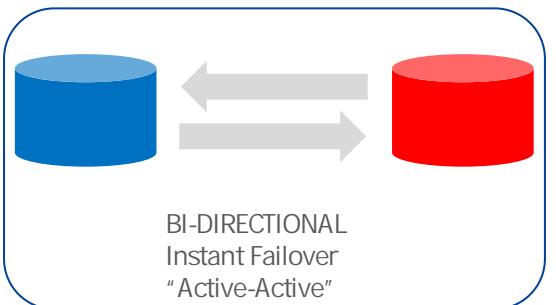
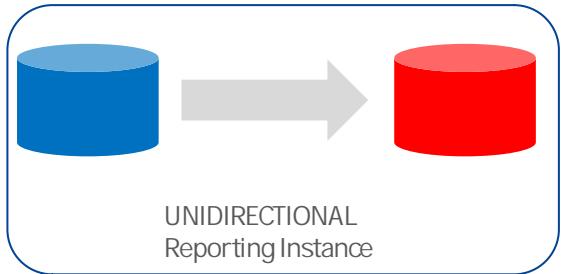
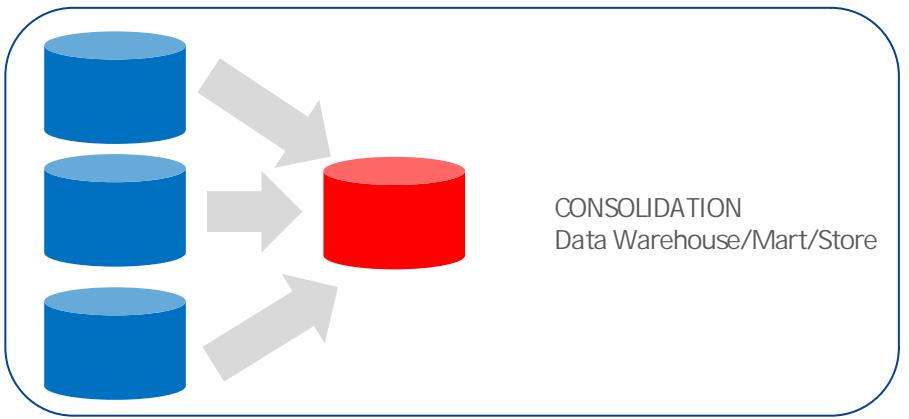
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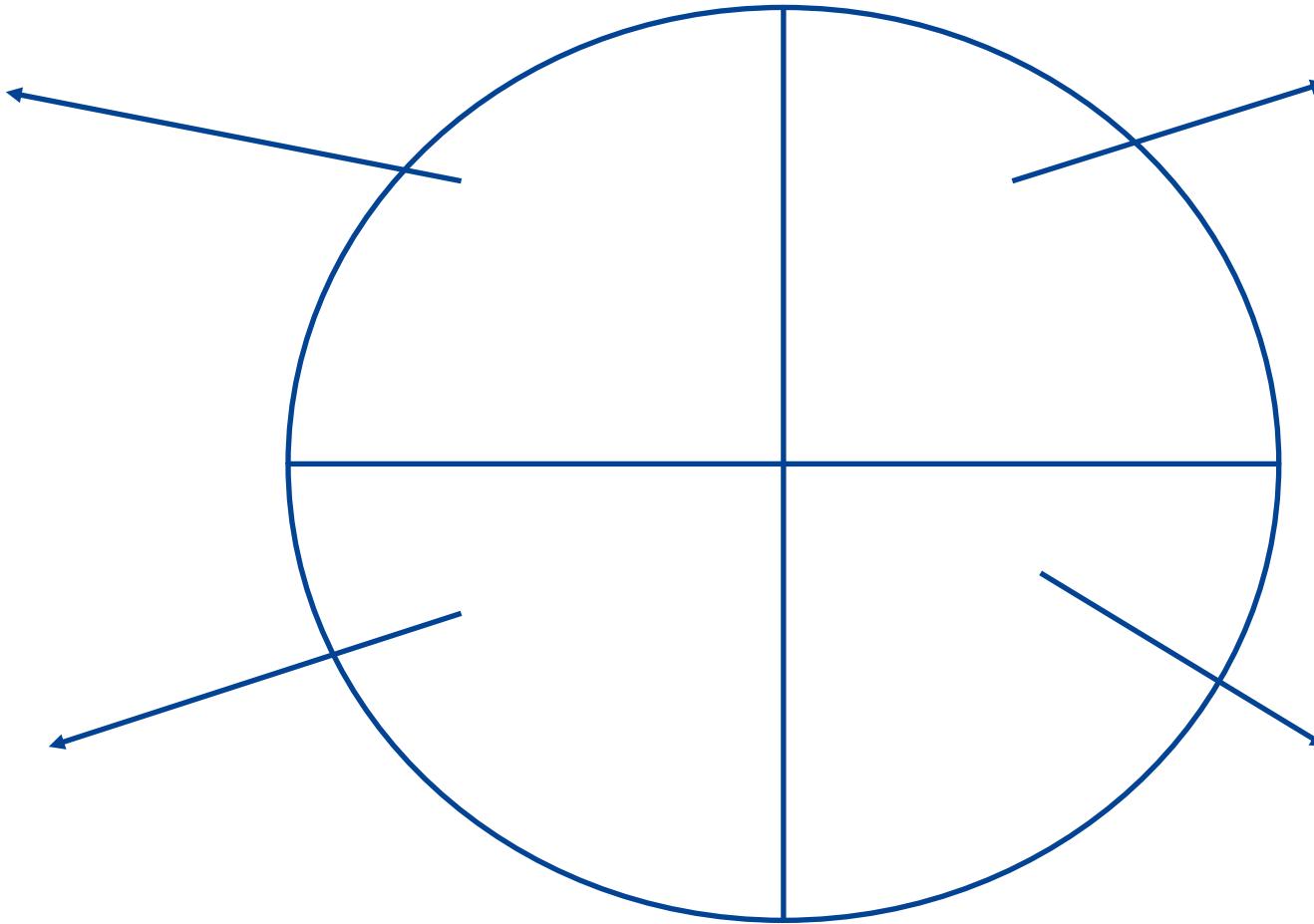
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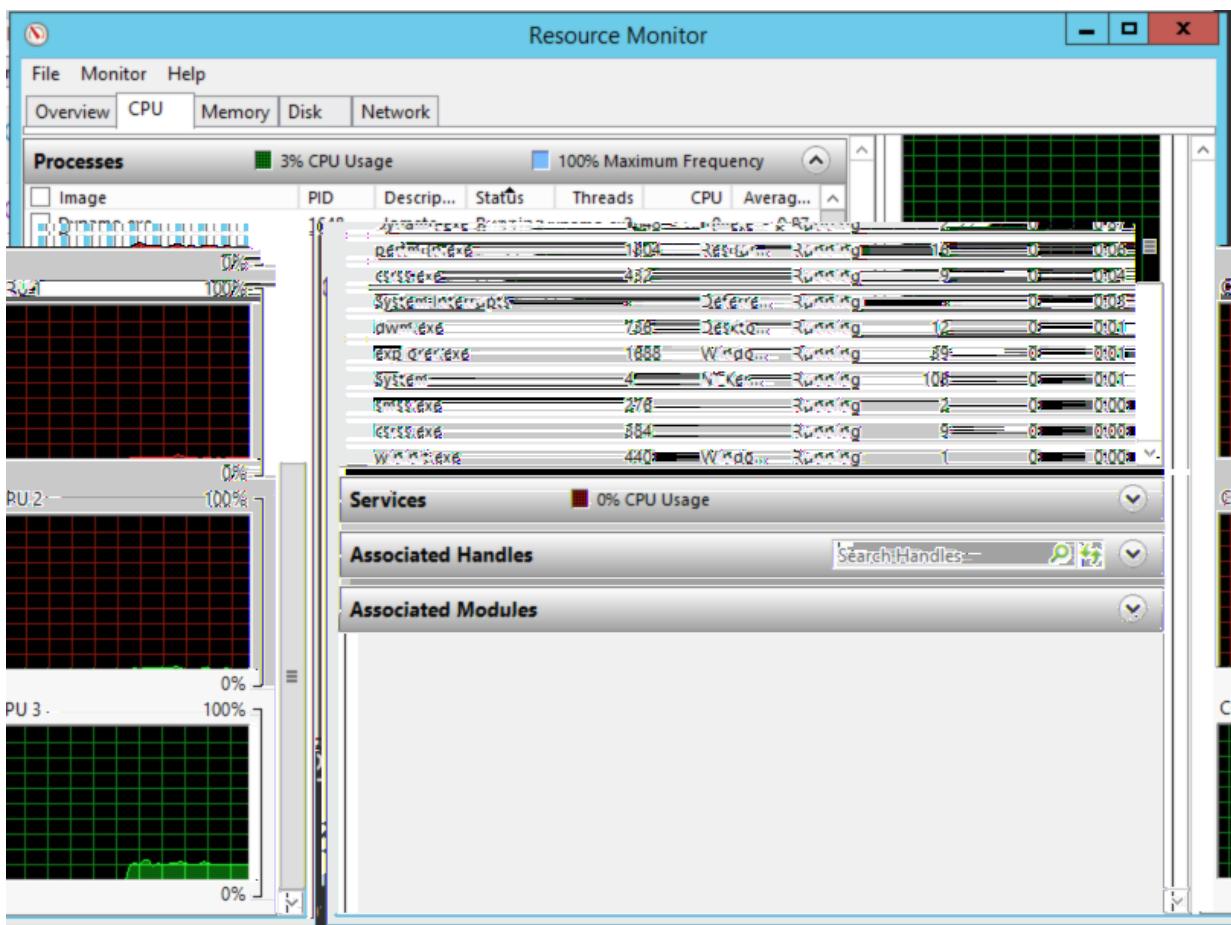


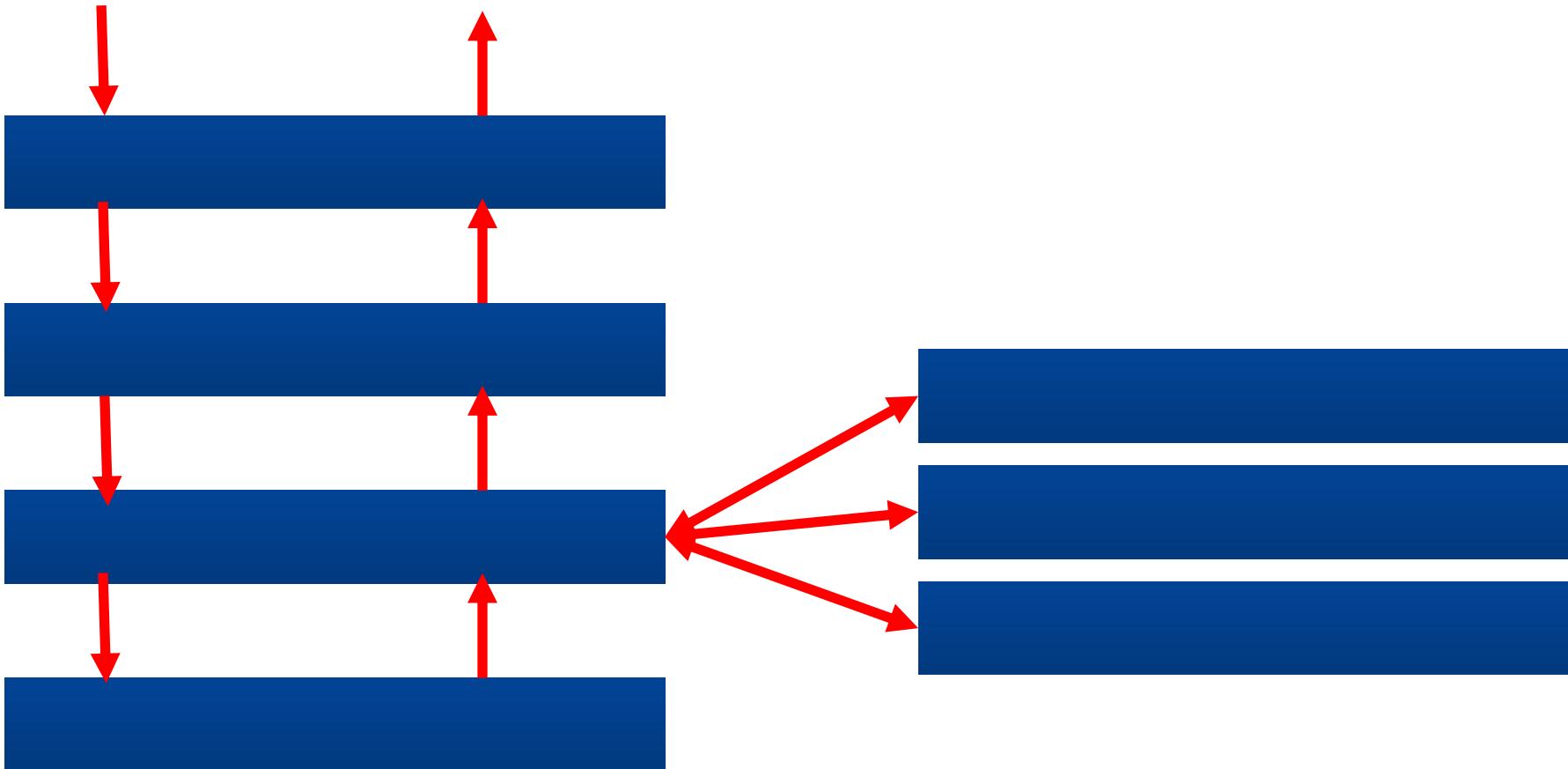
Item	Latency		Comments
L1 cache reference	0.5 ns		
Branch Mispredict	5 ns		
L2 cache reference	7 ns		14x L1 cache
Mutex lock/unlock	25 ns		
00x L1 cache	Main memory reference	100 ns	20x L2 cache, 2
	Compress 1KB with Zippy	3,000 ns	
	Sent 1KB over 1Gbps network	10,000 ns	0.01 ms
	Read 4K randomly from SSD	150,000 ns	0.15 ms
	Read 1MB sequentially from memory	250,000 ns	0.25 ms
	Round trip within datacenter	500,000 ns	0.5 ms
/	Read 1MB sequentially from SSD	1,000,000 ns	1 ms, 4x memory
center round	Disk seek	10,000,000 ns	10 ms, 20x data trip
10ry, 20x SSD	Read 1MB sequentially from disk	20,000,000 ns	20 ms, 80x mem
	Send packet CA -> Netherlands -> CA	150,000,000 ns	150 ms



- Find what your application consume ?
    - 
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  - Database (we will not cover this level , that's DBA should do this!)
    - 
    - 
    - 
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VDisk Name	Unstable data			Outstanding ops		Ops/s			KB/s		Avg latency (usec)		Avg op size	Avg outstanding	% busy
	KB	Ops/s	KB/s	Read	Write	Read	Write	Error	Read	Write	Read	Write			
NFS:60081962 (NTNX-IOM-single_1-flat.vmdk)	0	0	0	0	16	0	2562	0	0	10248	0	4493	4096	14	96
NFS:60082041 (NTNX-IOM-single_5-flat.vmdk)	0	0	0	0	1	0	169	0	0	676	0	5134	4096	1	79











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VDisk Id	VDisk Name	Usage (GB)	Dedup (GB)	Oplog				Outstanding ops				Ops/s				KB/s		Avg latency (usec)	Avg op size	Avg qlen	% busy	
				KB	Fragments	Ops/s	KB/s	Read	Write	Estore	Read	Write	Error	Random	Read	Write						
<a href="#">117081</a>	NFS:1:0:17386 (fbf08322-d54d-48fa-b91f-093f0c9e5fdd)	7.6	0	0	0	0	0	0, 0KB	0, 0KB	0	0	0	0	0	0	0	0	0	0	0	0	0
<a href="#">1611</a>	NFS:1:0:268 (80e9b08b-4684-4981-85f4-d6efd3bf2d97)	13	0	0	0	0	0	0, 0KB	0, 0KB	0	0	0	0	0	0	0	0	0	0	0	0	0
<a href="#">119554</a>	NFS:1:0:17434 (5751e562-c028-4846-a403-217e928ab0d1)	0.1	0	1384288	21597	213	13632	0, 0KB	0, 0KB	0	0	0	0	0	0	0	0	0	0	0	0	0
<a href="#">19</a>	NFS:1:0:258 (062a1fa9-d5e5-4449-9074-5f962b3b71fc)	3.6	0	0	0	0	0	0, 0KB	0, 0KB	0	0	0	0	0	0	0	0	0	0	0	0	0
<a href="#">119366</a>	NFS:1:0:17396 (cb2c3543-8ed5-43af-bc36-1f4a4f9353d4)	0.8	0	155	16	0	0	0, 0KB	0, 0KB	0	0	0	0	0	0	0	0	0	0	0	0	0
<a href="#">119530</a>	NFS:1:0:17428 (8bcf2329-8dbe-434a-8e3e-818246b450ad)	19	0	5358788	83732	1936	123904	0, 0KB	2, 2048KB	1	0	120	0	0	0	122880	19133	1048576	0	0	0	0
<a href="#">119538</a>	NFS:1:0:17429 (eab44b05-dc76-47d7-becd-2f7218502603)	0.1	0	1379876	21531	212	13568	0, 0KB	0, 0KB	0	0	0	0	0	0	0	0	0	0	0	0	0

## Stargate Caching Statistics

### Hit Rates

Hit Percentage	
Dedup Cache Hit %	0.0%
Range Cache Hit %	0.0%
VDisk block map Cache Hit %	56%
Extent id map Cache Hit %	0.0%
Extent group id map Cache Hit %	79%

## Stargate Caching Statistics

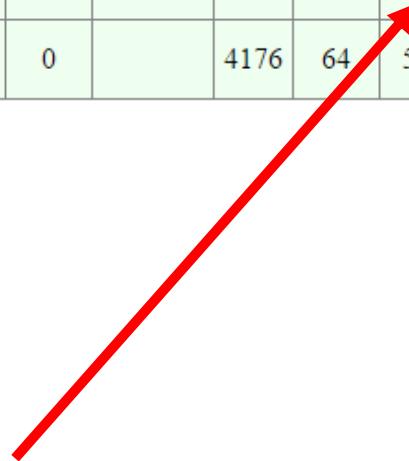
### Hit Rates

Hit Percentage	
Dedup Cache Hit %	0.0%
Range Cache Hit %	0.0%
VDisk block map Cache Hit %	92%
Extent id map Cache Hit %	0.0%
Extent group id map Cache Hit %	77%

The disk usage numbers in the table below are expressed as T/U where T is the transformed usage and U is the untransformed usage. The total outstanding ops in the QoS queue are expressed as P/S where P are the primary ops and S are the secondary ops.

Disk Id	Mount point	Outstanding ops				Ops/s				KB/s		Avg latency (usec)	Avg op size	Avg qlen	Avg qdelay	% busy	Size (GB)	Total usage (GB)	Unshared usage (GB)	
		QoS Queue	Read	Write	Replicate	Read Replica	Read	Write	Error	Random	Read	Write								
14	/home/nutanix/data/stargate-storage/disks/50014ee6b10777c7	0/0	0, 0KB	10, 10240KB	3	0	0	29	0		0	29696	110254	1048576	10	3	100	802	22/22	22/22
13	/home/nutanix/data/stargate-storage/disks/0281323500050000	0/0	0, 0KB	0, 0KB	0	2	4	2	0		4176	64	5500	723626	0	2	0	74	72/73	72/73

Disk Id	Mount point	Outstanding ops				Ops/s				KB/s		Avg latency (usec)	Avg op size	Avg qlen	Avg qdelay	% busy	Size (GB)	Total usage (GB)	Unshared usage (GB)	
		QoS Queue	Read	Write	Replicate	Read Replica	Read	Write	Error	Random	Read	Write								
14	/home/nutanix/data/stargate-storage/disks/50014ee6b10777c7	0/0	0, 0KB	10, 10240KB	3	0	0	29	0		0	29696	110254	1048576	10	3	100	802	22/22	22/22
13	/home/nutanix/data/stargate-storage/disks/0281323500050000	0/0	0, 0KB	0, 0KB	0	2	4	2	0		4176	64	5500	723626	0	2	0	74	72/73	72/73





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## VDisk 119538 Frontend Write Latency

Latency Range	Average Bucket Latency	Number of Write IOs	Percent of Write IOs	Bar Graph
0 <= x < 1 ms	745	98	5.7%	
1 ms <= x < 2 ms	1528	249	14%	
2 ms <= x < 5 ms	3339	665	39%	
5 ms <= x < 10 ms	7165	538	31%	
10 ms <= x < 20 ms	12332	168	9.7%	
20 ms <= x < 50 ms	21016	5	0.3%	
50 ms <= x < 100 ms	60093	4	0.2%	
100 ms <= x < inf				
Total	5180	1727	100%	

## VDisk 119538 VDisk Write Latency

Latency Range	Average Bucket Latency	Number of Writes	Percent Write Rate	Bar Graph
0 <= x < 1 ms	721	112	6.5%	
1 ms <= x < 2 ms	1527	254	15%	
2 ms <= x < 5 ms	3347	659	38%	
5 ms <= x < 10 ms	7162	530	31%	
10 ms <= x < 20 ms	12200	163	9.4%	
20 ms <= x < 50 ms	20989	5	0.3%	
50 ms <= x < 100 ms	60057	4	0.2%	
100 ms <= x < inf				
Total	5098	1727	100%	

## VDisk 119538 Write Destination

Destination	Data (MB/s)	Percent
Oplog	2.5	100%
Oplog Zero		
Estore SSD		
Estore HDD		
Estore Zero		
Block Store		
Total	2.5	100%

## VDisk 119538 Read Source

Source	Data (MB/s)	Percent
Oplog		
Oplog Zero		
Extent cache		
Cache DRAM	8.1	43%
Cache SSD		
Estore SSD Local		
Estore SSD Remote		
Estore HDD Local	11	57%
Estore HDD Remote		
Estore Zero		
Block Store		
Total	19	100%



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```
[root@oracleabs1 SLOB]# lscpu
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                6
On-line CPU(s) list:  0-5
Thread(s) per core:   1
Core(s) per socket:   1
Socket(s):             6
NUMA node(s):          1
Vendor ID:             GenuineIntel
CPU family:            15
Model:                 6
Model name:            Intel(R) Xeon(R) CPU E5-2699 v4 @ 2.20GHz
Stepping:               1
CPU MHz:               2199.996
BogoMIPS:              4399.99
Hypervisor vendor:    Microsoft
Virtualization type:  full
L1d cache:             32K
L1i cache:             32K
L2 cache:               4096K
NUMA node0 CPU(s):    0-5
```

## WORKLOAD REPOSITORY report for

DB Name	DB Id	Instance	Inst num	Startup Time	Release	RAC
ABSDB	3156857137	ABSDB	1	01-Nov-16 15:11	12.1.0.2.0	NO
Host Name	Platform	CPUs	Cores	Sockets	Memory (GB)	
oracleabs1	Linux x86 64-bit	6			31.17	
	Snap Id	Snap Time		Sessions	Cursors/Session	
Begin Snap:	894	07-Dec-16 13:13:15		84		1.4
End Snap:	895	07-Dec-16 13:18:18		52		1.1
Elapsed:		5.06 (mins)				
DB Time:		160.21 (mins)				

## WORKLOAD REPOSITORY report for

DB Name	DB Id	Instance	Inst Num	Startup Time	Release	RAC
BUDB	3214850893	BUDB	1	18-Feb-16 15:33	12.1.0.2.0	NO
Host Name	Platform	CPUs	Cores	Sockets	Memory (GB)	
bugatti.vexata.c	Linux x86 64-bit	56	28	2	251.81	
	Snap Id	Snap Time	Sessions	Curs/Sess		
Begin Snap:	8	18-Feb-16 19:44:01	274	1.7		
End Snap:	10	18-Feb-16 21:44:03	74	.9		
Elapsed:		120.03 (mins)				
DB Time:		24,000.26 (mins)				

## WORKLOAD REPOSITORY report for

DB Name	DB Id	Instance	Inst num	Startup Time	Release	RAC
ABSDB	3156857137	ABSDB	1	01-Nov-16 15:11	12.1.0.2.0	NO

Host Name	Platform	CPUs	Cores	Sockets	Memory (GB)
oracleabs1	Linux x86 64-bit	6			31.17

	Snap Id	Snap Time	Sessions	Cursors/Session	
Begin Snap:	894	07-Dec-16 13:13:15	84		1.4
End Snap:	895	07-Dec-16 13:18:18	52		1.1
Elapsed:		5.06 (mins)			
DB Time:		160.21 (mins)			

## WORKLOAD REPOSITORY report for

DB Name	DB Id	Instance	Inst Num	Startup Time	Release	RAC
BUDB	3214850893	BUDB	1	18-Feb-16 15:33	12.1.0.2.0	NO

Host Name	Platform	CPUs	Cores	Sockets	Memory (GB)
bugatti.vexata.c	Linux x86 64-bit	56	28	2	251.81

	Snap Id	Snap Time	Sessions	Curs/Sess	
Begin Snap:	8	18-Feb-16 19:44:01	274	1.7	
End Snap:	10	18-Feb-16 21:44:03	74	.9	
Elapsed:		120.03 (mins)			
DB Time:		24,000.26 (mins)			

## Load Profile

	Per Second	Per Transaction	Per Exec	Per Call
<hr/>				
DB Time(s):	200.0	0.2	0.05	313.93
DB CPU(s):	14.0	0.0	0.00	21.97
Background CPU(s):	1.7	0.0	0.00	0.00
Redo size (bytes):	66,465,643.9	51,433.4		
Logical read (blocks):	295,887.9	229.0		
Block changes:	168,961.9	130.8		
Physical read (blocks):	277,338.9	214.6		
Physical write (blocks):	85,724.4	66.3		
Read IO requests:	277,331.2	214.6		
Write IO requests:	82,510.4	63.9		
Read IO (MB):	2,166.7	1.7		
Write IO (MB):	669.7	0.5		
IM scan rows:	0.0	0.0		
Session Logical Read IM:				
User calls:	0.6	0.0		
Parses (SQL):	2.7	0.0		
Hard parses (SQL):	0.1	0.0		
SQL Work Area (MB):	0.2	0.0		
Logons:	0.1	0.0		
Executes (SQL):	4,309.3	3.3		
Rollbacks:	0.0	0.0		
Transactions:	1,292.3			

	Per Second	Per Transaction	Per Exec	Per Call
DB Time(s):	31.7	0.2	0.05	26.19
DB CPU(s):	1.2	0.0	0.00	1.03
Background CPU(s):	0.3	0.0	0.00	0.00
Redo size (bytes):	10,195,875.1	50,521.3		
Logical read (blocks):	45,595.3	225.9		
Block changes:	26,423.5	130.9		
Physical read (blocks):	38,441.8	190.5		
Physical write (blocks):	12,603.3	62.5		
Read IO requests:	38,441.0	190.5		
Write IO requests:	11,566.8	57.3		
Read IO (MB):	300.3	1.5		
Write IO (MB):	98.5	0.5		
IM scan rows:	0.0	0.0		
Session Logical Read IM:				
User calls:	1.2	0.0		
Parses (SQL):	12.1	0.1		
Hard parses (SQL):	1.7	0.0		
SQL Work Area (MB):	0.2	0.0		
Logons:	0.1	0.0		
Executes (SQL):	701.6	3.5		
Rollbacks:	0.0	0.0		
Transactions:	201.8			

## IO Profile

	Read+Write Per Second	Read per Second	Write Per Second
Total Requests:	50,199.6	38,443.9	11,755.7
Database Requests:	50,007.8	38,441.0	11,566.8
Optimized Requests:	0.0	0.0	0.0
Redo Requests:	188.4	0.0	188.4
Total (MB):	408.9	300.4	108.6
Database (MB):	398.8	300.3	98.5
Optimized Total (MB):	0.0	0.0	0.0
Redo (MB):	10.1	0.0	10.1
Database (blocks):	51,045.1	38,441.8	12,603.3
Via Buffer Cache (blocks):	51,044.9	38,441.8	12,603.1
Direct (blocks):	0.2	0.0	0.2

IO Profile	Read+Write/Second	Read/Second	Write/Second
Total Requests:	360,491.9	277,334.8	83,157.1
Database Requests:	359,841.6	277,331.2	82,510.4
Optimized Requests:	0.0	0.0	0.0
Redo Requests:	646.1	0.0	646.1
Total (MB):	2,901.4	2,166.8	734.6
Database (MB):	2,836.4	2,166.7	669.7
Optimized Total (MB):	0.0	0.0	0.0
Redo (MB):	64.9	0.0	64.9
Database (blocks):	363,063.2	277,338.9	85,724.4
Via Buffer Cache (blocks):	363,061.2	277,338.9	85,722.3
Direct (blocks):	2.1	0.0	2.0

Foreground Wait Class					
Wait Class	%Time Waits	Total Wait Time (s)	Avg wait (ms)	%DB time	
User I/O	1,996,797,443	0	1,394,243	0.70	96.8
DB CPU		100,766		7.0	
Configuration	4,322	0	39	8.91	0.0
Concurrency	86,034	0	22	0.26	0.0
Other	29,675	0	4	0.13	0.0
System I/O	951	0	1	0.79	0.0
Commit	59	0	0	5.20	0.0
Network	1,727	0	0	0.01	0.0

## Foreground Wait Class

- s - second, ms - millisecond - 1000th of a second
- ordered by wait time desc, waits desc
- %Timeouts: value of 0 indicates value was < .5%. Value of null is truly 0
- Captured Time accounts for 103.8% of Total DB time 1,440,015.33 (s)
- Total FG Wait Time: 1,394,308.05 (s) DB CPU time: 100,765.70 (s)

Wait Class	Waits	%Time	Outs	Total Wait Time (s)	Avg wait (ms)	%DB time
User I/O	3,966,588		0	9,400	2.37	97.79
DB CPU					377	3.92
Concurrency	1,100		0	5	4.82	0.06
Other	240		8	1	4.59	0.01
System I/O	167		0	0	0.55	0.00
Commit	26		0	0	2.95	0.00
Configuration	3		0	0	0.10	0.00
Network	167		0	0	0.00	0.00

#### Top 10 Foreground Events by Total Wait Time

Event	Total Waits	Wait Time (sec)	Avg(ms)	% DB time	Wait Class
db file sequential read	1.99679E+09	1.4M	0.70	96.8	User I/O
DB CPU		100.8K		7.0	
log file switch (private stran	4,041	38.4	9.51	.0	Configur
latch: row cache objects	2,534	10.8	4.27	.0	Concurre
cursor: mutex X	1,712	4.1	2.38	.0	Concurre
library cache: mutex X	3,883	3.1	0.80	.0	Concurre
latch: cache buffers chains	75,506	2.6	0.03	.0	Concurre
latch free	14,558	1.5	0.11	.0	Other
latch: call allocation	72	1.3	17.41	.0	Other
cursor: mutex S	1,046	1.2	1.11	.0	Concurre

#### Top 10 Foreground Events by Total Wait Time

Event	Waits	Total Wait Time (sec)	Wait Avg(ms)	% DB time	Wait Class
db file sequential read	3,825,071	8559.2	2.24	89.0	User I/O
db file parallel read	140,903	839.6	5.96	8.7	User I/O
DB CPU		377		3.9	
library cache load lock	236	2.1	8.82	.0	Concurrency
library cache: mutex X	273	1.4	5.22	.0	Concurrency
cursor: pin S wait on X	274	1.3	4.62	.0	Concurrency
kksfbc child completion	30	1	33.19	.0	Other
Disk file operations I/O	291	.5	1.82	.0	User I/O
latch: row cache objects	111	.4	3.67	.0	Concurrency
read by other session	39	.2	5.77	.0	User I/O

## Wait Event Histogram

- Units for Total Waits column: K is 1000, M is 1000000, G is 10000000000
- % of Waits: value of .0 indicates value was <.05%; value of null is truly 0
- % of Waits: column heading of <=1s is truly <1024ms, >1s is truly >=1024ms
- Ordered by Event (idle events last)

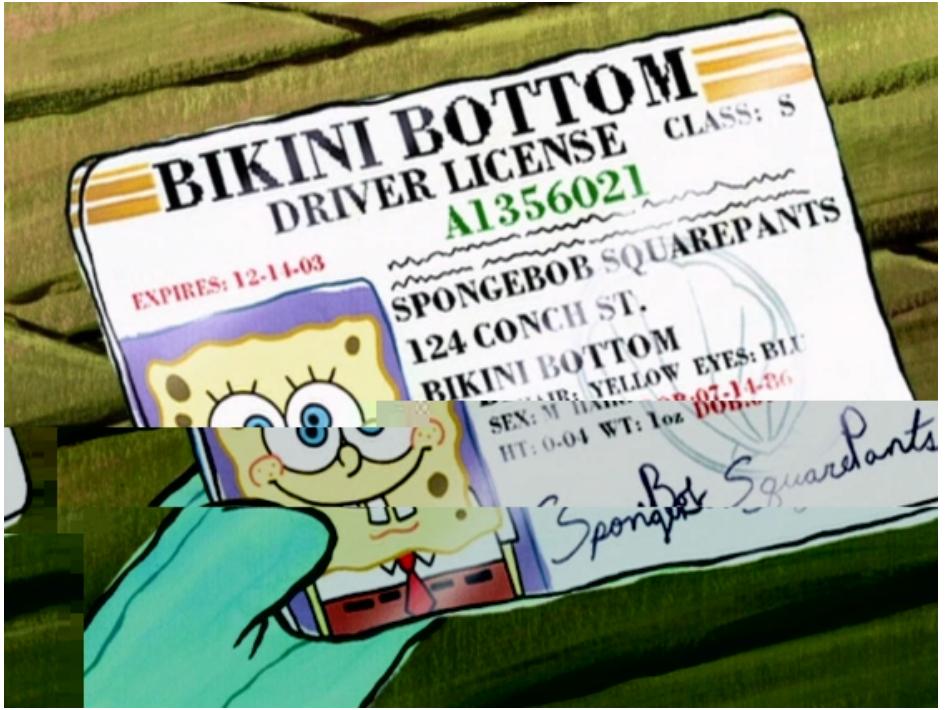
Event	Total	% of Waits								
		Waits	<1ms	<2ms	<4ms	<8ms	<16ms	<32ms	<=1s	>1s
db file parallel write	19.8M	91.8	5.0	2.3	.4	.1	.2	.0		
db file scattered read	5354	32.6	21.7	44.2	1.5	.0				
db file sequential read	2G	82.1	8.6	9.0	.3	.0	.0	.0	.0	

Event	Total Waits	% of Waits							
		<1ms	<2ms	<4ms	<8ms	<16ms	<32ms	<=1s	>1s
db file parallel read	140.9K	.1	1.5	25.1	57.1	15.1	1.0	.1	
db file parallel write	447.8K	94.5	3.3	1.9	.3	.0	.0	.0	.0
db file scattered read	39	2.6	15.4	30.8	30.8	15.4	2.6	2.6	
db file sequential read	3.8M	17.3	41.8	31.0	8.8	1.0	.1	.0	
direct path write	2	100.0							

## Wait Event Histogram Detail (64 msec to 2 sec)

- Units for Total Waits column: K is 1000, M is 1000000, G is 1000000000
- Units for % of Total Waits: ms is milliseconds s is 1024 milliseconds (approximately 1 second)
- % of Total Waits: total waits for all wait classes, including Idle
- % of Total Waits: value of .0 indicates value was <.05%; value of null is truly 0
- Ordered by Event (only non-idle events are displayed)

		% of Total Waits					
		Event	Total	ms	s	ms	s
	Disk file operations I/O		3	99.1	.9		
	cursor: pin S wait on X		4	98.5	1.5		
	db file parallel read		147	99.9	.1	.0	.0
	db file parallel write		2	100.0	.0		
	db file scattered read		1	97.4			2.6
	db file sequential read		652	100.0	.0	.0	.0
	kksfbc child completion		20	33.3	66.7		
	library cache load lock		8	96.6	3.0	.4	
	library cache: mutex X		9	96.7	2.6	.7	
	log file parallel write		8	100.0	.0	.0	



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*Hard      Soft*

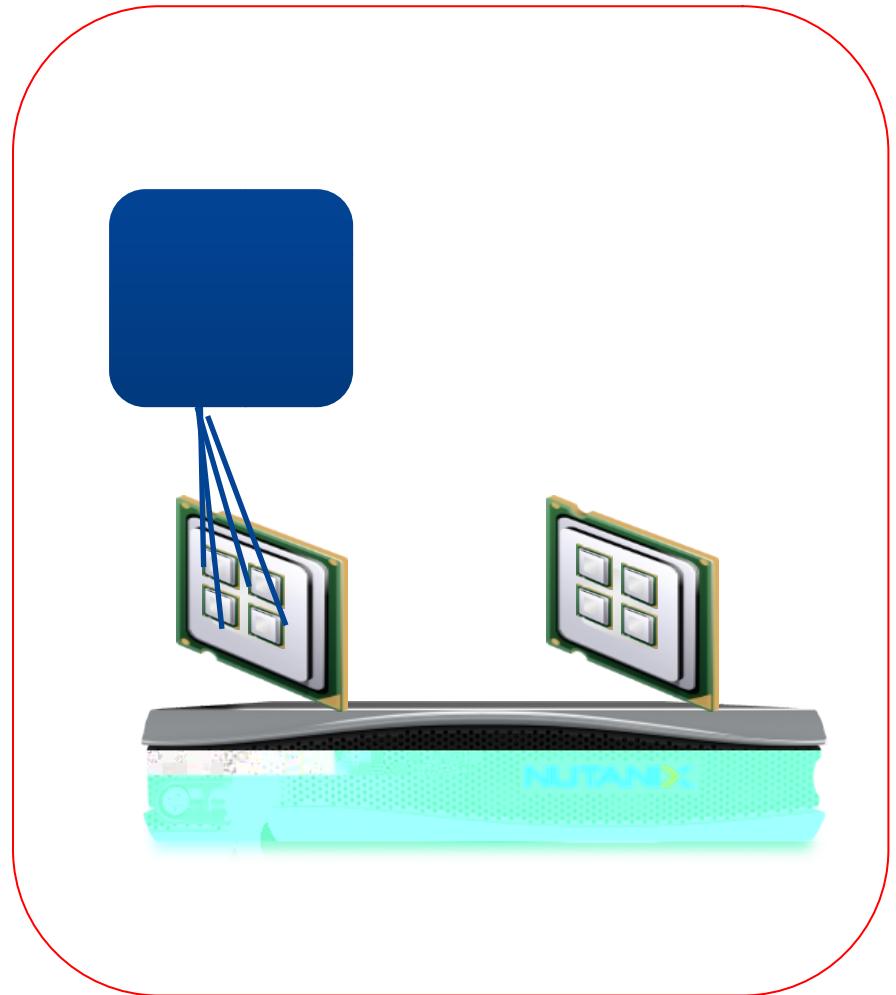
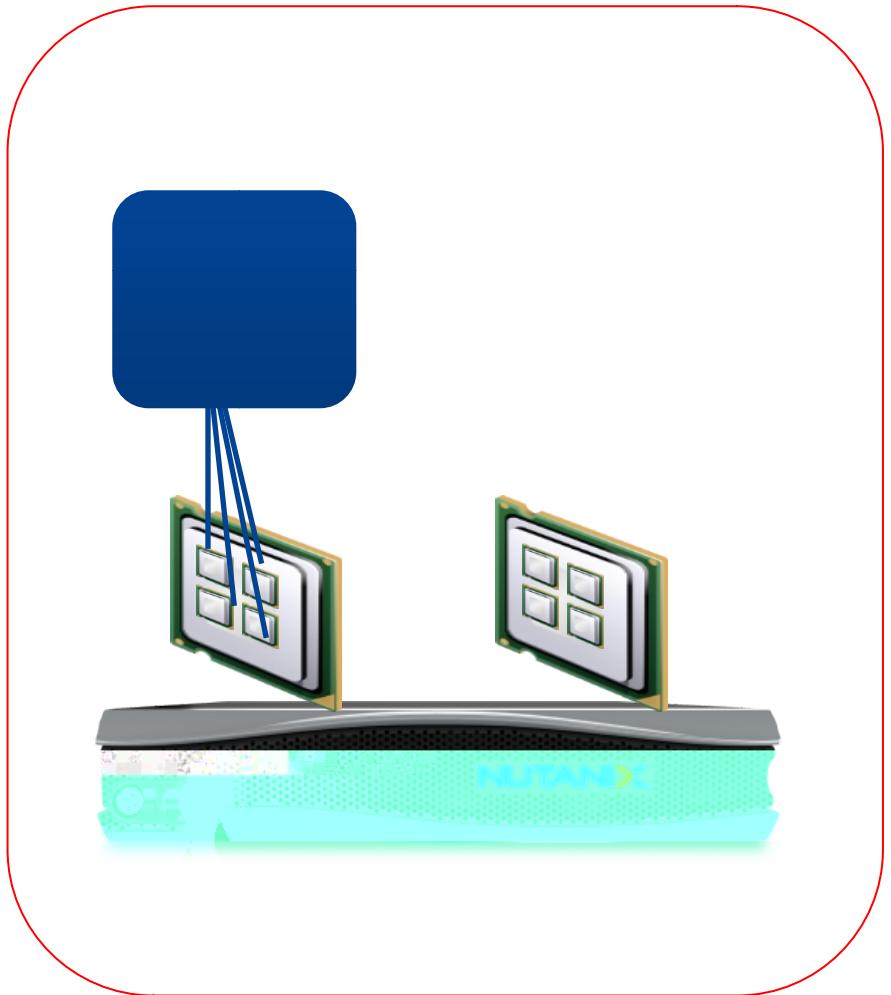
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*soft partition technology*

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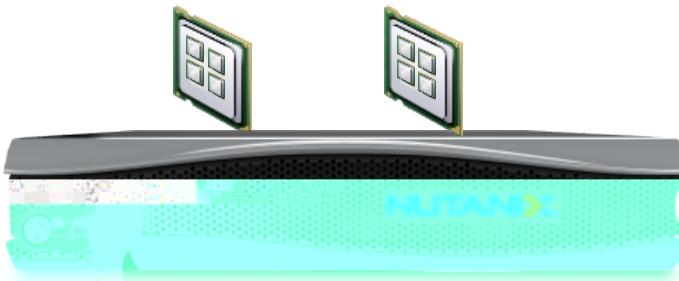


– <http://www.oracle.com/us/corporate/contracts/processor-core-factor-table->

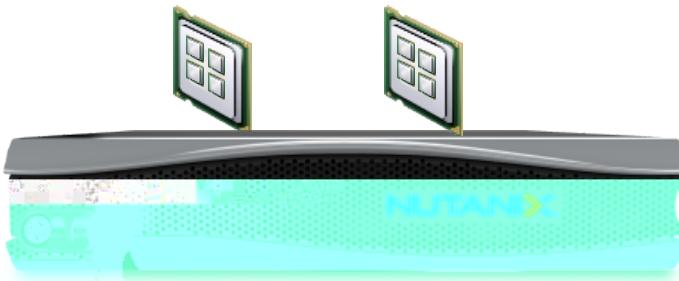
Vendor and Processor	Core Processor Licensing Factor	
Sun and Fujitsu UltraSPARC T1 processor (1.0 or 1.2 GHz)		
<b>Only named servers including:</b> Sun Fire T1000 Server, SPARC Enterprise T1000 Server*, with 6 or 8-core 1.0 GHz UltraSPARC T1 processor	0.25	
Sun Fire T2000 Server, SPARC Enterprise T2000 Server*, with 4, 6, or 8-core 1.0 GHz, or 8 core 1.2 GHz UltraSPARC T1 processor		
Sun Netra T2000, 1.0 or 1.2 GHz UltraSPARC T1 processor	0.25	
SPARC T3 processor	0.25	
Sun and Fujitsu UltraSPARC T1 1.4 GHz		
<b>Only named servers including:</b> Sun Fire T2000 Server and SPARC Enterprise T2000 Server*, with 8-core, 1.4 GHz UltraSPARC T1 processor	0.5	
Sun T6300, 1.4 GHz UltraSPARC T1 processor	0.5	
AMD Opteron Models 13XX, 23XX, 24XX, 32XX, 41XX, 42XX, 43XX, 61XX, 62XX, 63XX, 83XX, 84XX or earlier Multicore chips	0.5	
Intel Xeon Series 56XX, Series 65XX, Series 75XX, Series E7-28XX, E7-28XX v2, Series E7-48XX, E7-48XX v2, E7-48XX v3, Series E7-88XX, E7-88XX v2, E7-88XX v3, Series E5-24XX, E5-24XX v3, Series E5-26XX, E5-26XX v2, Series E5-46XX, E5-46XX v2, E5-46XX v3, E3-15XX v5, Series E5-16XX, Series E3-12XX, E3-12XX v2, E3-12XX v3, E3-12XX v4, E5-26XX v3, E5-24XX v2, E5-14XX v3, E5-14XX v2, E5-16XX v3 and E5-16XX v2 or earlier Multicore chips	0.5	
Sun and Fujitsu SPARC64 VI, VII		0.75
Sun UltraSPARC IV, IV+, or earlier Multicore chips		0.75
Sun UltraSPARC T2		0.75
HP PA-RISC		0.75
IBM POWER5+ or earlier Multicore chips		0.75
All Single Core Chips		1.0
Intel Itanium Series 93XX <i>(For servers purchased on or after Dec 1st, 2010)</i>		1.0
Intel Itanium Series 95XX		1.0
IBM POWER6		1.0
IBM POWER7, IBM POWER7+		1.0
IBM POWER8		1.0

Oracle have "Number of User license " we do not introduce here, one core license about 25 name users

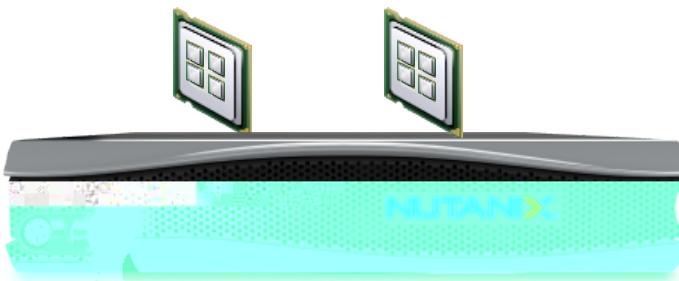
*socket*  
**two sockets**  
*full*

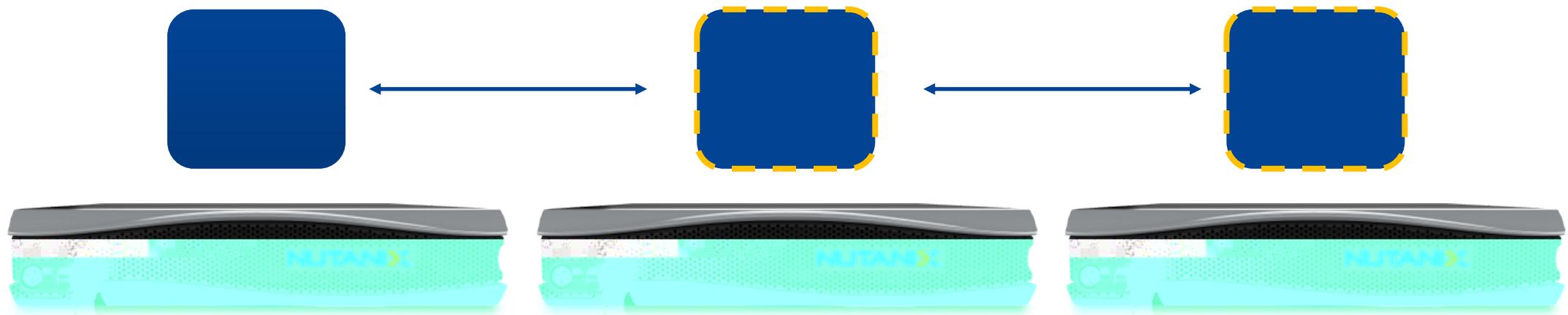


*socket*  
**four sockets**  
*full*



*core*  
*full*





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## NX-3000 Series

### Hardware Platform Specifications - Per Node

	PER NODE (4 PER APPLIANCE)	PER NODE (1 PER APPLIANCE)	PER NODE (1 PER APPLIANCE)
Model	NX-3060-G5 (Configure to Order)	NX-3155G-G4 (Configure to Order)	NX-3175-G5 (Configure to Order)
Server Compute	Dual Intel Broadwell: <del>E5-2620v4 [16 cores / 2.1 GHz], E5-2640v4 [20 cores / 2.4 GHz],</del> E5-2650v4 [24 cores / 2.2 GHz], E5-2680v4 [28 cores / 2.4 GHz], E5-2695v4 [36 cores / 2.1 GHz]	Dual Intel Haswell: E5-2660v3 [20 cores / 2.6 GHz], E5-2680v3 [24 cores / 2.5 GHz], E5-2698v3 [32 cores / 2.3 GHz]	Dual Intel Broadwell: E5-2650v4 [24 cores / 2.2 GHz], E5-2667v4 [16 cores / 3.2 GHz], E5-2680v4 [28 cores / 2.4 GHz], E5-2695v4 [36 cores / 2.1 GHz], E5-2699v4 [44 cores / 2.2 GHz]

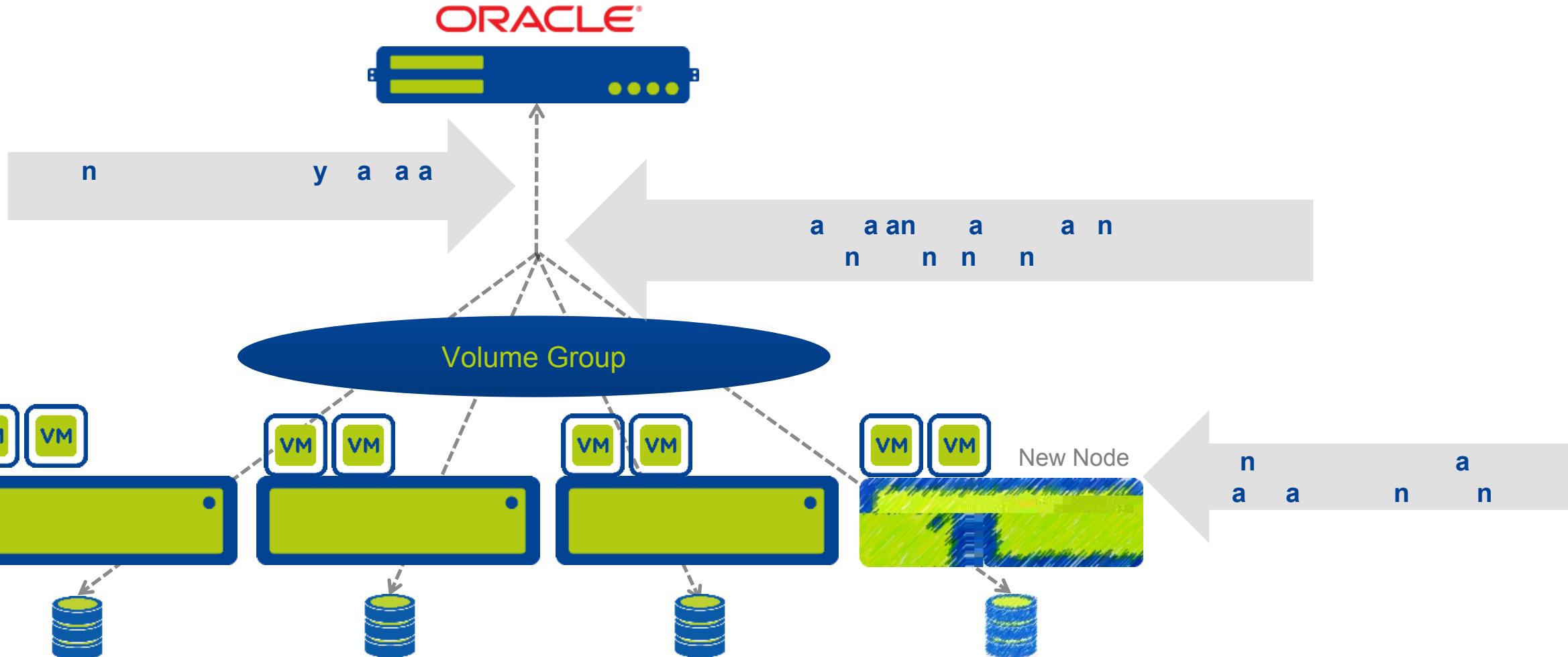
- We just need pay for two nodes license fee.
- you can run unlimited Oracle database guest VM

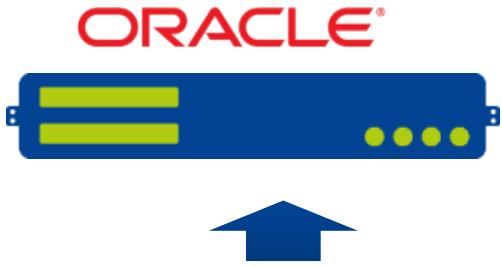
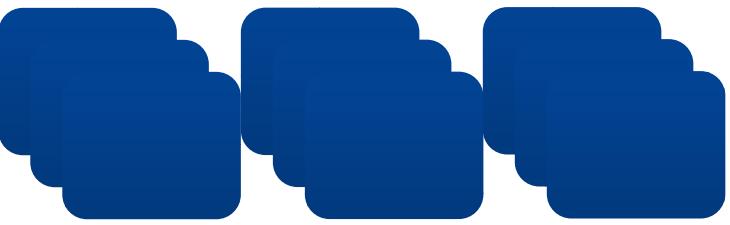




So we just pay for the two Compute Nodes licenses











# Oracle support ESXi Document – 249212.1

## APPLIES TO:

Oracle WebLogic Server - Version 10.3.6 and later

Oracle Database - Enterprise Edition - Version 11.2.0.2 and later

Enterprise Manager Base Platform - Version 12.1.0.3.0 and later

Oracle Database Gateway for DBDA - Version 10.2.0.3 and later

Oracle Fusion Middleware - Version 11.1.1.0.0 and later

Information in this document applies to any platform.

SCOPE: This note applies to all Oracle products but we have no easy way of adding all of them to the header.

## DETAILS:

\*\*\*\_Checked for currency: 10-JUL-2013\*\*\*

### Purpose

Explain to customers how Oracle supports our products when running on VMWare

### Scope & Application

For Customers running Oracle products on VMware virtualized environments.  
No limitation on use or distribution.

### Support Status for VMware Virtualized Environments

Oracle has not certified any of its products on VMware virtualized environments. Oracle Support will assist customers running Oracle products on VMware in the following manners: Oracle will only provide support for issues that either are known to occur on the native OS, or can be demonstrated not to be as a result of running on VMware.

If a problem is a known Oracle issue, Oracle support will recommend the appropriate solution on the native OS. If that solution does not work in the VMware virtualized environment, the customer will be referred to VMware for support. When the customer can demonstrate that the Oracle solution does not work when running on the native OS, Oracle will resume support, including logging a bug with Oracle Development for investigation if required.

If the problem is determined not to be a known Oracle issue, we will refer the customer to VMware for support. If the customer can demonstrate that the issue occurs when running on the native OS, Oracle will resume support, including logging a bug with Oracle Development for investigation if required.

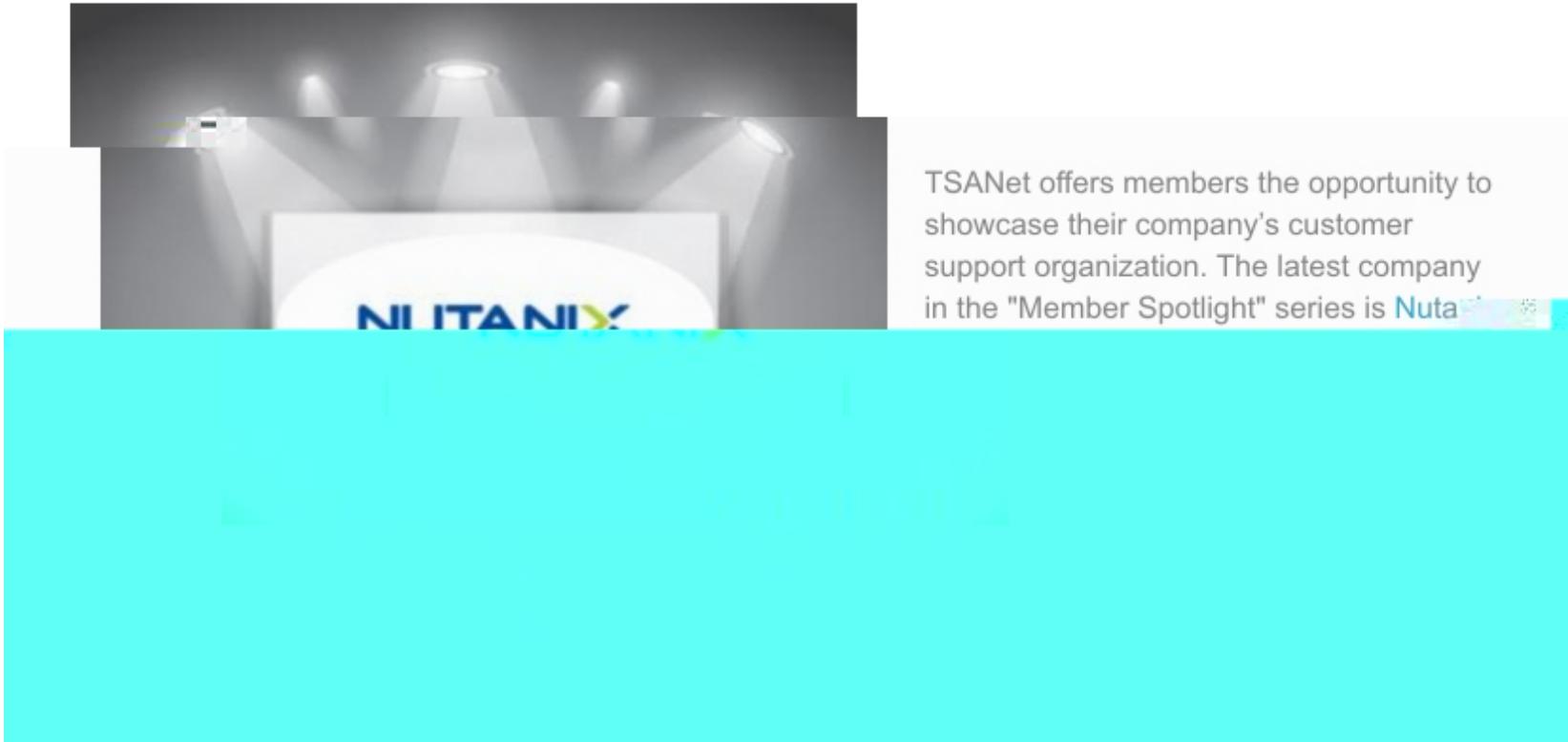
only

NOTE: Oracle has not certified any of its products on VMware. For Oracle RAC, Oracle will accept Service Requests as described in this note on Oracle RAC 11.2.0.2 and later releases.

# Nutanix TSANET support

<https://www.tsanet.org/blog/2015/7/7/tsanet-member-spotlight-%E2%80%93-nutanix>

Published by Brittany in Member Spotlight on Jul 7, 2015



# Oracle on AHV support

<https://portal.nutanix.com/#page/kbs/details?targetId=kA032000000TTtJCAW>

## Description

Nutanix supports Oracle software running in Acropolis environments if the guest VM operating system is certified by Oracle.

- Oracle does not distinguish underlying hardware for support purposes for applications. They support their applications running on certified operating systems.
- If customers run an Oracle-certified operating system on Acropolis, then Nutanix supports Oracle software.
- Acropolis does not modify the base OS, so the solution Oracle provides for the base OS is fully expected to work for that same OS running on Acropolis,
- Since Nutanix does not modify the guest VM operating system, customers will be supported by Oracle also.

## Information on supportability of Oracle on VMware and Hyper-V information

• My Oracle

[Support \(MOS\) Note 249212.1 – VMware vSphere Support](#)

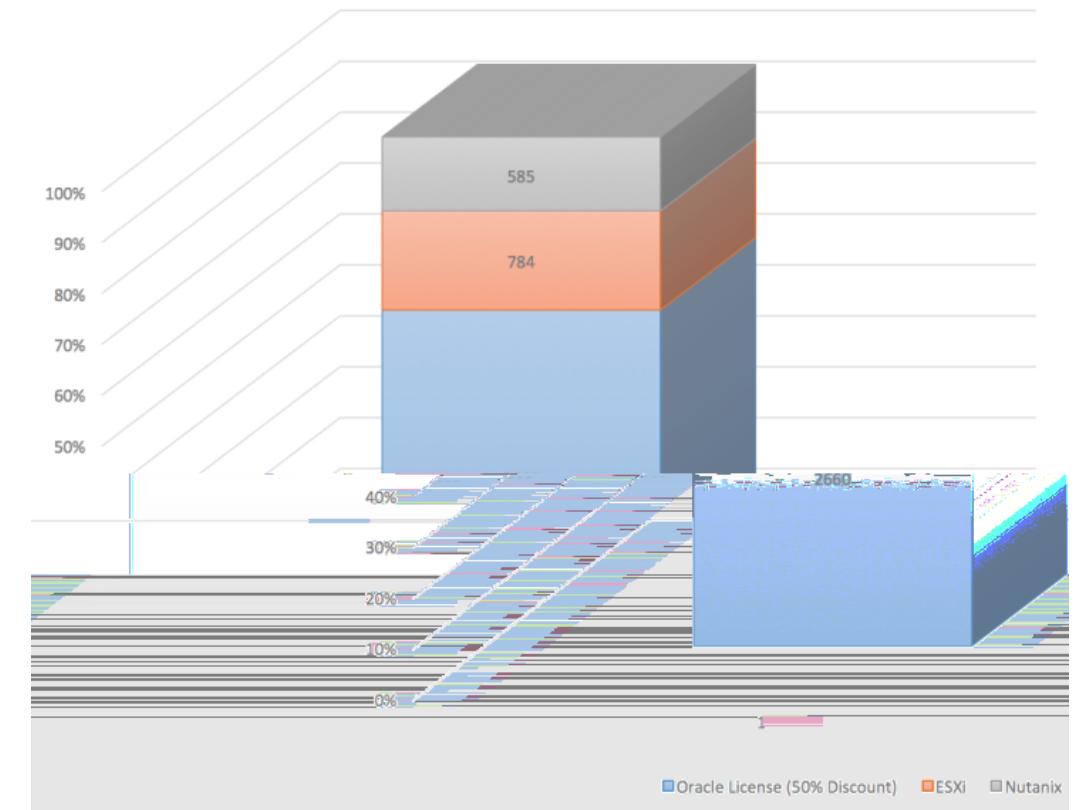
[Support \(MOS\) Note 1563794.1 – Microsoft Hyper-V Support](#)

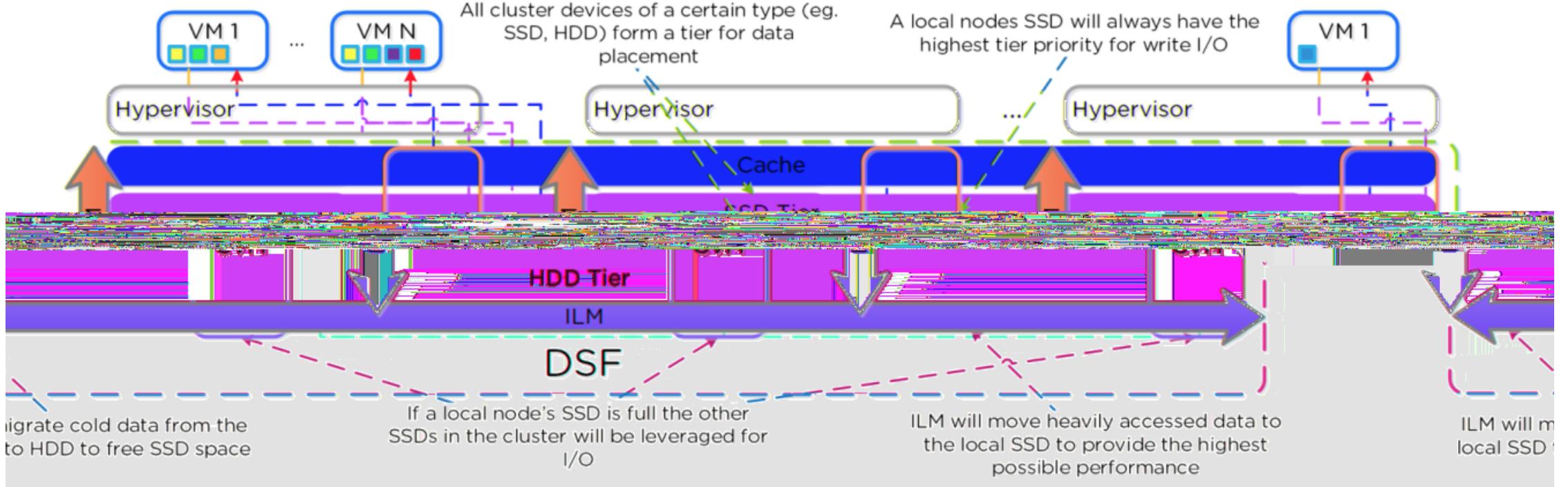


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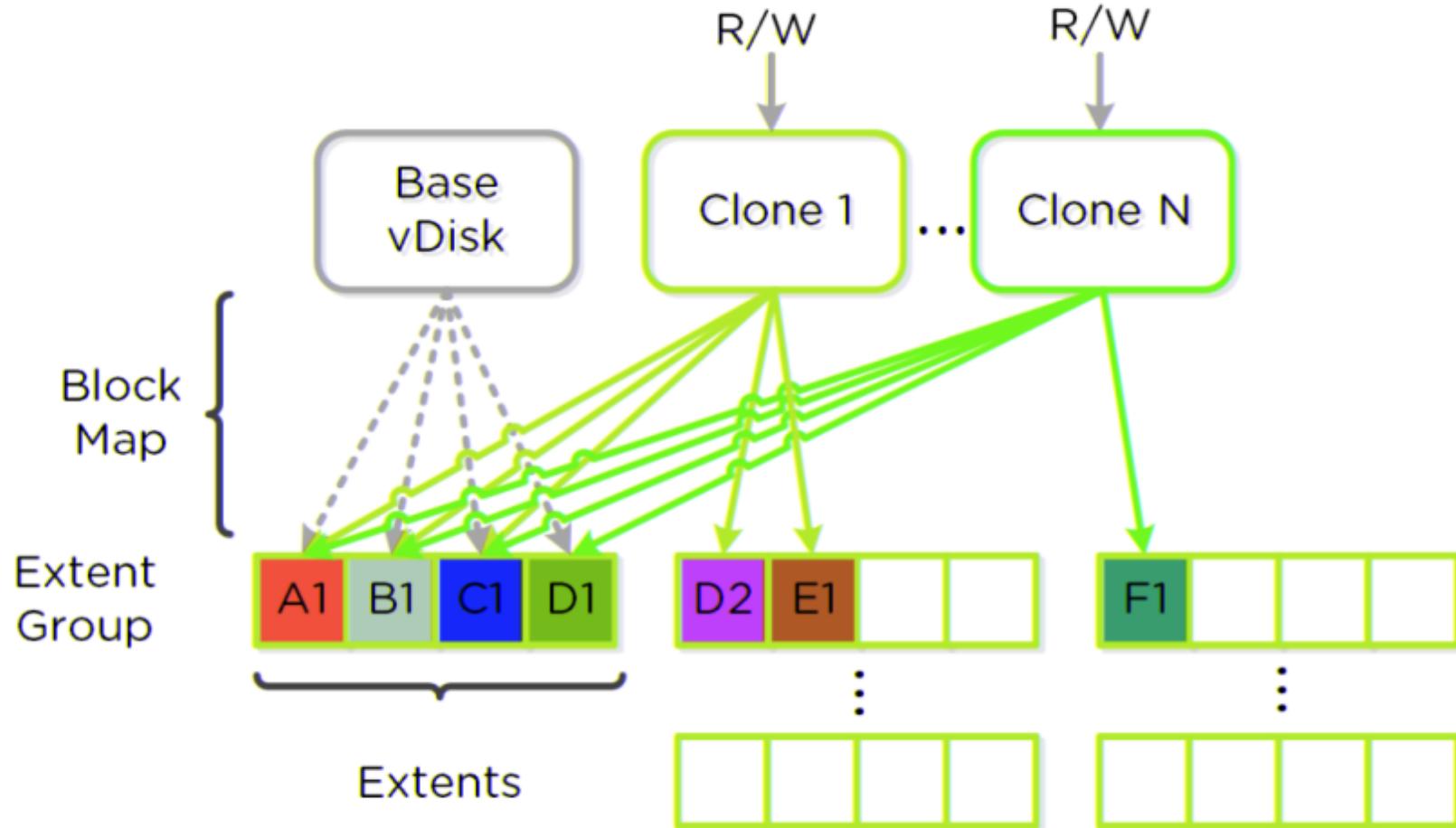
Thank You

Price Struture for Oracle Virtualization in real case with ESXi

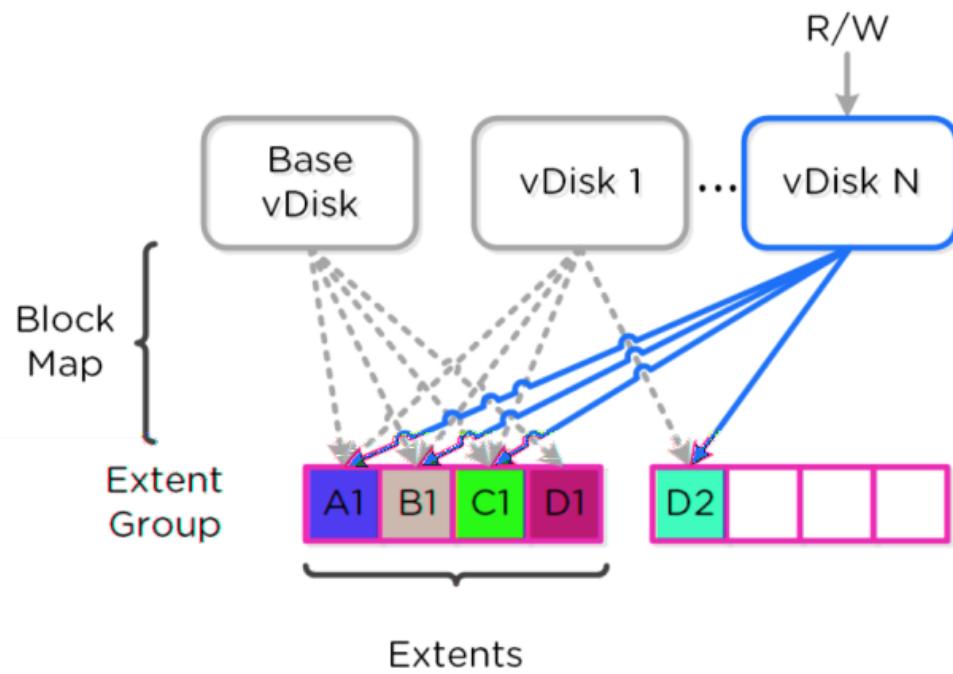




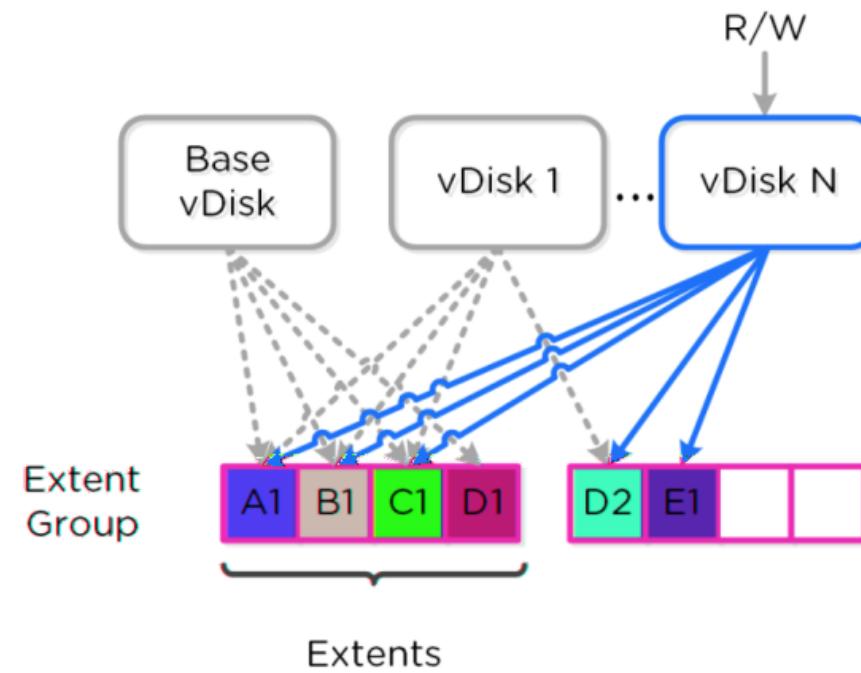
## Clone(s) with New Block(s) Written



Subsequent Snapshot(s) Taken

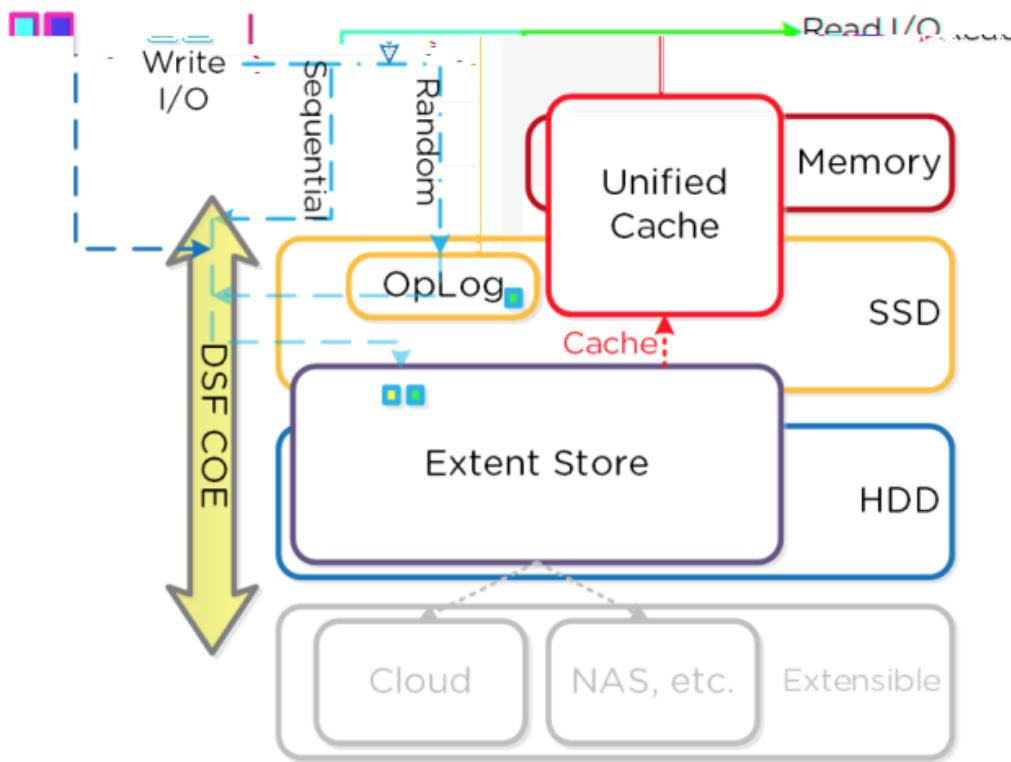


New Block Written



Sequential I/O or OpLog draining  
will be aligned, compressed and  
written to the Extent Store

All other I/Os >4K will be  
compressed in the OpLog





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