Optimisation des licences Oracle
valeur ajoutée des systèmes POWER vs OVM / VMware

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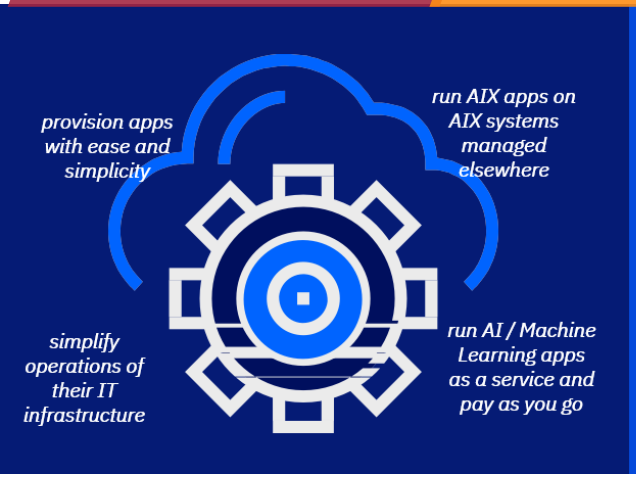
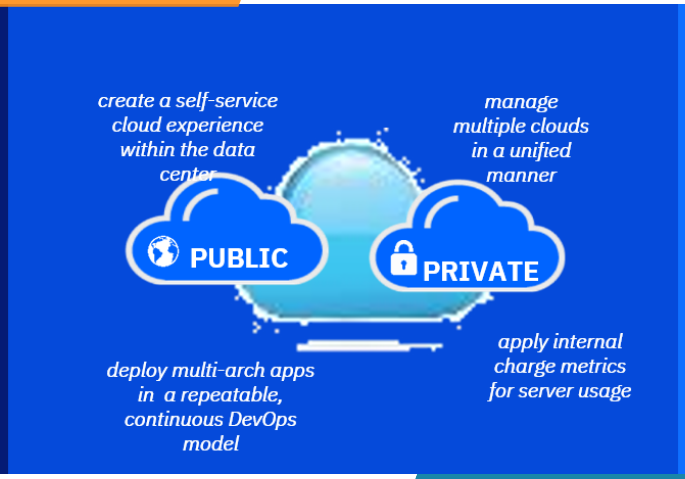
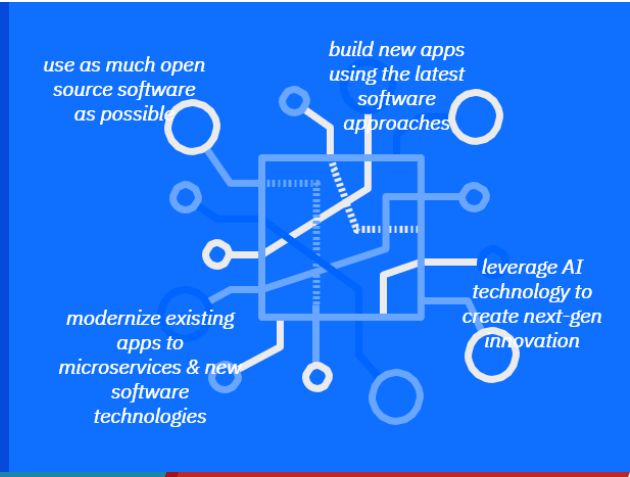
Customer Needs & Expectations

Reduce IT Spend

Accelerate Innovation





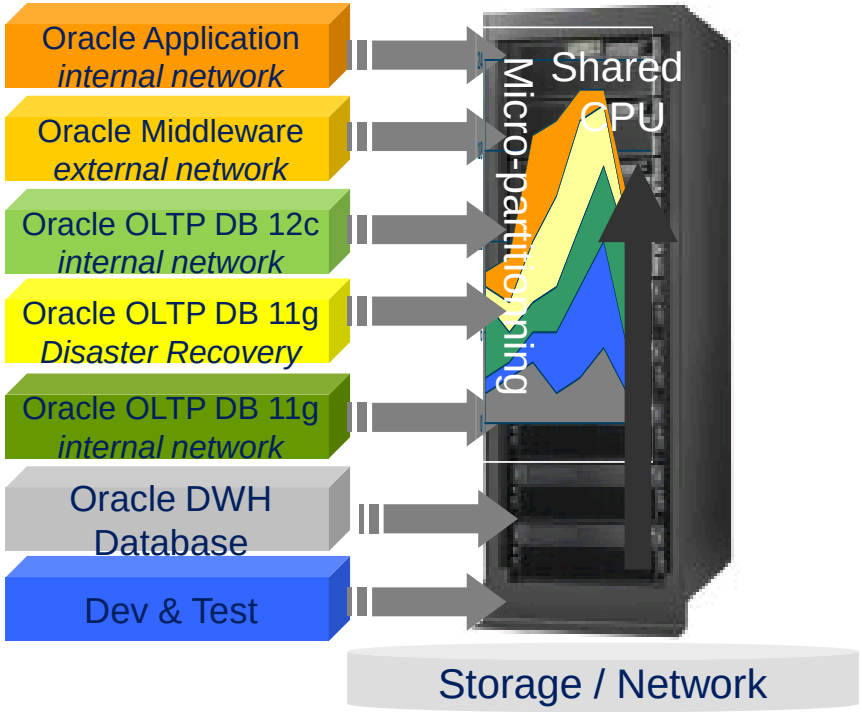


Increase Agility and Responsiveness

Drive Business Transformation

Consolidation and Co-Location of Oracle Workloads

Flexible and simple architecture for TCO



Keep it simple is efficient

- Reach 80% utilization rate
- Workload co-location for better resources optimization
- Secured VMs isolation with PowerVM
- Global production environment consolidation with resources sharing
  - Development, Test, Education, …
- Physical, Virtual or a mix depending on your requirements and objectives
  - Shared Processors and/or Pools
  - Memory dynamic LPAR and compression
  - Mutiple Virtual I/O Servers to isolate I/Os

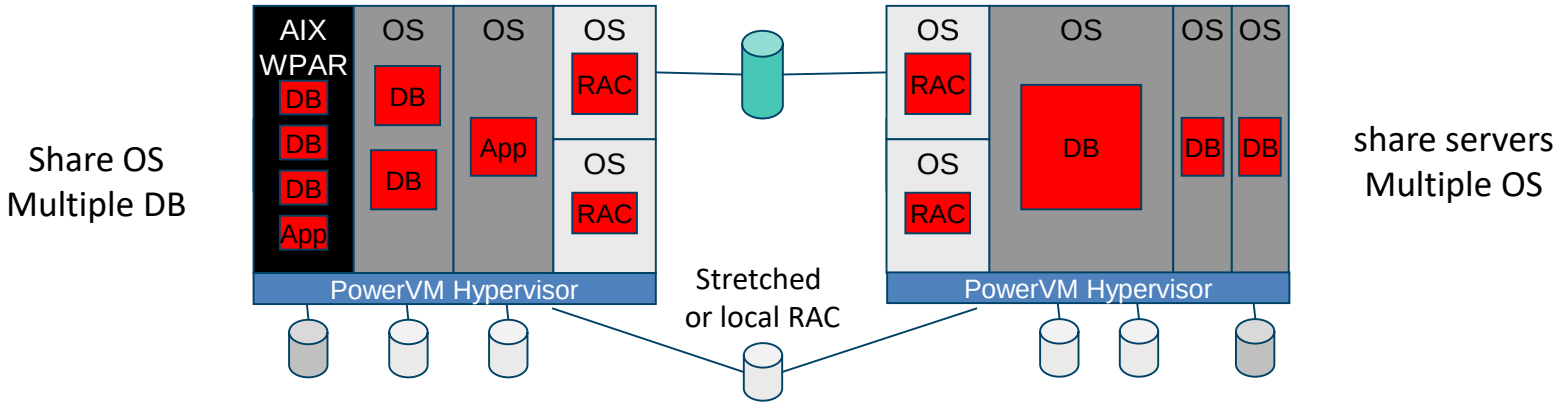
Flexible Architecture Design: Oracle consolidation on IBM Power

Thanks to PowerVM virtualization, you can create multiple LPARs and have the choice to isolate Oracle DB and workloads in separated OS enviroments/resources.

Implement/deploy an appropriate mix Oracle applications as well as single instance or RAC Oracle DB instances

- Size individual application or DB LPARs to match specific CPU, RAM, I/O needs
- Scale from very small to very large LPARs and Oracle instances
- Create independent security domains, deploy varying versions of Oracle, 11g, 12c, 18c, 19c

- Isolate critical applications or DBs in different LPARs
- Isolate IT service by department or other
- Mix test and production on the same frame
- Mix application and DB on the same machine



Oracle Database Editions

- **Enterprise Edition (per core license)**
  - Price per core $47,500 USD, + 22% annual SWMA
  - Database options are extra charge
  - Typical discount: 50% ←→ 70% for global accounts
  - Oracle SW cost (TCA + SWMA) is 80% to 90% of the TCO. **The number of licenses is critical**
    - Processors licensing
      - x86 = 0.5 license vs IBM Power = 1 license

- **Standard Edition 2 (per socket license)**
  - Price per socket: $17,500 USD, + 22% annual SWMA
  - Limited to 2 sockets capable servers (only scale out, S914, S922, S924)
  - RAC cluster option is included option. (not in version 19c)
  - Restrictions on other DB options, maximum 16 CPU threads per database

- **Both Enterprise and Standard Editions can by acquired on a per "Named User" basis with minimum number of Users . Customers typically pay per core for the Enterprise Edition and per socket for the Standard Edition 2.**

- **https://www.oracle.com/assets/databaselicensing-070584.pdf**
- **https://www.oracle.com/assets/technology-price-list-070617.pdf**

Virtualization and Licensing

Oracle defines two licensing rules depending on the Virtualization layer
http://www.oracle.com/us/corporate/pricing/partitioning-070609.pdf

"Soft Partitioning"

VMWare, HyperV, KVM are not means to limit the number of software licenses for any server a
A single VM running OracleDB requires licenses for all the cores of the server

➔ **Pay for all the server**

"Hard Partitioning"

PowerVM, OracleVM are means to limit the number of licenses.
Approved hard partitioning technologies must have a capped or a maximum number of cores/processors for the given partition

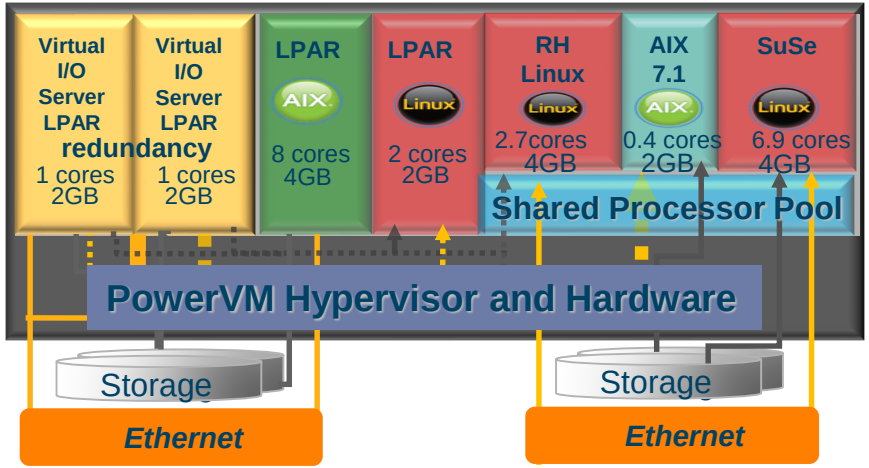
➔ **Pay what you use (*)**

(*) does not apply if usage of Live Partition Mobility

Hardware versus Software Virtualization

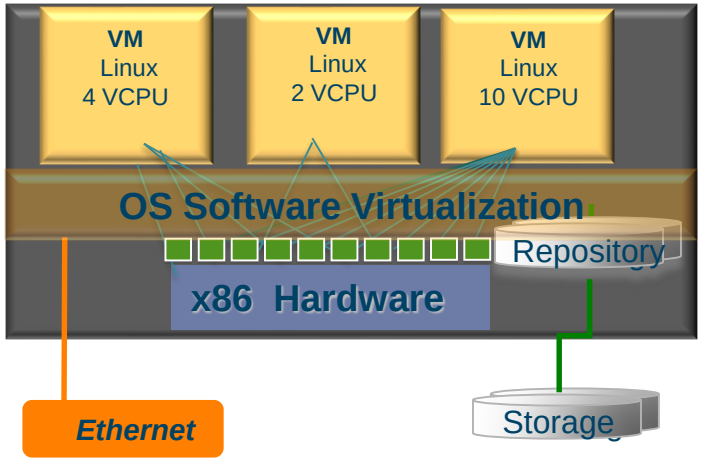
Sharing CPU

PowerVM is Bare Metal Hypervisor



Mapping CPU

x86 virtualization is OS SW additional layer



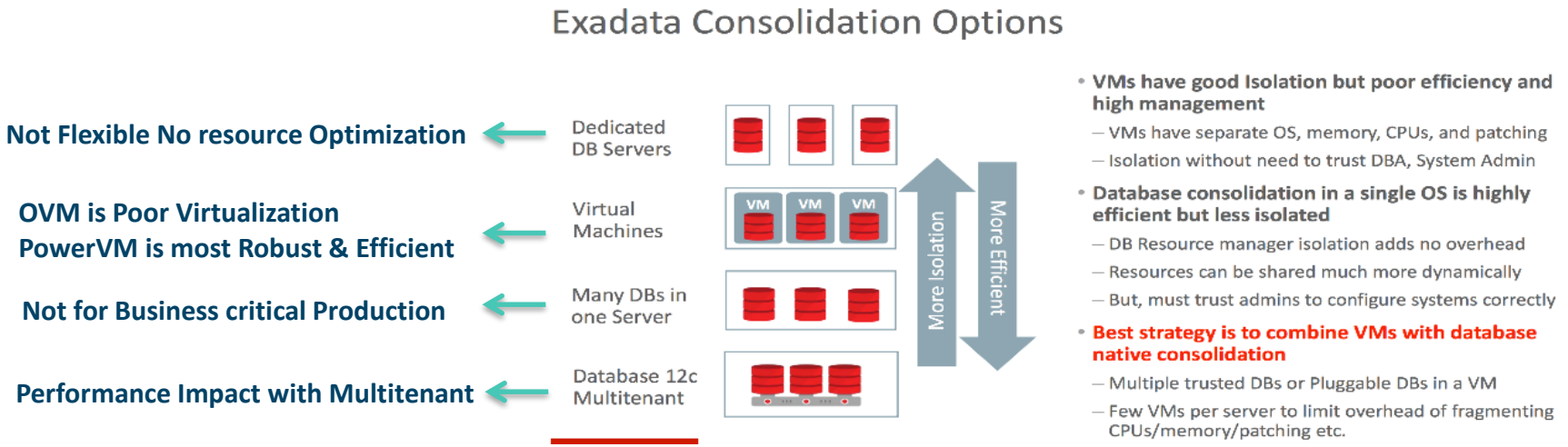
PowerVM

PowerVM is 2x more efficient than vs x86 virtualization

http://ibm.biz/BdrhE9

vmware
ORACLE VM
Microsoft Hyper-V
KVM

Enterprise Edition per Core Licensing, “hard/soft-partitioning” and Database Consolidation



OVM is “hard partition” licensing but Oracle <u>does not recommend to implement OVM</u> on x86/Exadata

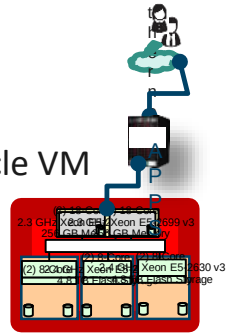
➔You cannot isolate DB in different VMs

http://www.oracle.com/technetwork/database/availability/exadata-ovm-2795225.pdf

slide 6: Exadata VMs are not recommended for virtualization of heavyweight applications

2:1 vCPU to physical cores is the recommended ratio to avoid performance and stability issues with Oracle VM

➔OVM is not compatible with security, maintenance and the business continuity



Oracle Virtual Machine (Oracle VM) on x86

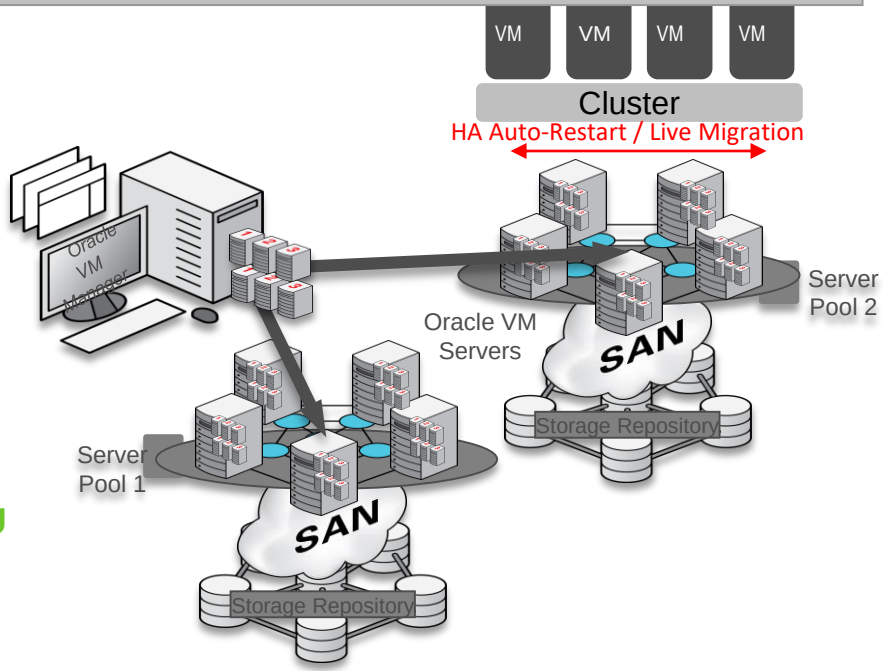
The only Server Virtualization Software supported and certified with Oracle Products on x86 Servers

Oracle Licensing –
only license the number of CPU or sockets being utilized
Oracle VM Server for x86: Hard Partitioning/CPU Pinning (Doc ID 1529408.1)

Using hard partitioning to limit Oracle product software licensing also adds some restrictions such as live migration, Distributed Resources Scheduler (DRS) and Distributed Power Management (DPM).

To conform to the Oracle hard partition licensing requirement, you must bind vCPUs to physical CPU threads or cores

https://www.oracle.com/technetwork/server-storage/vm/ovm-hardpart-168217.pdf



Oracle and VMWare : Licensing & Support

- **VMWare is Soft Partitioning by Oracle - http://www.oracle.com/us/corporate/pricing/partitioning-070609.pdf**
  - "soft partitioning (including features/functionality of any technologies listed is not permitted as a means to determine or limit the number of software licenses required for any given server or cluster of servers."

- **VMWare's vCenter 6.0 and higher**

With vCenter Server 6.0 or higher, a running virtual machine can move across vCenter Server Instances which impacts licensing across the entire environment. *As a result of this, Oracle requires you to license all the physical cores of all the physical EXSi hosts of all the vCenter Server Instance(s) which have hosts with ESXi 5.1 or later hypervisors.*

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

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Virtual Shared Processor Pools – Licensing Benefits

Server with 24 processor cores

POWER6/7/8/9 Multiple shared pools:

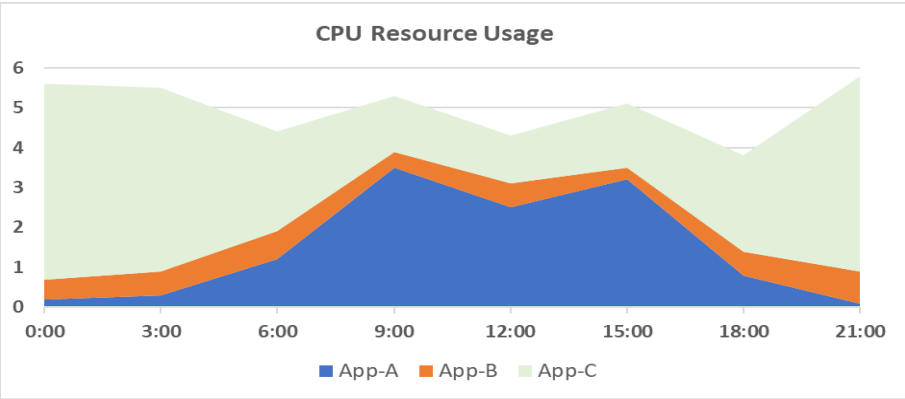
- Can reduce the number of software licenses by putting a limit on the amount of processors an uncapped partition can use
- Up to 64 shared pools

n5	n6	n7	n8	n9	n10	n11
Uncapped	Uncapped	Uncapped	Uncapped	Uncapped	Uncapped	Uncapped
AIX 7.1	AIX 7.2	AIX	AIX	AIX	Ubuntu Linux	SUSE Linux
Oracle DB	**Oracle DB**	**EBS App1**	**EBS App2**	**EBS QA**	**MongoDB**	**Redis**
Ent. = 2.5 VP = 5	Ent. = 1.70 VP = 3	Ent. = 2.00 VP = 4	Ent. = 2.5 VP = 4	Ent. = 0.5 VP = 3	Ent. = 1.00 VP = 4	Ent. = 1.50 VP = 3

CUoD	n1 VIOS	n2 VIOS	n3 IBM i	n4 Linux	Shared processor pool #1 Max Cap: 5 processors				Shared processor pool #2 Max Cap: 6 processors					Shared proc. pool #3 Max Cap: 4 processors		
					Physical Shared Pool (12 processor cores)											
7	1	1	2	1	1	2	3	4	5	6	7	8	9	10	11	12

Oracle DB cores to license:
5 from shared proc. pool 1
= 5

EBS cores to license:
6 from shared proc. pool 2
= 6



Activate and license only 1 incremental core at a time!

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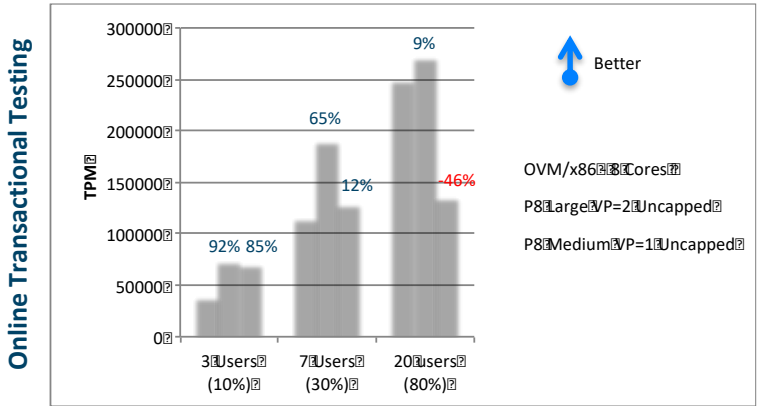
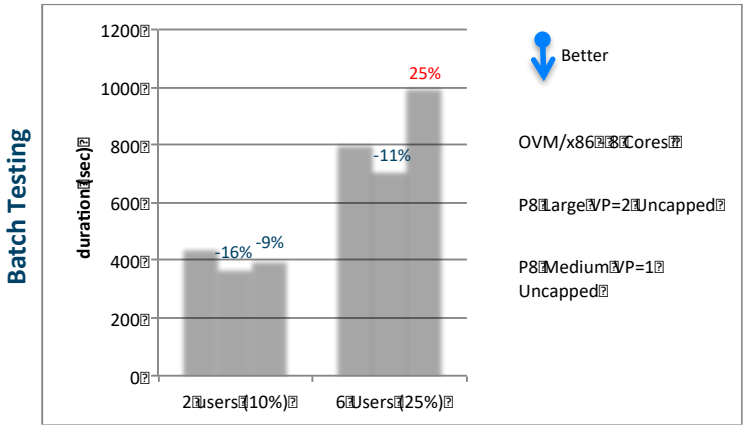
PowerVM vs OVM/x86, Hard-partitioning Comparison

8 x86 Cores vs 2 P8 Cores

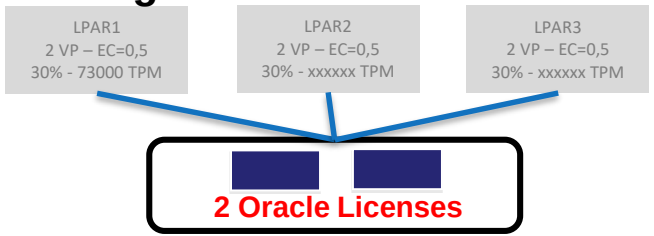
Up to 92% more TPM / 16% shorter batch duration





Power

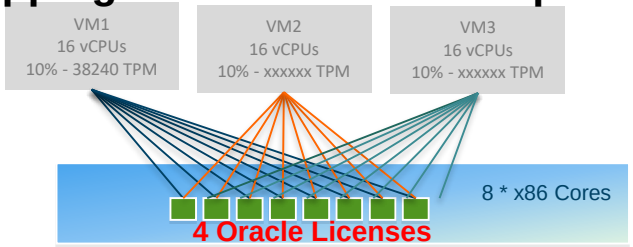
Sharing CPU w/o over commitment



- Shared Processor Pool = 2 CPUs
- No CPU Over-commitment – EC=guarantee per LPAR
- Cap Oracle Licenses
- Resize Pool according to workload growth

x86

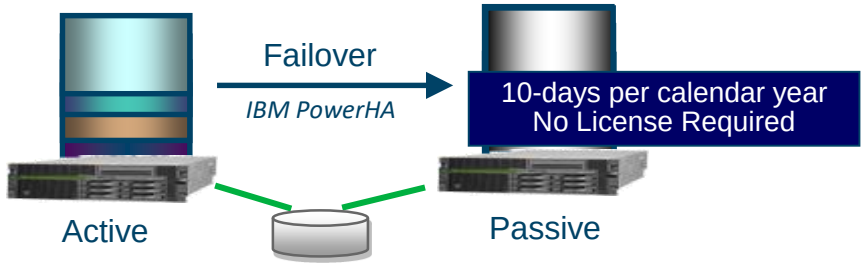
Mapping CPU based on over provisioning



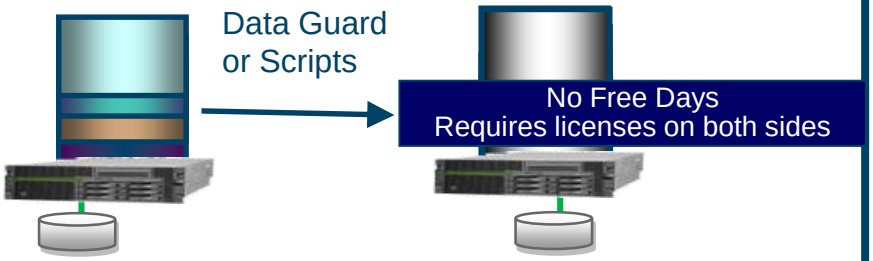
- Performance issues expected with OVM Consolidation (vCPU mapping 6:1)
- Over-provision CPU but workload performance conflicts if VMs become fully active
- 1vCPU=1 thread (2 vCPUs to one physical core) is the recommendation

Oracle Licensing on Backup / HA / DR Summary

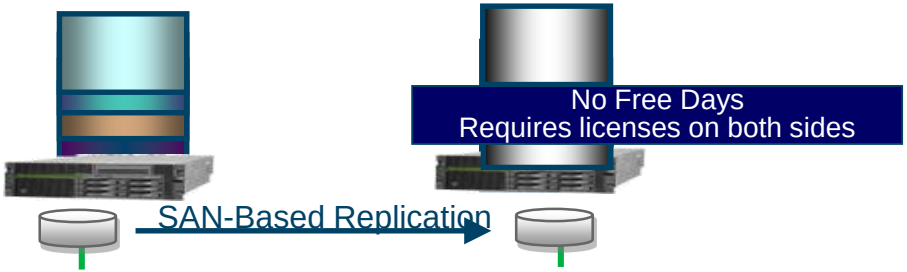
Backup: In this method, a copy of the physical database structures of the database is made.



Failover: In this method, nodes are configured in “clusters” with the first installed node acting as a primary node.



Standby: One or more copies of the primary database are maintained on a separate server(s) at all times.



Remote Mirroring: This method involves the mirroring of the storage unit or shared disks arrays.

http://www.oracle.com/us/corporate/pricing/sig-070616.pdf

LPM and the “*hard/soft*” partitioning” quote

”all physical cores on both the source and destination servers must be licensed …. » http://www.oracle.com/us/corporate/pricing/partitioning-070609.pdf
This document is NOT a contractual one, see foot page. (Check your contract)

Their statement is only about "usage“ not about the activation
The Oracle official statement explains that LPM is not consider as "Hard partitioning ...." and **using** LPM requires more licenses
Oracle applies the same usage policy for their In-Memory option that is installed by defaut when installing the DB binary code.
The option is charged only in case of usage, and de-activation is not required.

LPM de-activation method can not be specified by Oracle
LPM is an IBM technology, and IBM provides the activation or de-activation methods, Oracle can just Audit the usage.
The LPM de-activation per LPAR on the HMC method guarantees that the LPM is no more possible and this is auditable. (log files) which is what customers may require. http://ibmsystemsmag.com/blogs/aixchange/february-2016/running-lpm-on-selected-partitions/
Non-Oracle DB LPARs may run on the server and because of legal reasons Oracle cannot ask to the clients to remove LPM capability from the entire server for non-Oracle SW.(e.g Apps tiers LPAR running on top of an Oracle DB, SAP, DB2, ...)

Oracle sellers are not PowerVM experts and confuse our customers.
LPM and PowerVM Editions are IBM technology and Oracle sellers may not understand it.

POWER9 : Changing a Partition Template
POWER9 : Changing partition properties and capabilities
POWER8 : Changing a partition Template
POWER8 : Changing partition properties and capabilities

Superior Economics, lower TCO and TCA (SW+HW)

50%**
cost saving
on Oracle licenses

Oracle SW Licenses represents 80% of Total Costs of Ownership
Oracle Cost Reduction must be the unique Focus

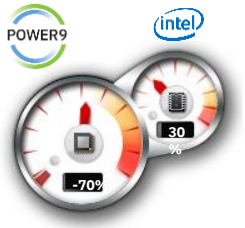
Highest Performance per Core

x2.2* vs Intel

Automated Throughput Optimization
Dynamic balance between cores and SMT

+

Higher Usage Rate



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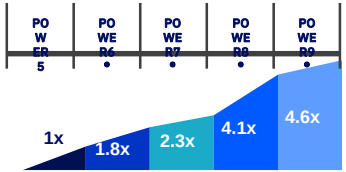
Continuously improved performance



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Competitive TCA Vs x86 Servers

Same Oracle Core Factor since POWER6

Hard-partitioning Virtualization Technology

Pay only for used cores for PowerVM

+

Extreme on-Premise Consolidation

- PowerVM unique capabilities (Isolation, Flexibility, Performance, SW Capping …)
- Unique platform for Apps / DB – Prod & Non-Prod

+

POWER Cloud Anywhere Private / Hybrid / Public

- Capex / Opex Models
- Choice for deployment
- Optimize investment (Shared Pool, ECOD, PEP, PEP 2.0, Cloud …)

*From proven official Standard Benchmarks representative of ERP/Database workloads
**based on customers testimonies and TCO studies - here