Comment réduire et optimiser nos coûts de licenses Oracle ?

COMMON

ROMANDIE

Webinar

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April 27, 2021

IBM Power Systems

IBM

Speakers

Frederic Dubois
Oracle on IBM Power Systems Specialist

Frederic is a Technical Specialist for the IBM Garage for Systems in Montpellier (France). He works with clients worldwide optimizing their Oracle workloads using IBM Power Systems servers. Frederic's experience spans across architecture design, sizing, solution validation, proof of concepts and benchmarks support. He also works in positioning and differentiating Power Systems solutions towards other solutions.


Francois Martin
Global Competitive Sales, Oracle on IBM Power Systems

Francois has over 20 years of experience with Oracle on IBM Power Systems supporting clients worldwide. He helps clients build state-of-the-art, optimized infrastructure with IBM Power Systems for the Oracle software stack, including the database and ISVs applications. He has extensive knowledge of the deep technical as well as high level and financial requirements of Oracle Exadata and SPARC/Solaris options and wants to help you reduce Oracle cost while building a rock-solid infrastructure with IBM Power Systems.

The Oracle landscape

WW Relational Database Software Market Share

Legend:
- Oracle
- Microsoft
- IBM
- SAP
- Terradata
- AWS

Pie chart values: 40%, 27%, 12%, 7%, 8%

Source IDC https://www.idc.com/getdoc.jsp?containerId=US45376919
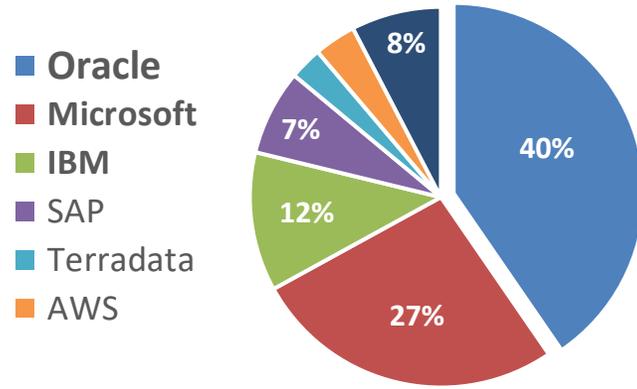
Oracle Market Share per Platform

Pie chart values: 50,1%, 28,1%, 21,1%, 0,6%, 0,1%

- x86 Linux   50.1%
- Windows   28.1%
- **UNIX (AIX) 21.1%**
- Other OE   0.6%
- Mainframe   0.1%
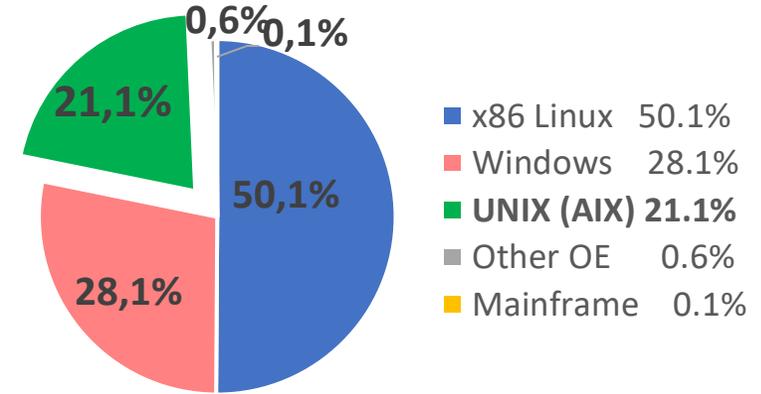
Source IDC Software tracker Oct 2019

Oracle on AIX/Power Systems is a huge install base and significant market share

- Mature offering optimized for Oracle applications and database
- Tens of thousands of clients trusting and proving this solution, Major Oracle and IBM customers
    (Public Client References & Case Studies, Public Performance Proofpoints: Public Scoring Metrics for Sizing)
- Worldwide largest and most critical Oracle Software implementations run on AIX/Power Systems across industries

**The market drives and the clients choose
IBM Power Systems to host Oracle SW for more than 25 Years**

Innovation in every generation
Long-term commitment and secure roadmaps

- **AIX** - a modern and flexible OS, Linux-Unix like
- Open-Source Modernization
- Ansible to achieve single pane of glass management
- AIX 7.3 was just announced, Roadmap beyond 2030
- Fewer and higher quality patches
- Check out the AIX Strategy Paper
- Unique features for Oracle, AIX Live Update Kernel
    - Zero downtime patching

    http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP102794

- **POWER10** will be launched later this year, again better performance per core
- Dev team already started to work on POWER11
- Open to innovation
- Check out the Power Systems video

    The Legacy and future of Power Systems YouTube Video

Oracle certifies based on the OS

AIX Roadmap

AIX 7.3

IBM POWER Processor Technology Roadmap

Performance   Security   Availability   Investment Protection   AIX Cognitive   Open Automation   Cloud-Ready
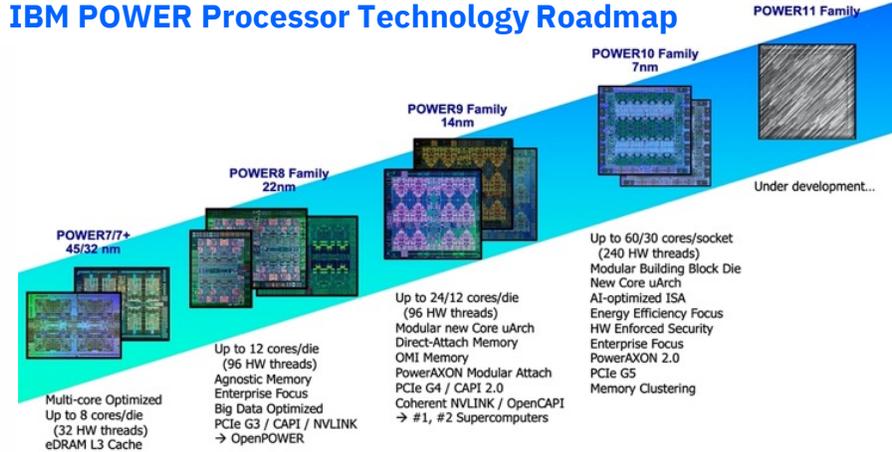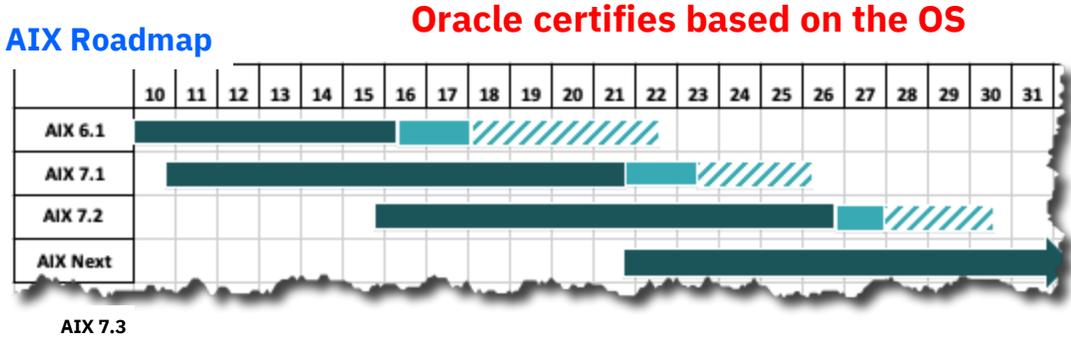
Collocate to Innovate
Power opens to Modernization and new Ecosystems

AIX	IBM i ISVs and Middleware	Linux ISVs and Middleware

IBM Power Systems

Industry

Ecosystem Innovation

IBM Routes to Market

Power Systems

Linux on POWER9

Processor Licensing and Chip Sales

Industry Routes to Market

Mission critical needs

Open-Source Agility for new workloads and additional solutions

POWER9 Processor with CAPI Technology
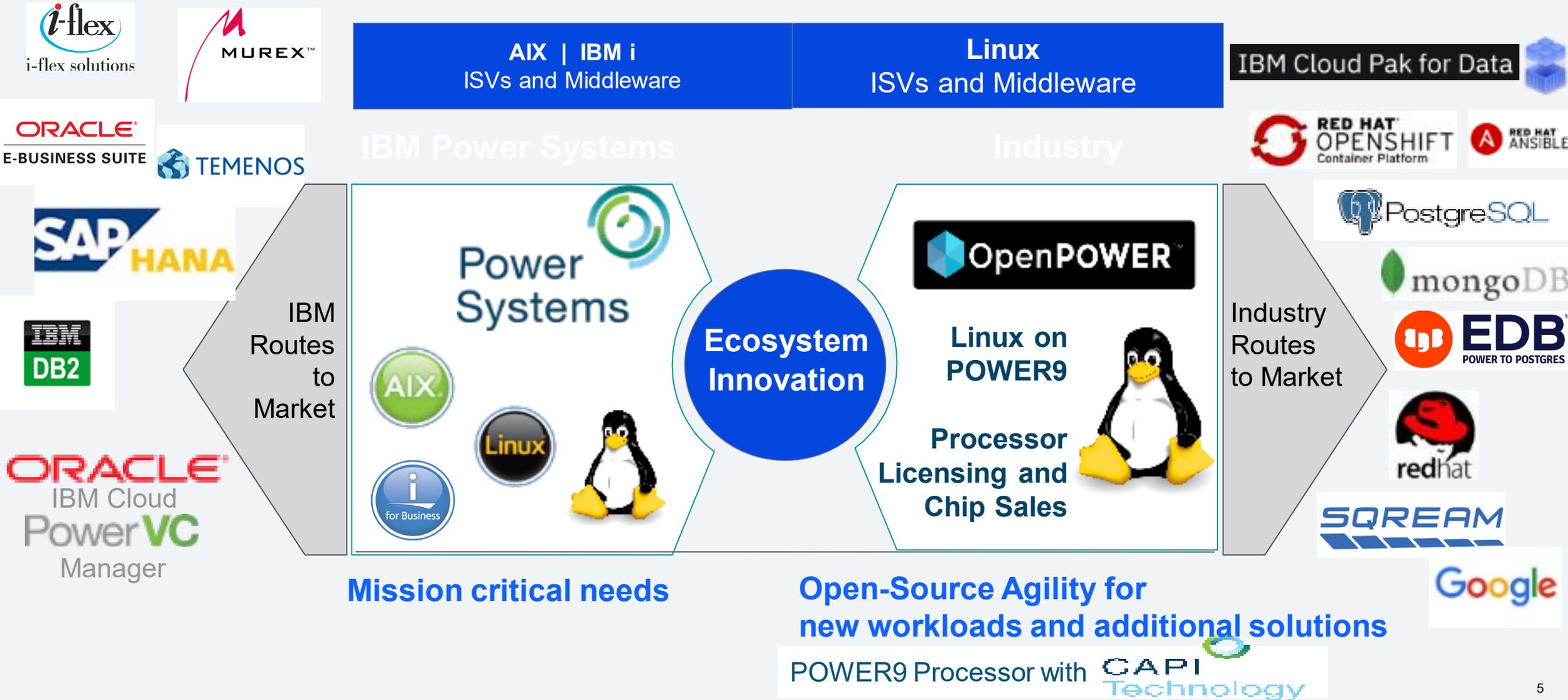
Oracle traditional database licensing rules

1. Contract signed between Oracle and the Client defines the Terms and Conditions on Oracle SW Usage
2. Oracle software costs depend on the following criteria: (as per Oracle Documentation for Educational purpose only)

Oracle Pricing Model

- Per Socket
- **Per Core**
- Per Named User Plus (NUP)
- Unlimited License Agreement (ULA)
- Universal Credit (Oracle Cloud only)

Oracle Database Editions

- Standard Edition (SE): per Socket or NUP
- Enterprise Edition (EE): per Core, NUP, ULA, Universal Credit
  + DB Options (on top of EE license)

Technology Used = Core Factor

- 0.5 on x86 / SPARC
- 1 on POWER Systems / Mainframe
- 1 on AWS / Azure
  (Authorized Cloud Vendors for Oracle)

Virtualization Technology

Soft-Partitioning – Pay for all physical cores of the server
- VMWare, Hyper-V, KVM, Xen, zVM

Hard-Partitioning – Pay only for cores used by Oracle SW
- PowerVM LPARs, Oracle Trusted Partitions, OVM, KVM (OL)

Architecture Design

Failover – 10 days grace period per Year
Disaster Recovery Solutions – requires Oracle licenses on DR
Backup / Restore – No Impact on Oracle licenses

➔ **Oracle SW Cost = Oracle License Acquisition + Oracle SW Maintenance (22%)** *Every Year*

IT costs lay beneath the surface

10%-50%

Acquisition Cost

Deployment

Maintenance

Downtime

Security

Software

Asset Management

Power

Space

50%-90%

- **Oracle Software Acquisition is ~80% of the Total Cost of Acquisition** (*)
  - Infrastructure is ~20%

- **Total Cost of Ownership is much more than TCA**
  - Oracle SWMA is 22% of Acquisition per year (including 1st year) ➔ 110% over 5 years
    Oracle TCO >2x Oracle TCA

  ➔ TCO is directly impacted by the number of server cores, as this drives the ongoing, long-term software maintenance/support costs

Invest a few in IBM Power Systems, Save a lot in Oracle costs

Oracle Technology Global Price List, Oracle Enterprise Edition license: $47,500 without options, Standard Edition 2 license: $17,500
https://www.oracle.com/assets/technology-price-list-070617.pdf

Reduce Oracle cost and Optimize your IT

Build the best solution for your Oracle workload

What's needed to give you a mission critical advantage?

Economics

Control license costs

Long term commitment & secure roadmaps

RAS, Resilience & Security

Rock solid infrastructure

Security by design

Flexibility

Open to a variety of ecosystem & application options

Cloud Capabilities

Deployment options for wherever you are on your cloud journey

Cloud-like capabilities, even when on-prem

IBM Power Systems has many options

- POWER10 to be launched in 2021
- Improved per core performance with every generation
- Outstanding consolidation capabilities
- TCO optimized

Constantly enhanced with each generationwith external proof points
- Top on ITIC
- Outstanding security track record on NVD

- Includes HW, choice of storage, as well as a wide range of 3rd party products that can be run side-by-side, including SAP HANA, open source databases and more

- Leverage various cloud options – at your pace!
- Includes on-prem, off-prem and hybrid multi-cloud – whatever best suits your workload and needs

IBM Power Systems value proposition for Oracle

Oracle cost parameters = licensing core factor, performance per core, Virtualization licenses, server CPU Utilization, efficiency

POWER9

70%   30%

intel

Highest Performance per Core	**Higher Utilization Rate**	**Platform Efficiency**

x2.2* vs x86

Real Simultaneous Multi threading
SMT8 throughput auto-optimized

Hard-Partitioning Virtualization Architecture for Data processing

– Pay only for cores used by Oracle SW

– Unique integration for the CPU, memory, I/O and all components usage

Unique Capabilities for

Flexibility , Agility, Availability/Robustness, Optimized infrastructure, scalability

➡ **Oracle licensing costs savings**

Oracle SW on Power Systems is superior economics and lower TCO than x86 and other servers even if licensing core factor = 1 vs 0.5

*From proven official Standard Benchmarks representative of ERP/Database workloads

Reduce Oracle cost and Optimize your IT

Performance per core, Oracle licensing costs

Performance
source IDC 2020

**4x improvement over 5 years**

Qualified Performance Index

1 license $47,500*

+17%

1.17 license equivalent

???

1 license $47,500

+69%

1.69 license equivalent

?

| 2012 | 2013 | 2015 | 2016 | 2017 | 2019 | | 2012 | 2014 | 2017 | 2021 |

| **Exa X3-2** | **Exa X4-2** | **Exa X5-2** | **Exa X6-2** | **Exa X7-2** | **Exa X8-2** | **Exa X9 ?** | **POWER7+** | **POWER8** | **POWER9** | **POWER10** |
| 16 Cores Xeon E5-2690 8-Core/chip | 24 Cores Xeon E5-2697 12-Core/chip | 36 Cores Xeon E5-2699 18-Core/chip | 44 Cores Xeon E5-2699 22-Core/chip | 48 Cores Xeon 8160 24-Core/chip | 48 Cores Xeon 8260 24-Core/chip | Xeon iceLake 10 nanometers | Power p780+ 8-Core/chip | Power E880 12-Core/chip | Power E980 12-Core/chip | Power Exxx 7 nanometers |

← Continuous improvement →

Similar scenario based on Official & Public SAP S&D benchmarks

$47,500 Oracle Enterprise Edition license list price
http://www.oracle.com/us/corporate/pricing/technology-price-list-070617.pdf

Database Growth vs Oracle licensing

Oracle Exadata

+17% performance over 5 years
= +3.2% per year

workload growth

Exadata X3
1 license

Exadata X7
2017

1 license

Only 3% growth per year with same # of licenses
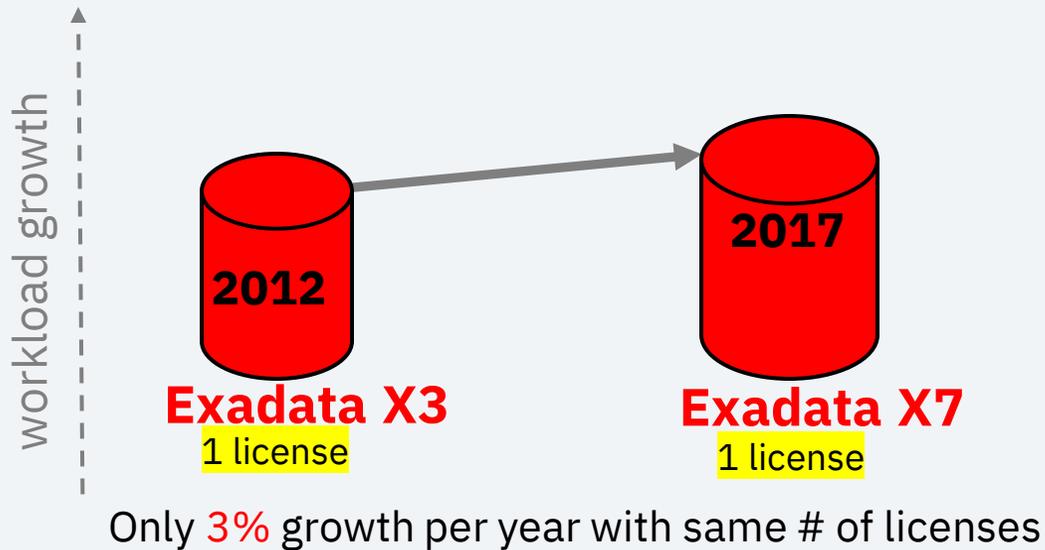
IBM Power Systems

+69% performance over 5 years
= +11% per year

POWER7
2012
1 license

POWER9
2017
1 license

up to 11% growth per year with same # of licenses
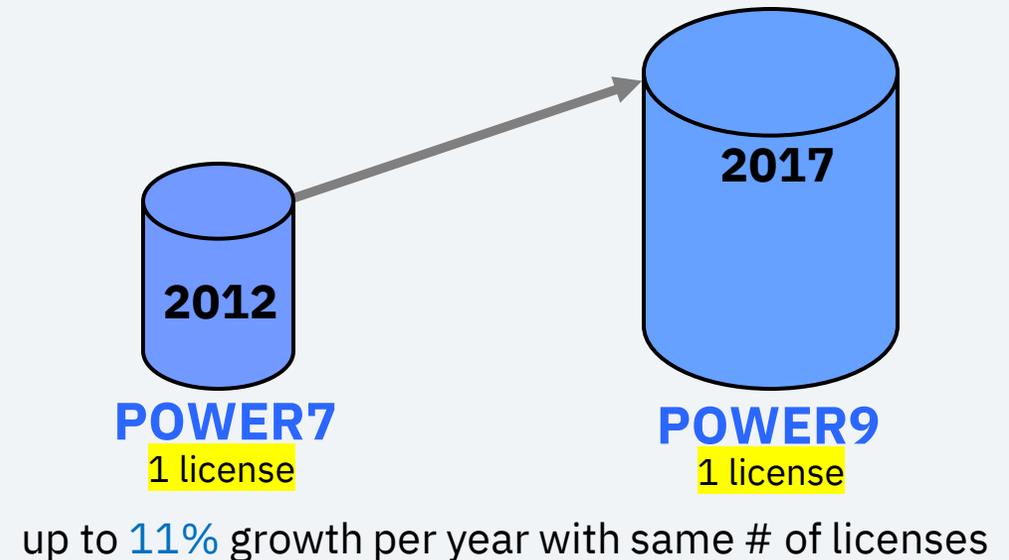
Refresh of Exadata requires purchase of additional licenses
More Exadata Hardware, More Oracle Software

You can make similar calculations with Exadata X8, see previous slide IDC QPI numbers

Reduce Oracle cost and Optimize your IT

Grow on Power Systems without additional licenses

Example of infrastructure refresh for a 10 Oracle licenses Database *
based on public IDC performance metrics and Oracle list price

IBM POWER7, refresh to POWER9
+69% CPU capacity over 5 years

Exadata X3, refresh to Exadata X7
+17% CPU capacity over 5 years

DB Workload growth		IBM POWER7, refresh to POWER9				Exadata X3, refresh to Exadata X7			
per year	five years	delta CPU Utilization	Oracle licenses	Additional licensing	Additional SWMA, 5 years	delta CPU Utilization	Oracle licenses	Additional licensing	Additional SWMA, 5 years
0%	0%	-69%	-7	$0	-$489 720	-17%	-2	$0	-$233 200
3.2%	17%	-52%	-5	$0	-$583 000	0%	0	$0	$0
5%	28%	-41%	-4	$0	-$466 400	+11%	+1	$106 000	$116 600
11%	69%	0%	0	$0	$0	+52%	+5	$530 000	$583 000

Power Systems helps you to grow
without additional Oracle costs
even reduce them

No additional SW with +11% workload per year

Exadata limits your growth
refresh requires additional licenses purchase, increasing SWMA

Additional SW starting at +3% workload per year

Exadata replacement with Power Systems is cheaper than Exadata refresh
Replacement is quick ROI and helps to grow the business

(*) Cost for 10 Oracle Ent Ed Licenses + DB options RAC, Partitioning, Diagnostic and Tuning packs, Active Data Guard
https://www.oracle.com/assets/technology-price-list-070617.pdf   + 22% SWMA cost per year, including 1st year

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Oracle savings, Growth without additional purchase

Refresh from POWER8 to POWER9, quick and easy

Facts from a Client performance test, apples to apples comparison
Saving 30% Oracle licenses while running 23% faster
http://bit.ly/IBMPOWER9forOracleDB   Results on page 27, summary slide 31

Configuration Forecast
(Processors cores)

	POWER8	POWER9	Saved licenses
Jan19	199	136	63
Jan20	252	172	80
Jan21	319	218	101
Jan22	404	277	127

26% annual growth

POC Outcome
Average CPU Reduction of
31.5%
and **23%** *throughput improvement*

Sicredi

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Oracle savings, Growth without additional purchase

Migrate from Exadata to POWER9, French retailer example

Difficulties / Problems encountered:
- End-of-life infrastructure / Not eligible for old and recent SW release
- Saturated resources (Compute and Storage)
- Expensive Storage Cost (dedicated Database storage)
- Lack of flexibility in the administration and maintenance of the various DBs (no virtualization)
- Complex integration into the customer's IT

Objectives :
- Reduce TCO - Increase performance without increasing Oracle licensing costs
- Gain in Flexibility and Administration of the different DBs (Maintenance, SLAs ...)
- Consolidation and simplification of the architecture
- Manage critical growth in DB server workload

Workshop Sizing

Benchmark
+1.5x to 5.4x main Batch Jobs

Migration Performance HealthCheck

X86 VMWare Apps | POWER7/AIX Apps

SAN Storage

x86/Appliance DB

X86 Dev DR

- PERFORMANCE
- COST
- AVAILABILITY
- CONSOLIDATION
- MANAGEABILITY

X86 VMWare Apps

X86 VMWare Apps

POWER9/AIX
Apps | Apps

POWER9/AIX
Apps | Apps

DB Dev | DB Prod | DB Prod

RAC

DB Prod | DB Dev | DB Prod

SAN Storage — Peer Persistant — SAN Storage

https://www.youtube.com/watch?v=IvJVWrpUxHo

Reduce Oracle cost and Optimize your IT

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Oracle savings, Reduce License usage

Migrate from SPARC/x86/Exadata to POWER9, and free Oracle licenses to:

• Prepare ULA exit
• Reduce SWMA cost
• Expand to off-prem infrastructure

40% Oracle software licensing savings
x86 to POWER9

itelligence Poland

https://www.ibm.com/case-studies/itelligence-poland-ibm-systems-oracle-paas-iaas

49% Oracle License Reduction

COPEL
Pura Energia

https://www.ibm.com/case-studies/copel-oracle-power

66% faster Oracle eBusiness Suite batch
From SPARC to POWER9

Tamilnadu Newsprint and Papers Limited

https://www.ibm.com/case-studies/tamilnadu-newsprint-and-papers-limited-systems-hardware-oracle

Oracle JD Edwards ERP to IBM Power Systems Virtual Server

38% Oracle license cost reduction
Exadata to Power

REJLERS

Presented at AIX Forum, Paris Nov 2019

11x faster processing
From ODA to POWER9

Skagerak Energi

https://www.ibm.com/case-studies/skagerak-energi-flashsystem-power

Labeyrie fine foods

https://www.ibm.com/blogs/systems/labeyrie-fine-foods-picks-ibm-power-systems-virtual-server/

Client References example, Oracle Migration to Power Systems Benefits
https://www.ibm.com/case-studies/

Reduce Oracle cost and Optimize your IT

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Oracle License Management Companies and Oracle Traps

Oracle Licensing has become such a complicated thing for customers that there is multiple companies specialized in Oracle Licensing management and Compliance

- https://redresscompliance.com/

Oracle License Management Review → **Oracle ULA Renewal or Exit** → **Oracle License Audit Defense**
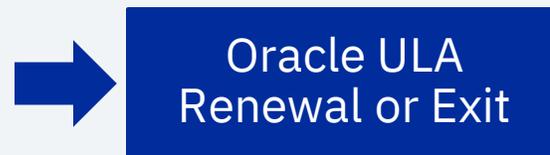
Example with Redress Compliance Videos
- Oracle Licensing and IBM Power Systems Micro Partitioning Video
- https://www.youtube.com/watch?v=SKpk8gynKMo

- Oracle Licensing and IBM Power Systems LPAR (VMs)
- https://www.youtube.com/watch?v=9KpETLDWWvA

IBM Live Partition Mobility

PowerVM Hard-Partitioning does not apply if **usage** of Live Partition Mobility (LPM)
→ disable LPM at the LPAR (VM) level unless all the server runs Oracle DB

Virtualization, Consolidation, higher Utilization
fewer cores, fewer licenses

Sharing CPU

Bare metal Virtualization

Physical cores Sharing
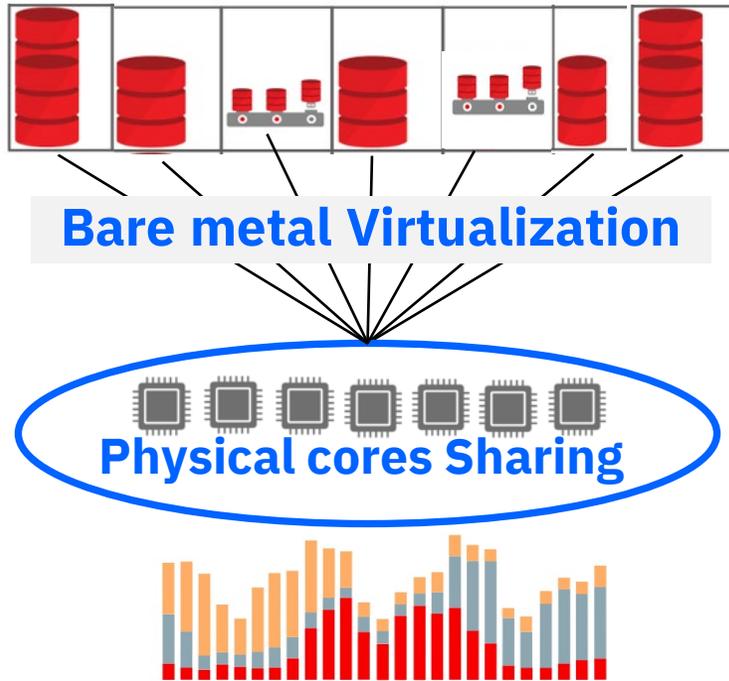
➔ **2x CPU utilization, less cores/licenses**
➔ Higher consolidation, less servers
➔ Mixed environments, Prod, dev,..
➔ Workloads physical isolation
➔ Run DBs and Applications
➔ Flexible, on the fly resource management
➔ Easier maintenance
➔ Simple operations
➔ No overhead, VMs scalability

Mapping CPU

Additional x86 SW Virtualization

Virtual/Physical Mapping

PowerVM Virtualization is integrated by design
➢ Optimize CPU utilization, reduce # of cores, Save Oracle costs
➢ POWER9 Performance Utilization Guarantee
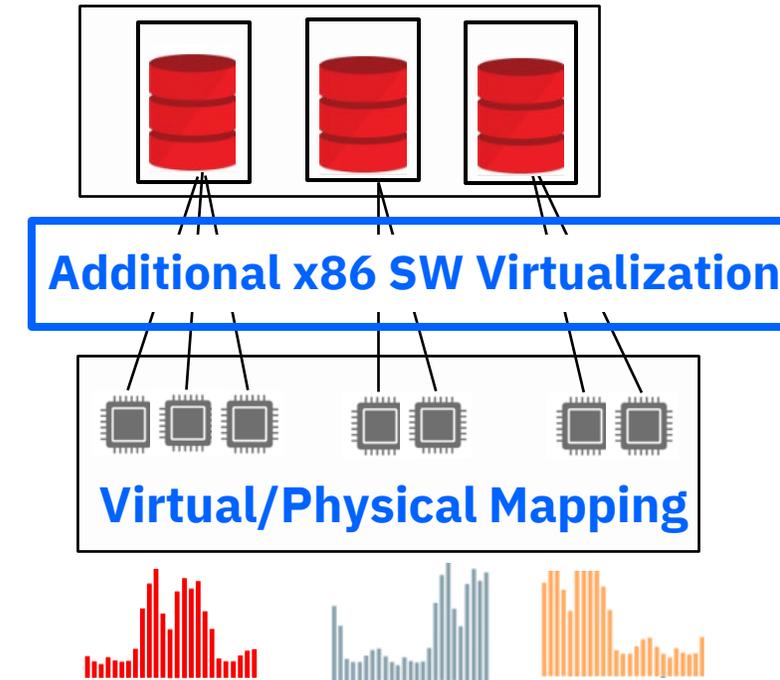
*" CPU over-provisioning is possible, But workload performance
    conflicts can arise if all guests become fully active "*
https://docs.oracle.com/en/engineered-systems/exadata-database-machine/books.html

➔ 1 Virtual CPU = 1 Physical thread, 1 to 1 Mapping
   ➔ **Idle CPU in VMs is wasted**

Security by design, less risk and fewer cost

NATIONAL VULNERABILITY DATABASE

https://nvd.nist.gov/vuln/search/results?form_type=Basic&results_type=overview&query=PowerVM&search_type=all

NVD

VULNERABILITIES   SEARCH AND STATISTICS

as of 02/21

Search Parameters:
- Results Type: Overview
- Keyword (text search):
- Search Type: Search All

Oracle VM → **755**

VMware → **1183**

KVM → **160**

Security is critical, risk mitigation is additional complexity and expensive cost.

It is not only about the Database!

VULNERABILITIES   SEARCH AND STATISTICS

Q Search Results

Search Parameters:
- Results Type: Overview
- Keyword (text search): PowerVM
- Search Type: Search All

asic search output is 1 matching record but it is related to Linux on several Virtualizations

→ **0**

Power Systems is a complete solution design. Security is integrated at all the levels of the technology, from the chip, up to the entire infrastructure.

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RAS & Resilience, IBM Power servers Ranked Number #1 by ITIC, 12 years in a row

Enterprise Server OS System Availability & *Unplanned* Downtime in 2020 (Hours per Year)

OS	Hours per Year
IBM RHEL/SUSE/Ubuntu on Power	0.08
IBM AIX on Power Systems	0.08
Lenovo RHEL Linux x86	0.12
Huawei SUSE/RHEL KunLun	0.13
HPE RHEL/SUSE Integrity	0.16
Cisco RHEL	0.17
Dell RHEL/SuSE	0.25
Windows 12/2016/2019 x86	0.23
HPE ProLiant RHEL	0.35
HPE ProLiant Ubuntu	0.43
Oracle Sun x86 Oracle Linux	0.49
Oracle Solaris SPARC	0.51

← 4.8 mins / server / year

← Enterprises classify mission critical class as 0.17

Exadata

https://itic-corp.com/blog/2020/05/itic-2020-reliability-poll-ibm-lenovo-hpe-huawei-mission-critical-servers-deliver-highest-uptime-availiability/

Is RAC cluster DB option required to meet Business Continuity, Uptime SLA ?

NO ➔ Save $23,000 per license (list price) + 22% SWMA per year

YES ➔ Use RAC on Power Systems as a stretched active/active, it's HA, not just DR

Power Systems has Unique Flexibility to optimize TCA

The business defines the right SLA, not the infrastructure limitations

- Define the right architecture for each workload according the requirements
  Active/active cluster, Active/Passive Failover, Remote Restart
- Pay only for what you use via metering by the minute (capacity credits) to handle unexpected peaks beyond base and to enable OpEx models

Scenario example

Primary Site / Secondary Site diagram with POWER9 servers, LPARs, VM Restart, Restart, VM Failover, Active/Active, Failover

System A / System B / System C / System D — N cores
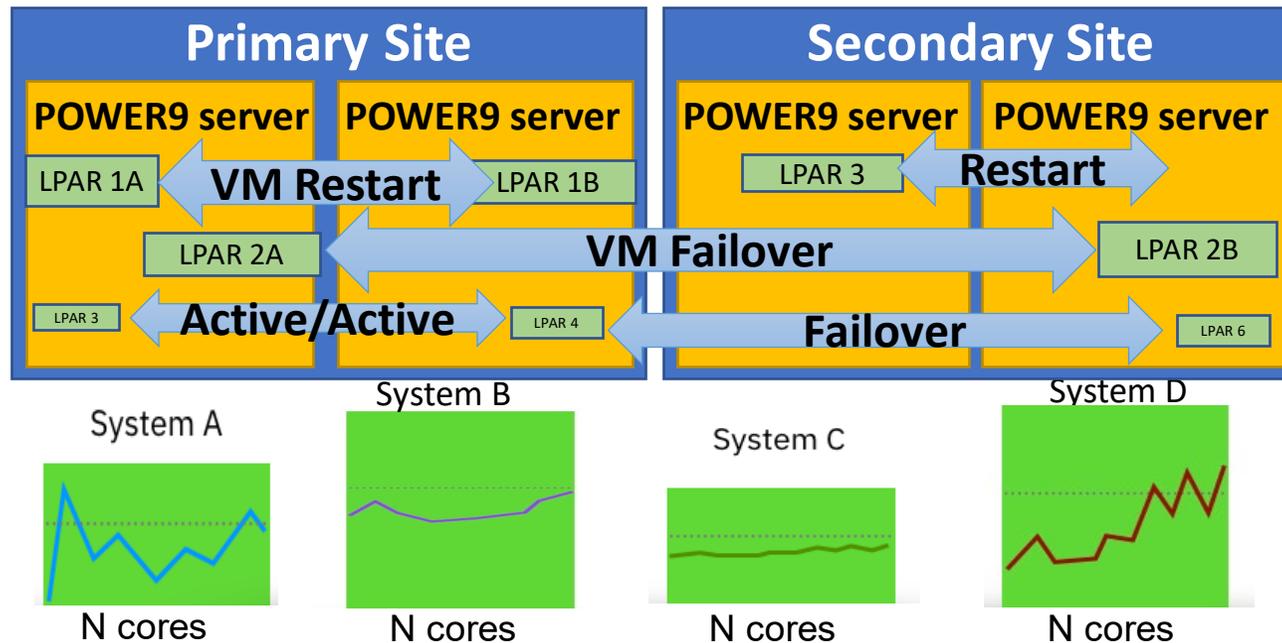
No impact on Oracle licensing with Shared Processor Pool Capping or Capped LPARs

Power Private Cloud with Dynamic Capacity

Pool #1
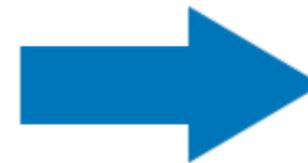
Base activation

Share a Pool of resources across servers in an automated way to optimize your infrastructure

Activate in a pool maximum usage resources instead of paying all cores activations

Flexible deployment options

Deploy wherever needed AIX + ORACLE AIX, IBMi / Linux Workloads Apps and DB Tiers

Optimized Open Keep Control

← **Optimized & Secured Oracle Licenses & Options, Investments across locations** →

Power Server Standalone	**Power Private Cloud with Dynamic Capacity**	**Power Virtual Server / MSPs / CSPs**
Traditional Infrastructure Deployment	**Pay for what you use**	**Move all or part of applications out of the data center**

Same Hardware : POWER9
Same Virtualization : PowerVM
Same Operating System
Same Oracle Software
BYOL Model

Customer Datacenter

vmware KVM
ORACLE VM
Bare-Metal Server

≠

**Different Virtualization
Different Licensing Rules
Different Core
Recognition/Factor**

amazon web services Azure
ORACLE CLOUD

Lock-In Complex Closed

Reduce Oracle cost and Optimize your IT

Oracle cost reduction options

Migrate / refresh to POWER9/POWER10 and free up licenses for growth needs

Avoid new licenses acquisition

Save $47.5k per license (list price)+ DB options + 22% annual SWMA

Configuration Forecast
(Processors cores)

	Current		Saved licences
	P8	**P9**	
Jan19	199	136	63
Jan20	252	172	80
Jan21	319	218	101
Jan22	404	277	127

Release Oracle contracts thanks to savings obtained by infrastructure

Several database and options licenses over multiple contracts

Multiple support renewal and services contracts

2M$**   **1M$ **3M$**

IBM Support for Oracle software, DB and apps

With IBM's support for Oracle software, you get highly personalized support for your Oracle estate at a fraction of the cost

50%

Based on cost savings achieved by IBM Services clients

Migrate to or co-exist with alternative databases

Oracle Proprietary database

Other DB vendors / Open-source database

PostgreSQL   mongoDB

IBM DB2   SAP HANA

IBM Power Systems save costs whatever the selected option
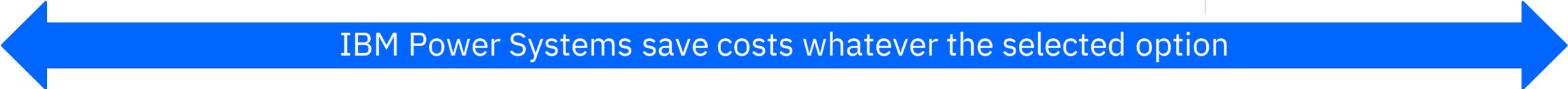
Power E950

Power S914, S922 & S924

Power E980

POWER10 coming soon and protects your POWER9 investment
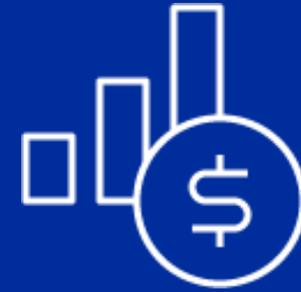
Economics

Flexibility

IBM **Power Systems**

RAS & Resilience

Cloud Capabilities

Q & A

Could you please tell us the information bellow?

- *Date of End of Exadata support ?*

- *Exadata Storage extension required ?*

- *Experience with Exadata, technical issue, business disruptions, maintenance pain points ? Rating: Satisfied / Neutral / Dissatisfied*

- *Opinion about Exadata cost ?*

- *Exadata refresh plan ?*

- *End of Oracle ULA contract, if any ?*

- *Licensing Audit threat ?*

- *Perception about the Oracle sales strategy ?*

Questions Page 1

Could you please tell us the information bellow?

- *What are the Oracle DB workloads, OLTP, Batch, OLAP/DWH ?*

- *What are the reasons of using Oracle RAC (Scalability or HA)?*

- *What are their policies for Backup / Patching & Upgrades (DB and OS) ?*

- *What is the global HA/DR Strategy (including Apps Tier)*

- *What is Experience with Oracle SW on IBM Power Systems ?*

- *Open-Source DB strategy ? (it could have changed from the last 18 Months)*

- *Running SAP? If yes, what is the plan to move to HANA ?*

Questions Page 2

For more information

Your IBM and Business Partner Representatives

Customized Briefings and Workshops

Take a peek at POWER10
https://ibm.biz/power-10-chip

On-demand replay of Cognitive Strategy with Power Systems event
https://ibm.biz/03-feb-IBM-briefing-replay

Replay of past Power briefings
https://ibm.biz/power-virtual-briefings

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IBM's Values
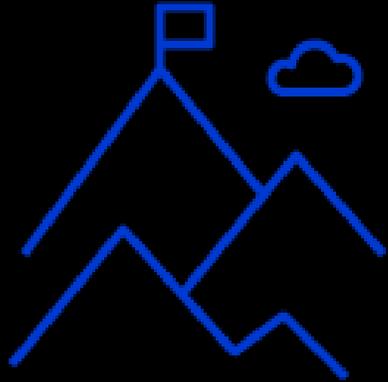
Dedication to every client's success

Innovation that matters—for our company and for the world
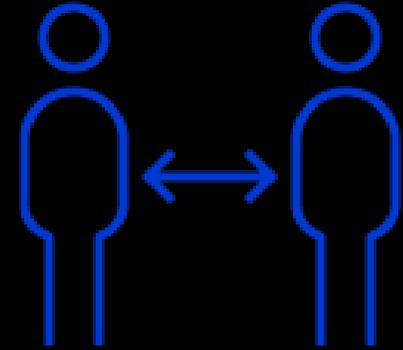
Trust and personal responsibility in all relationships