

VM04

# Effective consolidation of Oracle Databases on IBM Z or LinuxONE

Armelle Chev 

IBM Oracle Competency Center – IT Specialist

[Armelle.cheve@fr.ibm.com](mailto:Armelle.cheve@fr.ibm.com)

IBM Client Center Montpellier - France



## IBM Guide Share Europe Hamburg, October 2017



## Abstract

---

You want to optimize your TCO with an Oracle consolidation on IBM Z or IBM LinuxONE platforms? But you don't know how and where to start?

This session will give you an overview of the latest Oracle solutions and architecture that are available on IBM Z platforms.

Through IBM Oracle Center projects, you will see how to meet your needs in terms of performance, high availability, resource optimization, simplification of infrastructure and maintenance processes.

The IBM Oracle Center will share its experience of building the right solution architecture with Oracle, through real life examples.

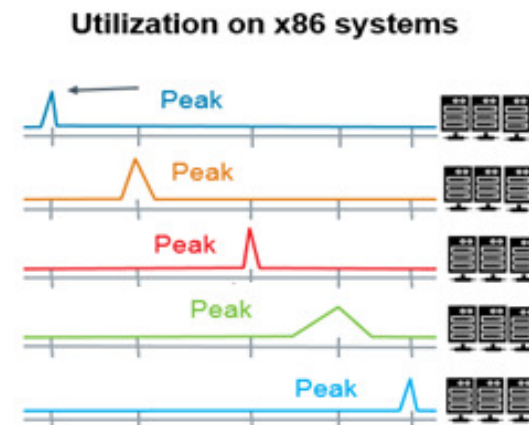
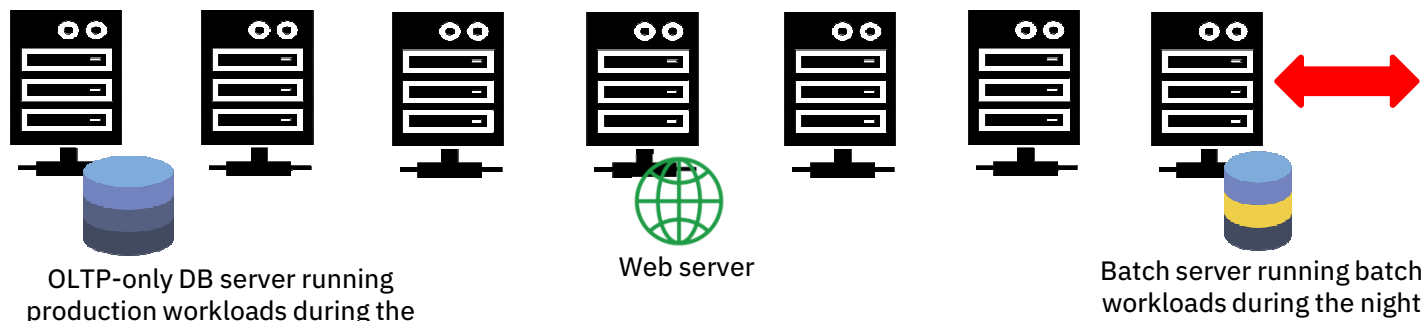
# Agenda

---

- **Introduction: Server consolidation**
- IBM and Oracle
- Oracle Database: Latest certifications
- Why Oracle on IBM Z?
- Running a successful consolidation project
- Client cases

# Introduction

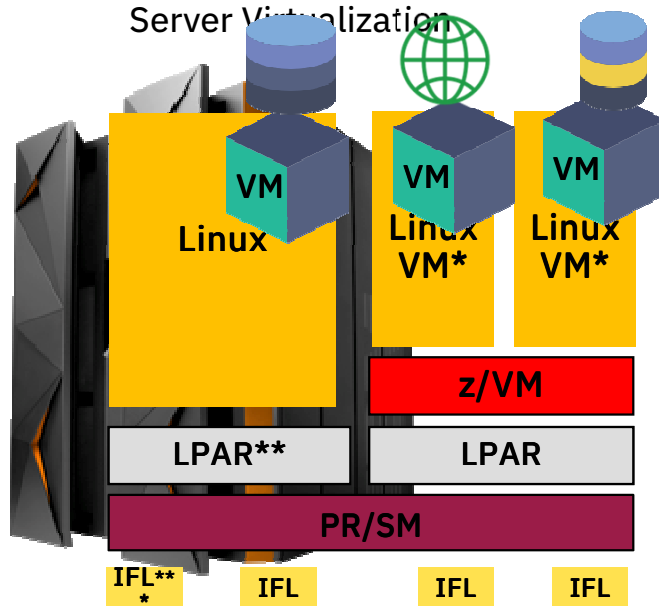
## Why consolidate?



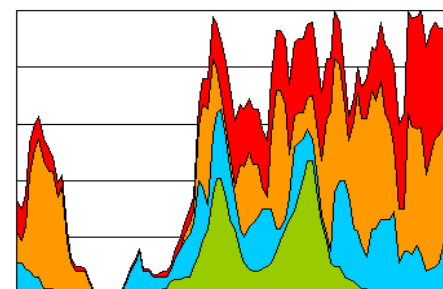
Consolidate underutilized servers through Server Virtualization

Server consolidation

- Resolve the server sprawl problem
- Simplify
- Reduce costs



Mixed Utilization on IBM High End Servers



\*VM: Virtual machine  
 \*\* LPAR: Logical Partition  
 \*\*\* IFL: Integrated Facility for Linux

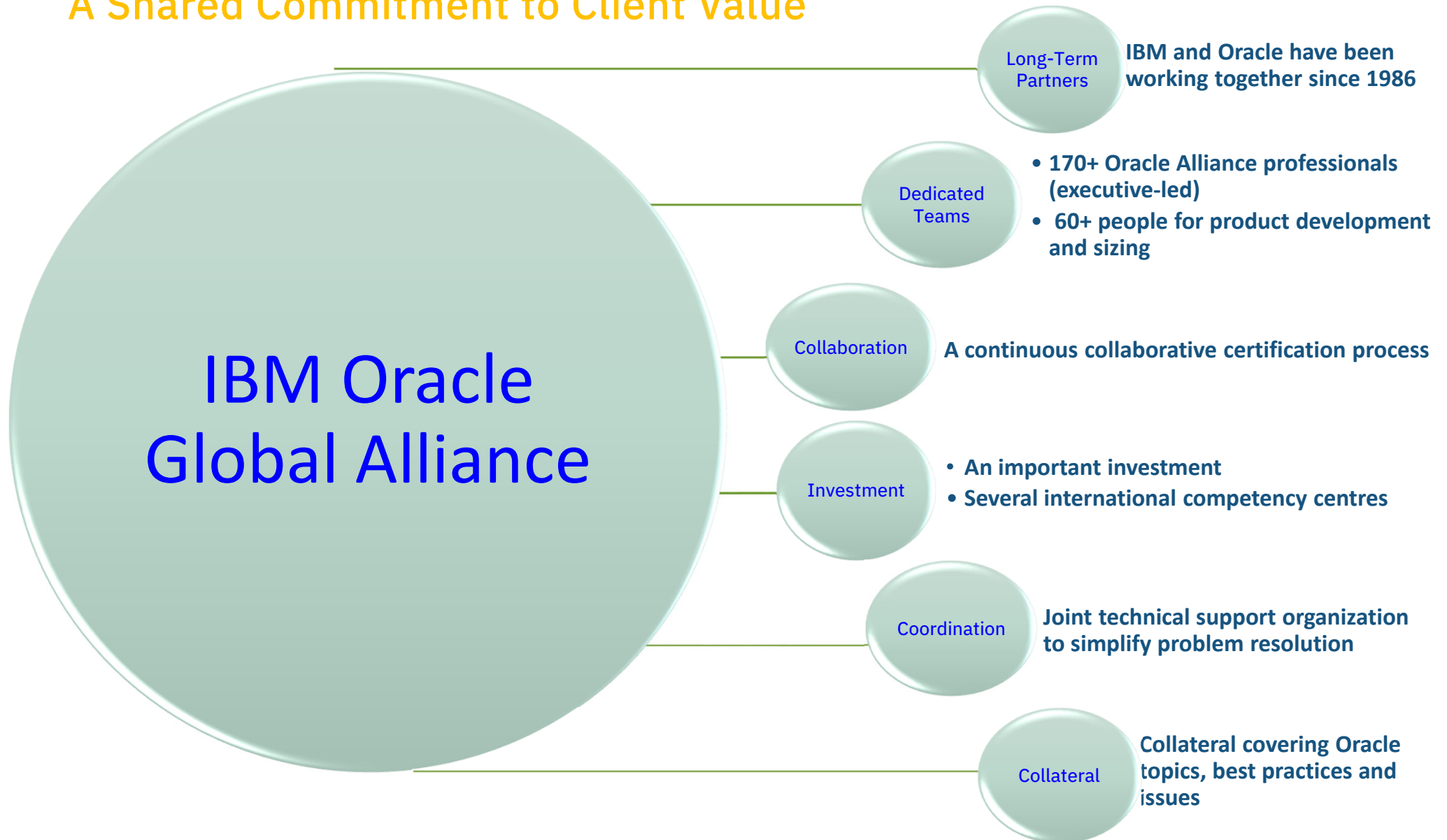
# Agenda

---

- Introduction: Server consolidation
- **IBM and Oracle**
- Oracle Database: Latest certifications on Z
- Why Oracle on IBM Z?
- Running a successful consolidation project
- Client cases

# IBM and Oracle

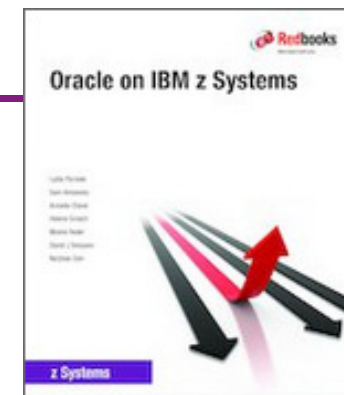
## A Shared Commitment to Client Value



## IBM and Oracle

---

- Within Oracle, there is a dedicated team to support Oracle database on Linux on IBM Z (including z/VM)
- Examples of collaboration:
  - IBM RedBooks and RedPapers; Joint IBM and Oracle Publications
    - Example: Oracle on IBM z Systems Redbook:  
<https://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg248397.html?Open>
  - Joint webcasts (Doc ID 1456176.1 Oracle 12c In-Memory Database Tips with Linux on IBM z System)
  - SIG conference 2017: The International Oracle on z Systems Special Interest Group (SIG) is an organization of companies licensed for Oracle on IBM System z hardware. The latest conference was held in the US on June 13th and June 14th 2017:  
[www.oraclezsig.org](http://www.oraclezsig.org)
- More information on IBM Web site  
<http://www.ibm.com/solutions/oracle>
- More information on Partner Relationship on Oracle Web site :  
<http://solutions.oracle.com/partners/ibm>



# Oracle support for IBM Z and LinuxONE platforms

---

- **Oracle support cross-platform team**
  - Oracle cross-platform teams can handle any SR that doesn't have platform specific dependencies - as it's the same Oracle code running the same underlying operations, the platform isn't relevant, and thus support staff is specifically trained to handle 99.9% of the issues.
  - Platform specific issue – those that only occur on, or are caused by, a specific problem in the Linux on System z Architecture, are extremely rare.
- **A team dedicated to IBM Z**
  - Oracle provides, in addition to the generic Support, a team of dedicated Linux on System z Engineers - not because we expect platform specific issues, but because there are some features of the platform which require skilled, knowledgeable engineers to assist at time - a prime example is z/VM, which is not something encountered on any other platform, and an SR involving interaction between z/VM, Linux and Oracle
- **Issues that require such knowledge, for example, are:**
  - Installation - it helps to know that the Java JDK is provided by IBM, not by Oracle Sun as on other platforms
  - Performance: **greatly assisted by these technical specialists.** This team usually works in collaboration with the generic teams, to provide specific relevant technical expertise and customer knowledge to a broader generic issue.
  - Clustering - specific knowledge of vswitch or Hipersocket architecture may be required.
- **An SR could benefit from this team's input, by simply requesting in the SR that the Linux on System z team are engaged:**  
*"Please request the assistance of the Database Specialized Mainframe/Linux on System z team"*
- **When opening a new SR**, if you choose the options below, then the **SR should be routed directly to the specialist team:**
  - The correct platform: *IBM System z with Linux*
  - Problem Type: *Issues on Linux on zSeries*
  - Problem Clarification:
    - *Database Install Issues on Linux on zSeries*
    - *General Issues on Database running on Linux on zSeries*
    - *Performance Issues on Database running on Linux on zSeries*
    - *RAC on Linux on zSeries*

Refer to Oracle 11g Redbook (SG24-8104-00 - Appendix C) - Written by D. Gallagher from Oracle support



# Oracle Publicly Acknowledges our relationship

---

This certifies that

**IBM CORPORATION**

has achieved the level

**ORACLE** Diamond  
Partner

**IBM—A Diamond Level Partner in the  
Oracle PartnerNetwork.**

Delivering expertise across the Oracle product portfolio.



# Agenda

---

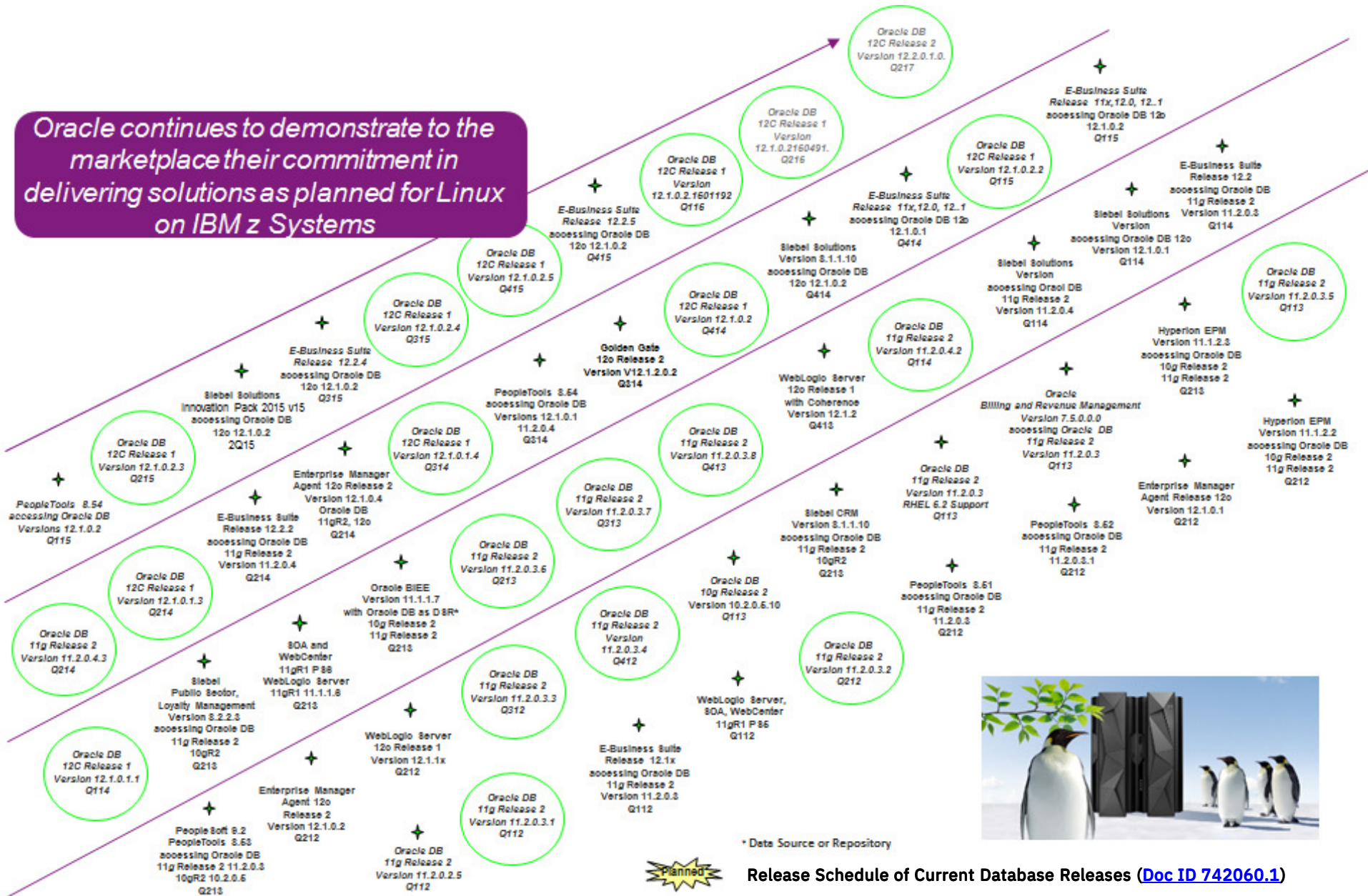
- Introduction: Server consolidation
- IBM and Oracle
- **Oracle Database: Latest certifications on Z**
- Why Oracle on IBM Z?
- Running a successful consolidation project
- Client cases

# A View of Oracle Solutions Delivered:

## Linux on IBM Z



Oracle continues to demonstrate to the marketplace their commitment in delivering solutions as planned for Linux on IBM z Systems



Release Schedule of Current Database Releases (Doc ID 742060.1)

## Oracle databases certifications

- Oracle has been delivering database solutions on Linux on z/VM since 2002
- Execution on a certified Linux Distribution in a LPAR or under z/VM (My Oracle Support, Doc ID 417770.1)

### Latest certifications:

	SLES 11	SLES 12	RHEL 5	RHEL 6	RHEL 7
Oracle DB 12.2.0.1	—	✘	—	✘	✘
Oracle DB 12.1.0.2	✘	✘	✘	✘	✘
Oracle DB 12.1.0.1	✘	—	✘	✘	—
Oracle DB 11.2.0.4	✘	—	✘	✘	✘
Oracle DB 11.2.0.2	✘	—	✘	—	—
Oracle DB 10.2.0.5	✘	—	✘	—	—

*June 6, 2017: Oracle Database 12c Release 2 available running Linux on IBM LinuxONE Z servers!*

Oracle certification and support: See My Oracle Support website  
 Release Schedules of Current DB Releases: Doc ID 742060.1

## Are the Oracle versions delivered at the same time on IBM Z ?

- Patchsets are delivered at the same platforms
- *Example:*  
**Patch 26710464: DATABASE RELE**
- *Available same day as other platform*
- To check product availability
  - Go to ‘My Oracle’ Support website  
<https://support.oracle.com/epmos/faces/PatchHom>
  - Choose the tab ‘Patches and Updates’
  - Look for **26710464** or **Recommended Patch Advisor**
  - Check the last updated date for the different platforms

**Oracle**

October 17, 2017  
Oracle Critical Patch Update for October 2017

Dear Oracle Customer,

The Critical Patch Update for October 2017 was released on October 17th, 2017. Oracle strongly recommends applying the patches as soon as possible.

If you are new to this process, please review Oracle's Security Fixing Policies and the Critical Patch Update Advisory. After reviewing these resources, if you are unable to determine if you require a software update, or how to apply it, please contact Oracle Support.

The Critical Patch Update Advisory is the starting point for relevant information. It includes the list of products affected, pointers to obtain the patches, a summary of the security vulnerabilities for each product suite, and links to other important documents. Supported products that are not listed in the "Affected Products and Components" section of the advisory do not require new patches to be applied.

Also, it is essential to review the Critical Patch Update supporting documentation referenced in the Advisory before applying patches, as this is where you can find important pertinent information. Critical Patch Update Advisories are available at the following location:

Oracle Technology Network:  
<http://www.oracle.com/technetwork/topics/security/alerts-086861.html>

The Critical Patch Update Advisory for October 2017 is available at the following location:

Oracle Technology Network:  
<http://www.oracle.com/technetwork/security-advisory/cpuoct2017-3236626.html>

Important information can also be found at: <https://blogs.oracle.com/security/>

Oracle's Security Fixing Policies are available at the following location:  
<http://www.oracle.com/support/assurance/vulnerability-remediation/security-fixing.html>

The next four dates for Critical Patch Updates are:

- January 16, 2018
- April 17, 2018
- July 17, 2018
- October 16, 2018

Thank you,  
Customer Support of Oracle Corporation  
<http://www.oracle.com/us/support/contact/index.html>

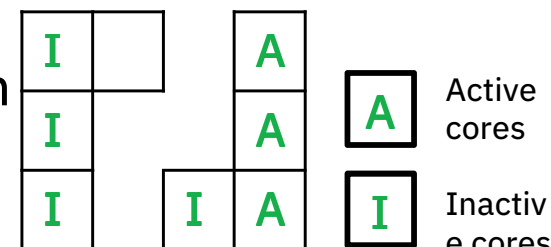
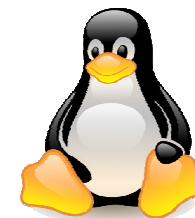
# Agenda

---

- Introduction: Server consolidation
- IBM and Oracle
- Oracle Database: Latest certifications on Z
- **Why Oracle on IBM Z?**
- Running a successful consolidation project
- Client cases

## Why Choose IBM Z for Running Oracle DB ?

- Virtualisation technology – z/VM
  - Do more with less
  - ~100% utilization of system resources (Oracle support for z/VM : <http://www.oracle.com/technetwork/database/virtualizationmatrix-172995.html>)
  - Native LPAR, z/VM guests
- Disaster Recovery Requirements
- High Availability Requirements
- Simultaneous Multi-thread + UP to 32 TB memory available
- Highest security rating or classification for any commercial server
- Manage growth and complexity
  - Purchase desired number of active cores
  - Add cores later with no minimum limit
  - Scale from 1 to 170 cores and without service disruption



Processing chip –representation on z System

## What is Oracle DB on IBM Z or LinuxONE Systems?

---

- Same procedures as on other platforms
  - **Installation** : runInstaller, silentInstall, dbca, netca, ...
  - **Migration** : Data Pump, CTAS, Stream, Golden Gate, IBM Infosphere CDC (Change Data Capture)
  - **Monitoring** : OEM Cloud Control agents
  - **Disaster Recovery** : Data Guard
  - **High Availability** RAC, RAC ONE Node
  - **Backup/Restore** : rman
  
- Pre-requisites need to be filled, as for any other platform
  
- Infrastructure design is key, especially at the storage level

*Linux is Linux is Linux...*

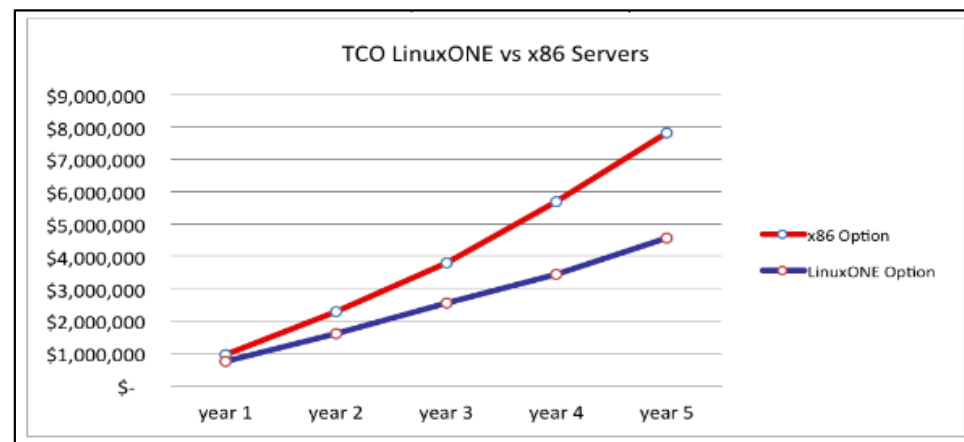
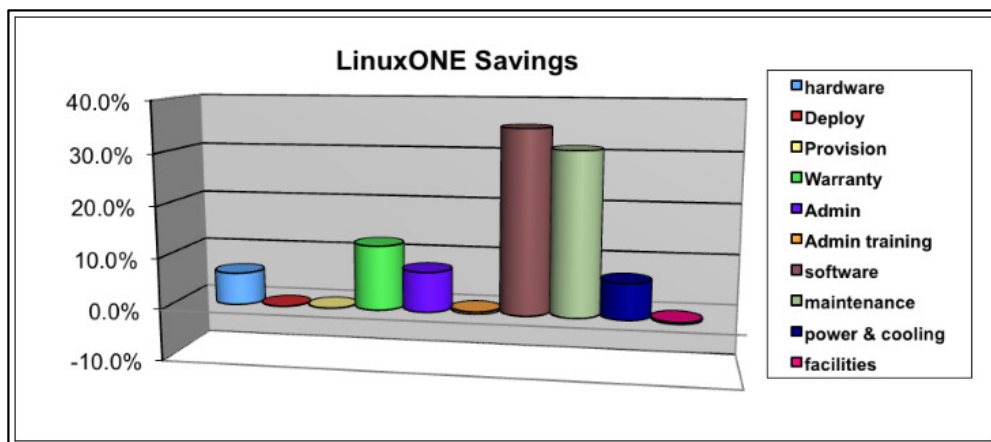
**Oracle is Oracle is Oracle...**



# Why High-End Servers?

## Top 10 reasons excluding TCO:

1. Agility/flexibility
2. Scalability – supporting exponential growth with linear costs
3. Availability – virtually no downtime (99.999%)
4. Highest level of Security
5. Staffing / productivity / Skills / simplicity
6. Disaster/Recovery – RPO, RTO, and single version of truth
7. Performance – response time consistency – latency elimination and best price/performance
8. Stability - elimination of constant change which causes human errors; change control
9. Investment protection – no x86 obsolescence cost and lowest initial and total cost
10. IBM support



10 Reasons LinuxONE is the Best Choice for Linux Workloads: Robert Frances Group 2015

# Agenda

---

- Introduction: Server consolidation
- IBM and Oracle
- Oracle Database: Latest certifications on Z
- Why Oracle on IBM Z?
- **Running a successful consolidation project**
- Client cases

## Method proposed for consolidation projects

---

1. Scope of the project delimitation – feasibility study
2. Architecture design and sizing exercise
3. Proof of Concept
4. Pre-production tests
5. Put to production

## Consolidation study: Validating Oracle product support for Linux on IBM Z

---

- Log into My Oracle Support Website : <https://support.oracle.com>
- Go to “Certification” Tab
- Provide “Oracle Product Name” , “Release” and “Platform”
- Click “Search”

**It will display the Oracle Support Statement and certified versions related to the Oracle products and specific releases being considered for consolidation**

### **For example:**

- Verify the O/S version is certified on Linux on IBM Z for each Oracle product:
  - My Oracle Support website result => Oracle Database Release 12.2.0.1.0 is certified on SUSE Linux Enterprise12 and Red Hat Enterprise Linux 6 and 7 on IBM: Linux on System z

***For release schedule of all current and planned Oracle Database releases please see:***

- [Doc ID 742060.1](#)

## Consolidation study: Which information to gather ?

---

- **System** information
  - List of the servers models with details (constructor, model, CPU, cores, processor...)
  - Are the servers virtualized and if yes, number of cores allocated to the virtual server
- **Workload** information
  - Need to have an idea of the type of workload, if we have no information we take DB production
  - Software version (to check support)
- **Memory** information
  - AWR reports (SGA, PGA, Connections, Advisories,...)
- **CPU** information
  - Best is to have vmstats, collected 1 or several days during a relevant period.
  - Collect interval should be at most 10min or less, if possible, with either
    - VMSTAT
    - SAR data
    - NMON
  - If not possible to get the vmstats we need an estimation of CPU utilization during the peak period

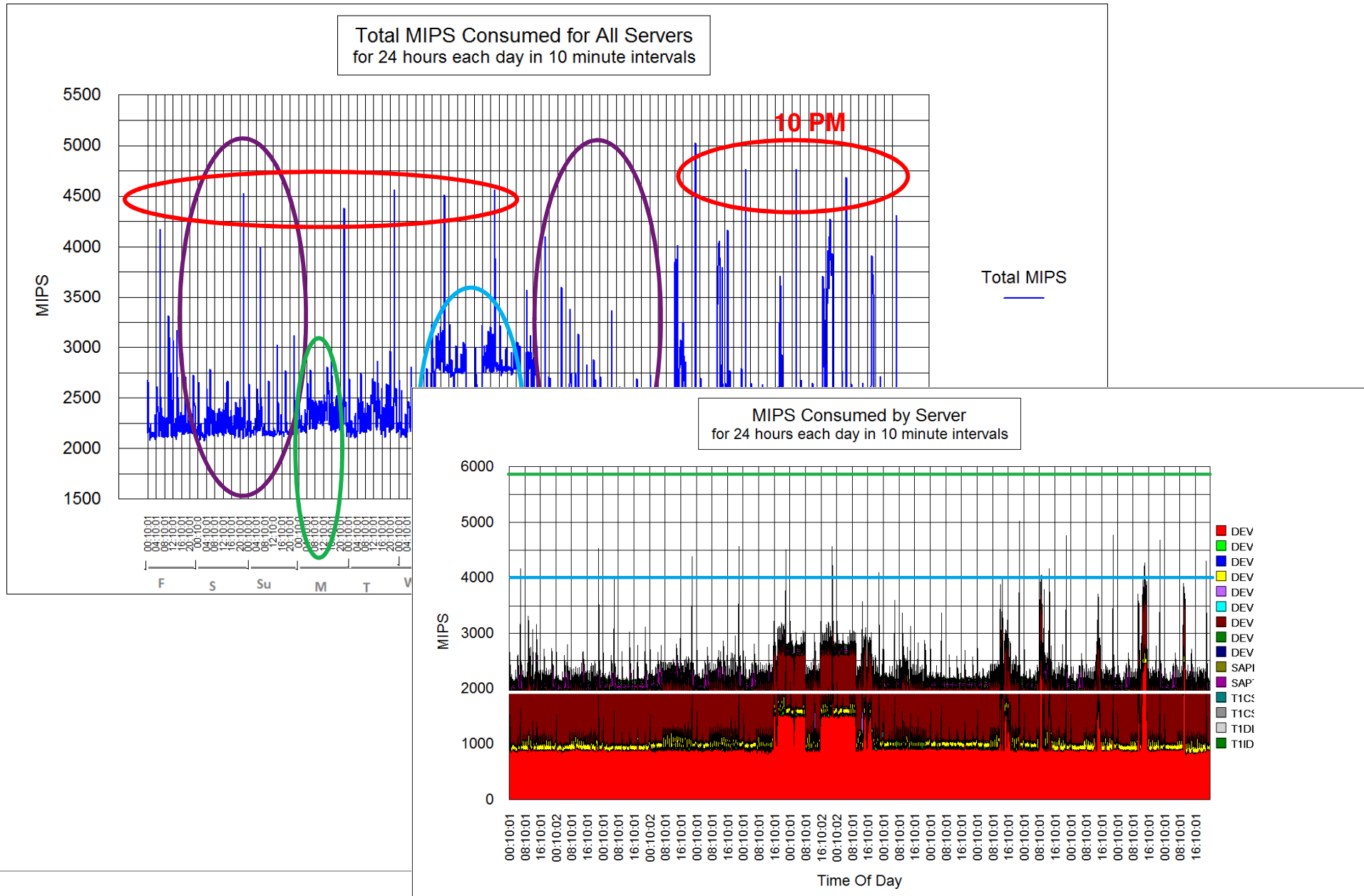
# Consolidation study: Sizing exercise

## Methodology example

Row	Defined Sequence Number	User Desired Sequence	Exclude (I)	Application Name	Vendor	Server Hardware Description and Lookup Identification	Note: Fractional values must be less than 1.00		Peak Utilization		Workload Assignment	
							# OEM Servers		Default Values			
							Enter #	Result	90.0%	65.0%	No.	Description
1	1	1		d-intellinx	IBM	BladeCenter HS22V Xeon E5649 Hex Core 2.53GHz (2ch/12co)	0.08	0.08	20.0%	65.0%	33	DB: Production
2	2	2		dw-bo-t	IBM	BladeCenter HS22V Xeon E5649 Hex Core 2.53GHz (2ch/12co)	0.17	0.17	20.0%	65.0%	33	DB: Production
3	3	3		IFNPROD	IBM	BladeCenter HS21 Xeon 5150 Dual Core 2.66GHz (1ch/2co)	1.00	1.00	50.0%	65.0%	33	DB: Production
4	4	4		IFNT	IBM	BladeCenter HS22V Xeon E5649 Hex Core 2.53GHz (2ch/12co)	0.17	0.17	10.0%	65.0%	33	DB: Production
5	5	5		INTELLINK	IBM	System x3850 (3U) Xeon EM64T 3.66GHz 1MB (4ch/4co)	1.00	1.00	50.0%	65.0%	33	DB: Production
6	6	6		twindba1	IBM	BladeCenter HS22V Xeon L5638 Hex Core 2.0GHz (2ch/12co)	1.00	1.00	10.0%	65.0%	33	DB: Production
7	7	7		managegrid	IBM	BladeCenter HS22V Xeon E5645 Hex Core 2.4GHz (2ch/12co)	0.33	0.33	20.0%	65.0%	33	DB: Production
8	8	8		OPANT1	IBM	BladeCenter HS21 XM Xeon E5345 Quad Core 2.33GHz (2ch/8co)	1.00	1.00	10.0%	65.0%	33	DB: Production
9	9	9		OPANT5	IBM	BladeCenter HS22V Xeon E5649 Hex Core 2.53GHz (2ch/12co)	0.33	0.33	20.0%	65.0%	33	DB: Production
10	10	10		OPAST1	IBM	BladeCenter HS22V Xeon E5649 Hex Core 2.53GHz (2ch/12co)	0.08	0.08	50.0%	65.0%	33	DB: Production
11	11	11		OPAST3	IBM	BladeCenter HS22V Xeon E5645 Hex Core 2.4GHz (2ch/12co)	0.17	0.17	10.0%	65.0%	33	DB: Production
12	12	12		OraTest1	IBM	BladeCenter HS22V Xeon L5640 Hex Core 2.26GHz (2ch/12co)	0.17	0.17	20.0%	65.0%	33	DB: Production
13	13	13		OraTest3	IBM	BladeCenter HS22V Xeon X5675 Hex Core 3.06GHz (2ch/12co)	0.08	0.08	30.0%	65.0%	33	DB: Production
14	14	14		OraTest5	IBM	BladeCenter HS22V Xeon L5640 Hex Core 2.26GHz (2ch/12co)	0.17	0.17	20.0%	65.0%	33	DB: Production
15	15	15		PCTHCON	IBM	BladeCenter HS22V Xeon X5675 Hex Core 3.06GHz (2ch/12co)	0.08	0.08	10.0%	65.0%	33	DB: Production
16	16	16		pdw-boxi	IBM	BladeCenter HS21 XM Xeon E5420 Quad Core 2.5GHz (2ch/8co)	1.00	1.00	10.0%	65.0%	33	DB: Production
17	17	17		PGL	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	0.17	0.17	10.0%	65.0%	33	DB: Production
18		18	1	pisrdb1					40.0%		33	
19		19	1	pisrdb2					50.0%		33	
20	18	20		poralnx01	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	1.00	1.00	30.0%	65.0%	33	DB: Production
21	19	21		poralnx02	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	1.00	1.00	30.0%	65.0%	33	DB: Production
22	20	22		poralnx03	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	1.00	1.00	30.0%	65.0%	33	DB: Production
23	21	23		PRIORITY	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	0.17	0.17	10.0%	65.0%	33	DB: Production
24	22	24		ptm-oradb1.ext	IBM	BladeCenter HS22V Xeon E5649 Hex Core 2.53GHz (2ch/12co)	0.17	0.17	40.0%	65.0%	33	DB: Production
25	23	25		qaora1	IBM	BladeCenter HS22V Xeon E5649 Hex Core 2.53GHz (2ch/12co)	0.33	0.33	40.0%	65.0%	33	DB: Production
26	24	26		qaoralnx1	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	0.17	0.17	30.0%	65.0%	33	DB: Production
27	25	27		qasv1	IBM	BladeCenter HS22V Xeon X5670 Hex Core 2.93GHz (2ch/12co)	0.08	0.08	30.0%	65.0%	33	DB: Production
28		28	1	risrdb1					10.0%		33	
29		29	1	risrdb2					10.0%		33	
30	26	30		saoralnx1	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	0.17	0.17	40.0%	65.0%	33	DB: Production
31	27	31		storalnx1	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	1.00	1.00	10.0%	65.0%	33	DB: Production
32	28	32		storalnx2	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	1.00	1.00	10.0%	65.0%	33	DB: Production
33	29	33		storalnx3	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	1.00	1.00	10.0%	65.0%	33	DB: Production
34	30	34		TGL	IBM	BladeCenter HS22V Xeon E5649 Hex Core 2.53GHz (2ch/12co)	0.17	0.17	60.0%	65.0%	33	DB: Production
35		35	1	tisrdb2					15.0%		33	
36	31	36		toralnx1	IBM	BladeCenter HS22V Xeon X5650 Hex Core 2.66GHz (2ch/12co)	0.67	0.67	20.0%	65.0%	33	DB: Production
37	32	37		pmove2prod	IBM	BladeCenter HS22V Xeon E5645 Hex Core 2.4GHz (2ch/12co)	0.08	0.08	10.0%	65.0%	33	DB: Production
38		38	1	TSYSSDB2					5.0%		33	
39	33	39		ttm-oradb1.ext	IBM	BladeCenter HS22V Xeon E5649 Hex Core 2.53GHz (2ch/12co)	0.17	0.17	20.0%	65.0%	33	DB: Production
40	34	40		pemquestpaora	IBM	BladeCenter HS22V Xeon E5645 Hex Core 2.4GHz (2ch/12co)	0.33	0.33	20.0%	65.0%	33	DB: Production
41		41	1	Tmobidb							33	
42	35	42		tsysdba1			1.00	1.00	10.0%	65.0%	33	DB: Production
43		43	1	Pmobidb							33	
44		44	1	STmobidb							33	
45		45	1	QAmobidb							33	
46	36	46		TPRIORITY			0.33	0.33	10.0%	65.0%	33	DB: Production

Summary of Servers to be Consolidated			
Servers	Chips	Cores	Applications
36	35	172	36

# Consolidation study: Methodology example

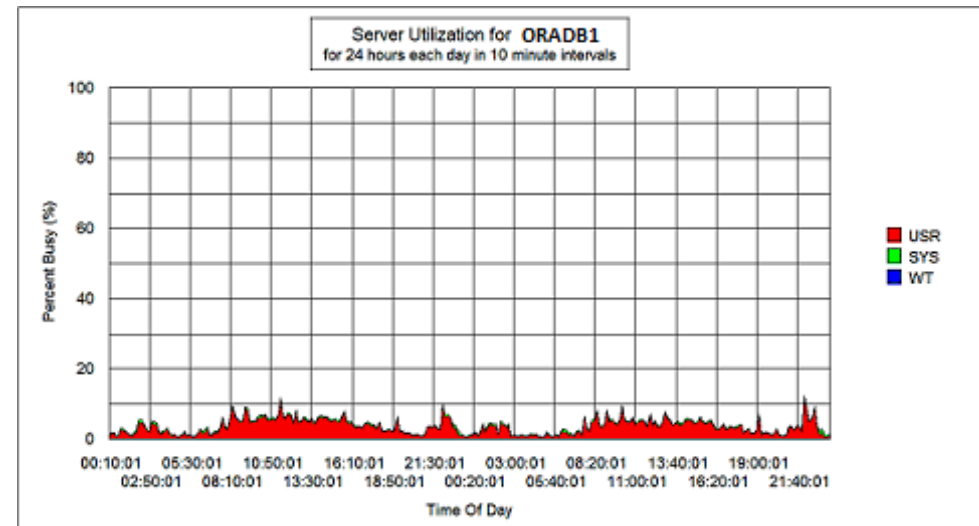


# Consolidation study: Provide accurate values!

Model	Sockets	Cores per Socket	Processor Speed
Intel(R) Xeon(R) CPU X5650	2	6	2.67GHz

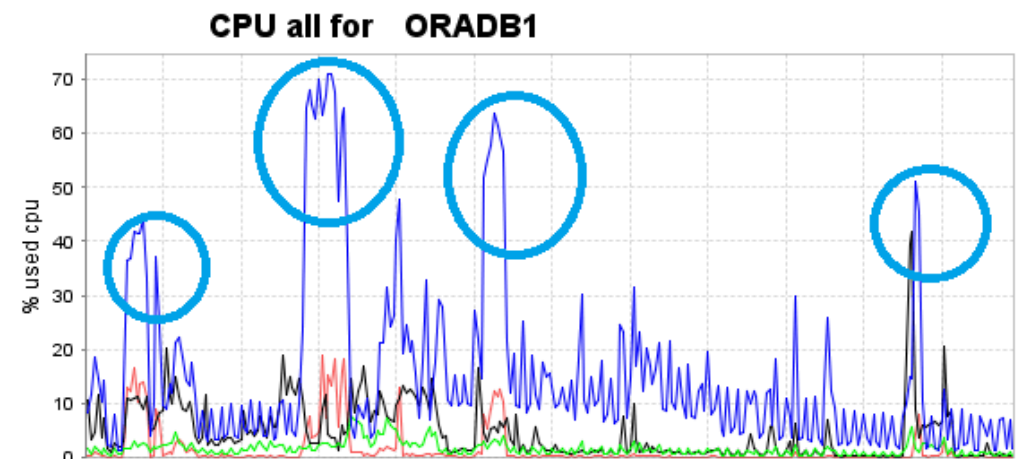
- Before consolidation

- Workload on Intel Xeon



- After consolidation

- Workload on IBM Z





# Agenda

---

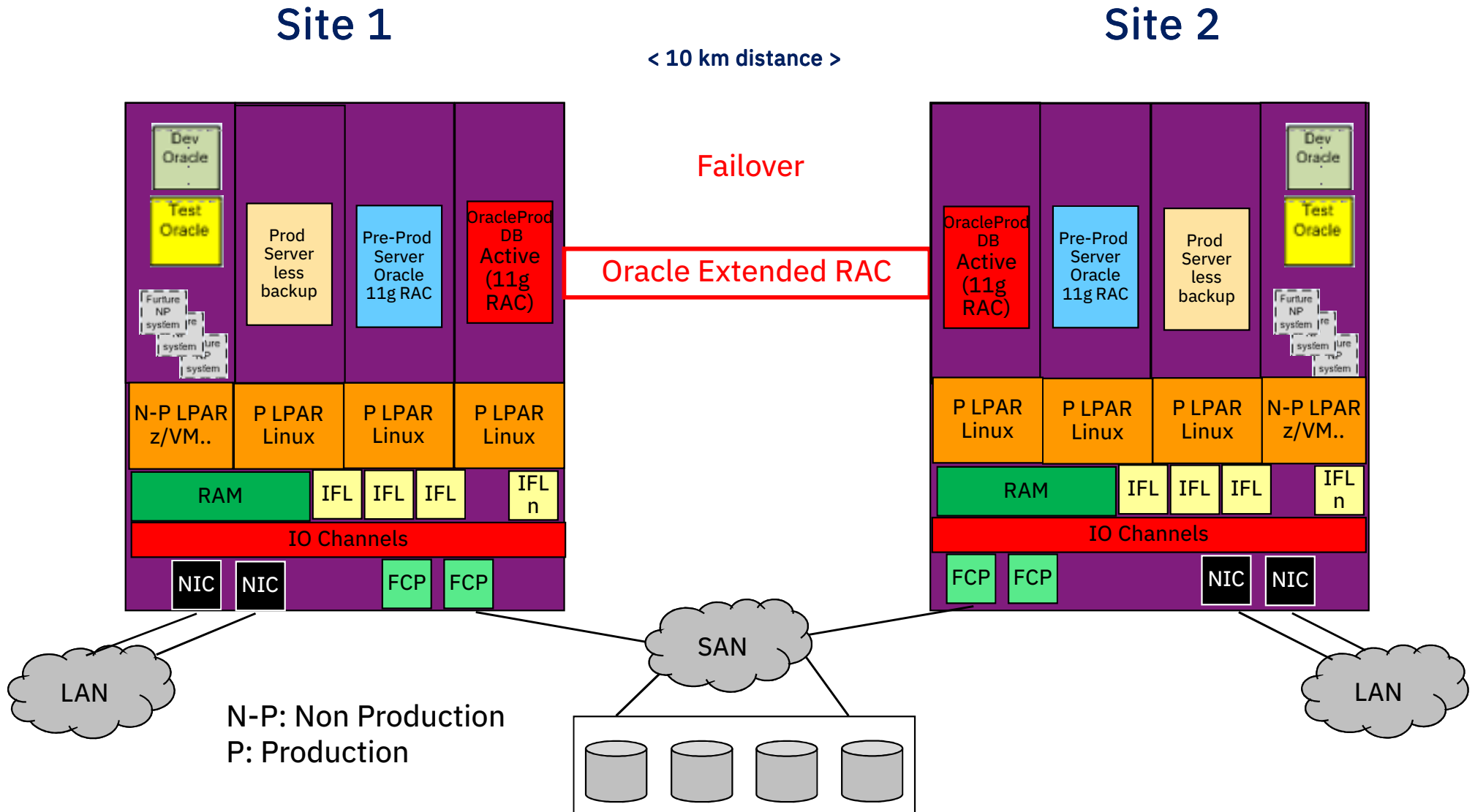
- Introduction: Server consolidation
- IBM and Oracle
- Oracle Database: Latest certifications on Z
- Why Oracle on IBM Z?
- Running a successful consolidation project
- **Client cases**

# End to End consolidation project with Oracle Database: The challenge

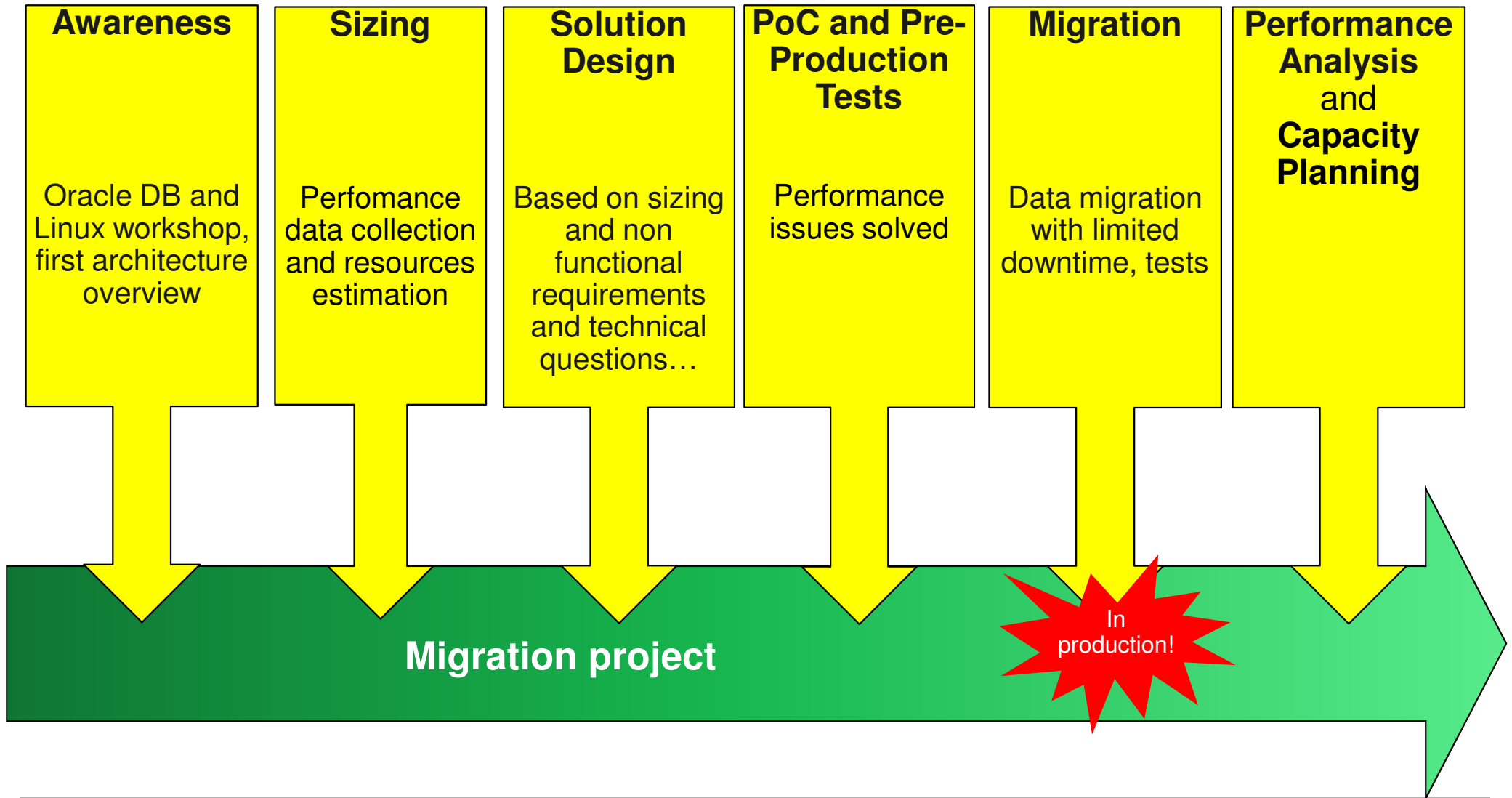
---

- *Pain points* in current Oracle application environment:
  - Current HW end of life
  - Unsecure future of current platform
  - No real dual site D/R setup
  - Complex Environment
  - Long Outages
  - Many Scheduled downtime (maintenance windows)
- *Future setup must support*
  - High Availability
  - High Resilience
  - Easy to Scale
  - Reduced Maintenance Hours
  - Improved test Environment for Developers
  - Improve TCO including software, hardware, resources...

# End to End consolidation project with Oracle Database: Logical overview



# End to End consolidation project with Oracle Database: Project steps



## End to End consolidation project with Oracle Database: Results

---

- Oracle databases run smoothly with excellent response time and throughput
- Continuous availability since migration
- Recent additional capacity to sustain the growth without interruption nor migration (just add processors)
- Consolidation project is carrying on!



2 z13 – 40 IFLs

## Customer Success Story: L3C LLP

---

L3C is an UK based company offering enterprise cloud services with IBM System Z at the core.

L3C: Consulting, Cloud, Collaboration ...



Deliver extreme reliability, security and cost.

“We bring the performance, reliability and security of the mainframe to our partners offering dev/test, POC, Pre-Prod and production environments. Our z/Linux is also an ideal platform to consolidate Oracle database where up to 12:1 license savings can be achieved.”

<https://www.ukoug.org/2016-events/ukoug-licence-management-event/exhibition/>

*“Our clients want an environment that’s flexible and cost-effective while also meeting the highest standards for reliability and security”*

- Lubo Cheytanov, founder and co-owner, L3C LLP

# L3C LLP – delivers reliability and cost savings to cloud customers with IBM z Systems

---

## Creates revenue opportunities

by making IBM Z capabilities more widely available

## Saves customers money

by eliminating hardware acquisition and licensing costs

## Reduces customers' economic risk

through an innovative “proof of concept” engagement



**The transformation:** Using an Infrastructure-as-a-Service (IaaS) model, IBM Business Partner L3C LLP provides the robust reliability, security and affordability of a System z server running Linux for its cloud customers.

*Now, midsized companies can benefit from **mainframe-caliber services** at a cost that's sized for their business.*

*“System z hosting a virtualized Linux environment differentiates L3C in level and quality of service.”*

*—Lubo Cheynatov, founder and co-owner, L3C LLP*

L3C delivers mainframe as a service with IBM z Systems : <https://www.youtube.com/watch?v=NNlxxpmeG-s>

## Consolidation & Open Source Software Aids Met Office Forecasting to Save Property and Lives

---

**Customer Value:** Reduced complexity, improved uptime, capacity for analytics, innovate with open source software for mission critical functions with enterprise grade QoS

**Success Story:** Building on the previous success of consolidating Oracle from 204 x86 processor cores to only 17 IFLs, UK's national weather service (Met Office) runs mission critical functions on open source

Read more about this client success story:

<https://www-03.ibm.com/systems/uk/references/system-z/met-office.html>

*“The IBM Z platform delivers resiliency, reliability, and it’s just a platform that we’re able to trust and make our business depend on”.*

— Richard Lawrence, Enterprise Architect Met Office



### **The Benefit**

Consolidating from 204 x86 processor cores to 17 IFLs allowed to improve the TCO and optimize the Software cost. Fewer physical servers means a more manageable Linux landscape and lower hardware lifecycle costs.





# The IBM Oracle Center (IOC) - How we can help you?



## OUR MISSION

Help IBM customers to deliver integrated solutions with Oracle Software Products on IBM Infrastructures



## OUR STRENGTH

Cross platform team with strong knowledge on Oracle products and a wide network within IBM and Oracle ecosystem



## OUR ACTIVITIES

- Convince : Briefings & Conferences
- Build : Architecture, Design, Sizing
- Demonstrate : Proof-of-Concept, Benchmarks
- Deliver : Publications & Workshops



## COVERED PRODUCTS

- IBM Platforms (z Systems, IBM Z, Power, Total Storage)
- Oracle Technologies (Oracle DB, RAC, ASM, Dataguard)
- Oracle Applications (EBS, Siebel & OBI & OWI)
- Entry point to other on Industry Solutions (BRM, iFlex, RETEK, Weblogic...)

**Unified IBM / Oracle Architectures**

Contact: [ioc@fr.ibm.com](mailto:ioc@fr.ibm.com)



Thank  
**you** IBM®