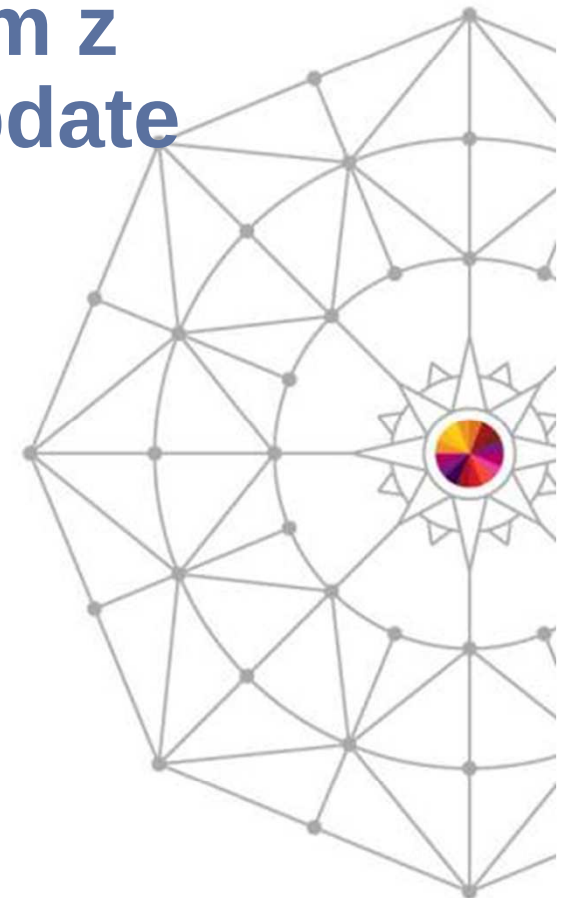




Oracle on Linux on System z Solutions and Support Update

Gaylan Braselton IBM
Rhoda Sarmiento-Pereira Oracle

Wednesday March 12, 9:30 – 10:30
Session Number 14796



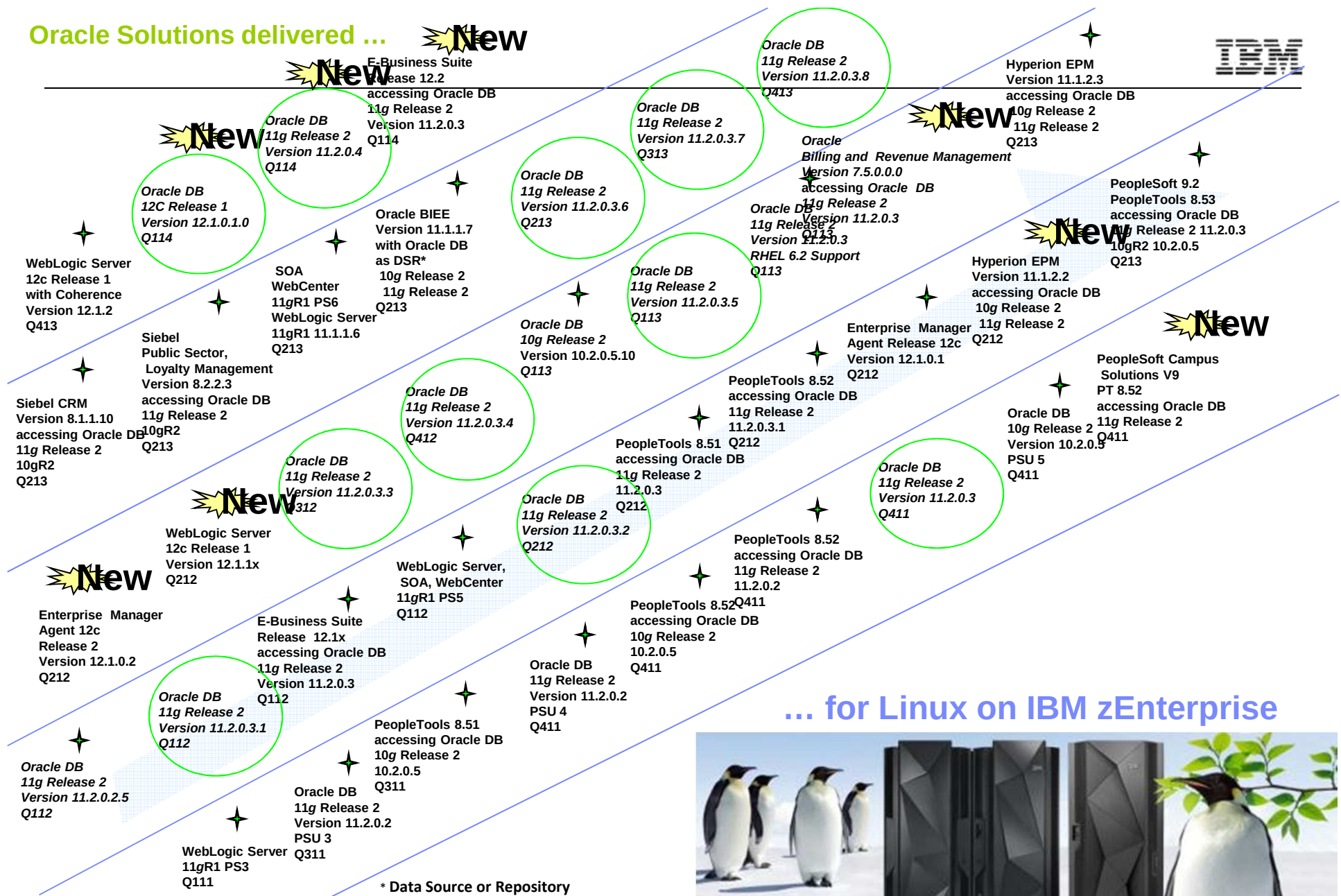
Our relationship with
Oracle is key



For more on how System z provides data and application consolidation for fast deployment and cost savings, visit www.ibm.com/systems/z/



Oracle Solutions delivered ... New



Oracle Technology Solutions for System z Servers

Oracle DB Server on z/OS

Oracle DB Server on Linux



Database	Oracle Database 10gR2	Oracle DB 10g Release 2 (10.2.0.5) Terminal Release	Oracle DB 10g Release 2 (10.2.0.5)
	Oracle Database 11gR2	No	Oracle DB 11g Release 2 (11.2.0.2, 11.2.0.3)
	Oracle Database 12c	No	Oracle DB 12c Release 1 (12.1.0.1.0) 

Oracle Fusion Middleware on z/OS

Oracle Fusion Middleware on Linux

Fusion Middleware 10g	Oracle FMW 10gR2/10gR3 Application Server	Not Applicable Oracle DB/FMW	10g Release 2 (10.1.2.3) 10g Release 3 (10.1.3.5)
Fusion Middleware	Oracle FMW 11gR1	Not Applicable Oracle DB/FMW	WebLogic Server 11g Release 1 (11.1.1.6+) SOA 11g Release 1 (11.1.1.6+) WebCenter 11g Release 1 (11.1.1.6+) Tuxedo 11g Release 1 (11.1.1.2+) WebLogic Portal 11g Release 1 (10.3.2)
	Oracle FMW 12cR1	Not Applicable Oracle DB/FMW	 WebLogic Server 12c Release 1 (12.1.1x) Note: 12.1.2 includes Coherence
Enterprise Manager	Oracle Enterprise Cloud Control Agent	Not Applicable Oracle DB/FMW	 12c Release 2 (12.1.0.2) Oracle DB 11gR2 (11.2.0.2, 11.2.0.3)
			12c Release 1 (12.1.0.1) Oracle DB 11gR2 (11.2.0.2, 11.2.0.3)
Golden Gate	Oracle GoldenGate	11g Release 1 (11.2.1.0.5+) DB2 v10, 9.1 for z/OS (11.1.1.1.1) DB2 v10, 9.1, 8.1 for z/OS	11g Release 2 (11.2.1.0.2+) 11g Release 1 (11.1.1.1.1, 11.1.1.1.2) Oracle DB 10g R2 (10.2.0.5)

Oracle Analytic Solutions for System z Servers



IBM Data Server on DB2 z/OS and or Linux*

Oracle DB Server on Linux

** Note: Multi-Platform "Split Tier" Configuration – Only the Database runs on System z Servers unless otherwise noted*

Hyperion Enterprise Performance Management

Oracle
Enterprise Performance
Management

*** Version 11.1.2.3**
*** Version 11.1.2.2**
DB2 v10 z/OS as Data Source



*** Version 11.1.1.4**
DB2 v10 z/OS as Data Source

Not planned

OBIEE Solutions:

Oracle
Business Intelligence
Enterprise Edition

*** Version 11gR1 v11.1.1.7**
DB2 9.1 z/OS as Data Source
DB2 V10 Linux on z as Data Source
DB2 V9.1.9.5, 9.7 Linux on z
as Data Source & Repository

*** Version 11gR1 v11.1.1.6**
DB2 V9.1, 9.5 Linux on z as Data Source
DB2 V9.7 Linux on z as Data Source & Repository

*** Version 10.1.3.4.2**
DB2 v8, 9.1 z/OS as Data Source
DB2 v9.1, 9.5, DB2 9.7 Linux on z as Data Source

*** Version 11gR1 v11.1.1.7**
Oracle 10g (10.2.0.5)
11g Release 2 (11.2.0.2, 11.2.0.3)
as Data Source & Repository

*** Version 11gR1 v11.1.1.6**
Oracle 10g (10.2.0.5)
11g Release 2 (11.2.0.2, 11.2.0.3)
as Data Source & Repository

*** Version 10.1.3.4.2**
Oracle 10g (10.2.0.5)
11g Release 2 (11.2.0.2, 11.2.0.3)
as Data Source & Repository

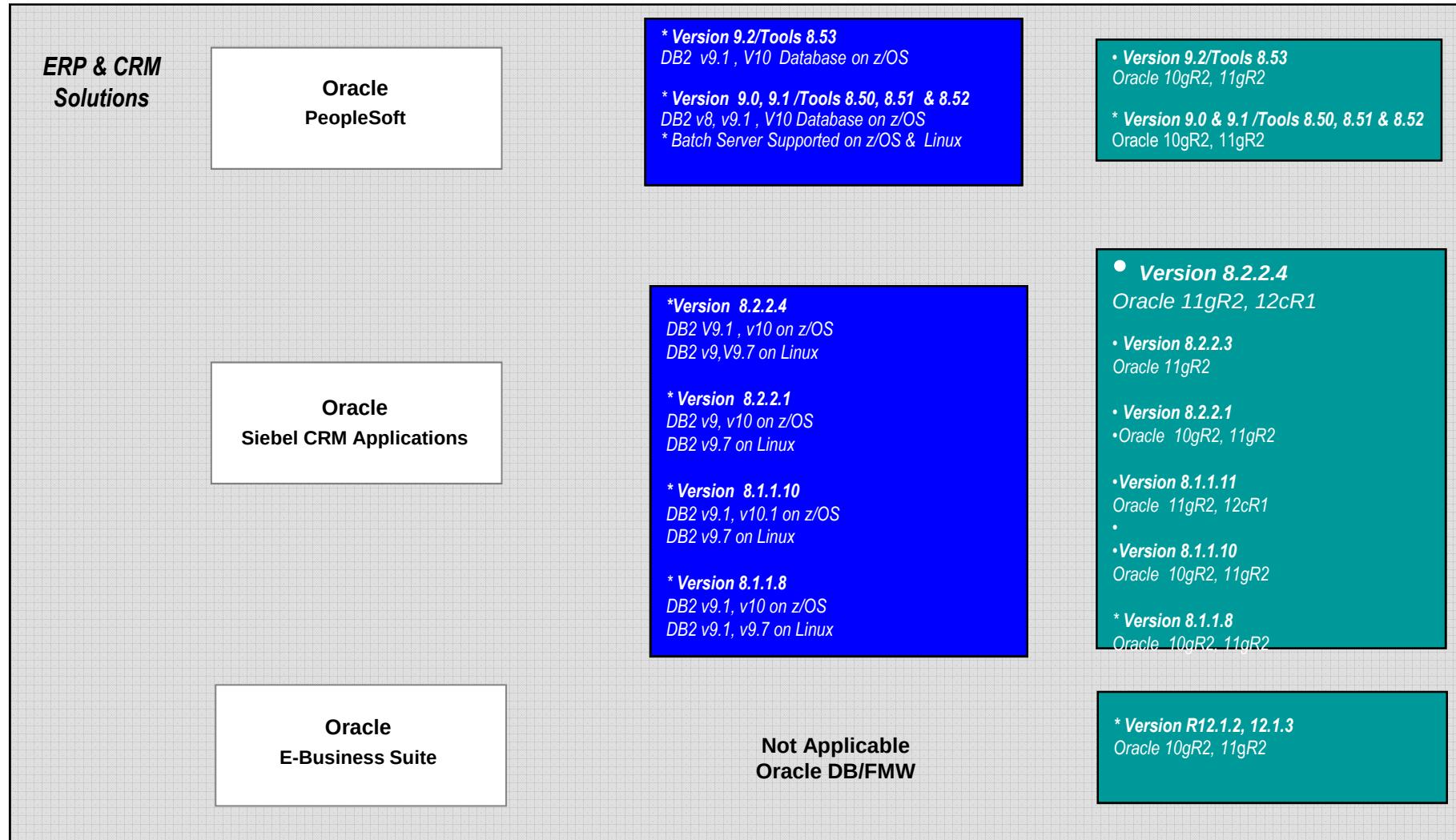
Oracle Applications for System z Servers



IBM Data Server on DB2 z/OS and or Linux*

Oracle DB Server on Linux

* Note: Multi-Platform "Split Tier" Configuration – Oracle applications accessing Database,, only the Database runs on System z Servers unless otherwise noted



Oracle Industry Applications for System z Servers

IBM Data Server on DB2 z/OS and or Linux*

Oracle DB Server on Linux



** Note: Multi-Platform "Split Tier" Configuration – Oracle applications accessing Database,, only the Database runs on System z Servers unless otherwise noted*

Industry Solutions	<u>Higher Education</u> Oracle PeopleSoft Campus Solutions	Not planned	* Version 9.0 /Tools 8.50, 8.51, 8.52, 8.53 Oracle 10gR2, 11gR2
	<u>Public Sector</u> Oracle Siebel CRM	* Version 8.2.2.3 * Version 8.2.2.1 DB2 v9.1, v10 on z/OS DB2 v9.7 on Linux * Version 8.1.1.8: DB2 v9.1 , v10 on z/OS DB2 v9.1, 9.7 on Linux on System z	Oracle 10gR2, 11gR2
	<u>Insurance</u> Oracle Documaker	Version 12.1 DB2 v8.1, v9.1 z/OS Version 11.5 DB2 v8.1, v9.1 z/OS	Not planned
	<u>Communications</u> Oracle Billing and Revenue Management	Not Applicable Oracle DB	New Oracle, 11gR2

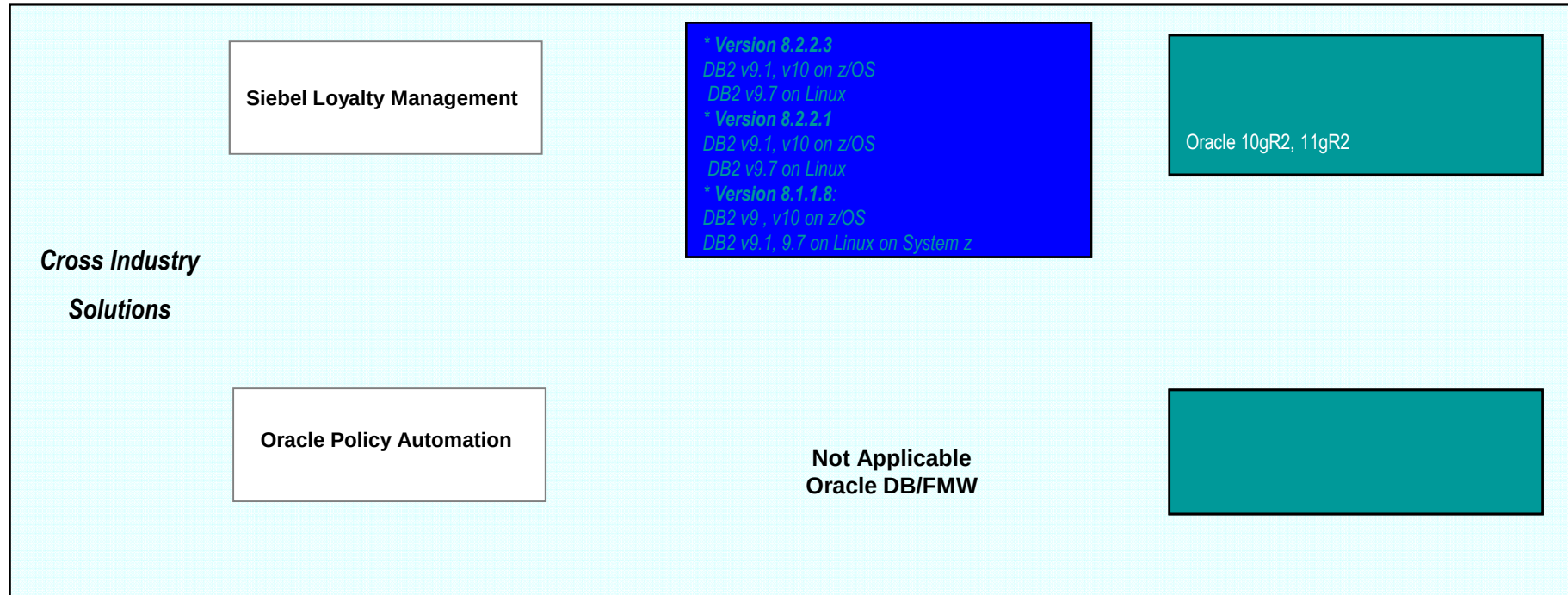
Oracle Cross Industry Applications for System z Servers



IBM Data Server on DB2 z/OS and or Linux*

Oracle DB Server on Linux

** Note: Multi-Platform "Split Tier" Configuration – Oracle applications accessing Database,, only the Database runs on System z Servers unless otherwise noted*



**Redbooks providing
Implementation Guidance for Oracle/IBM System z
www.redbooks.ibm.com**

Example

SG24-7191

SG24-6482

SG24-7573

SG24-7634

SG24-8104

SG24-8159

NEW

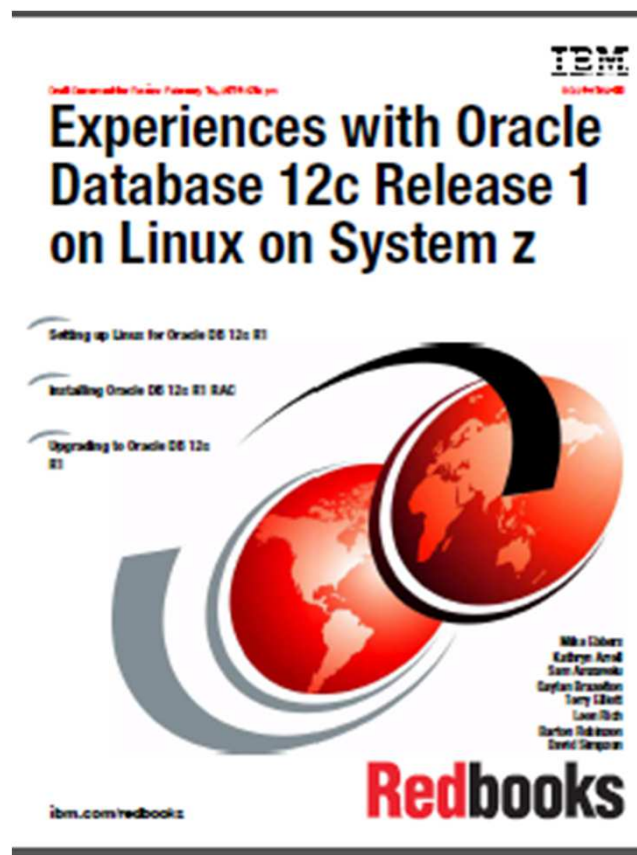
Redpieces

REDP4788

(11gR2 RAC)

REDP9131

(Silent Install)



27th Annual International zSeries Oracle SIG Conference and Oracle R12c System z Conference

April 2 – 3, 2014

600 14th Street, NW, Washington, DC
IBM Institute for Electronic Government Briefing Center

- No charge, Open Enrollment, Registration Required
- SIG is User Led User Group, Oracle and IBM Supported
- Oracle on Linux on z Technical Conference, with 12c on z focus
- Presenters include Users, Partners, Oracle, and IBM
- Topics including Demos on 12c Features, Installation, Migration, Upgrades, Pluggable & Non-pluggable databases, Oracle z Support update, z/VM 6.3 update, Performance Tips, Performance Management, CSL Wave, and User Experiences
- For more info and to register, see www.zseriesoraclesig.org or contact gbrasel@us.ibm.com

ORACLE®





Oracle Support Update for Oracle running on Linux on System z

Rhoda Sarmiento-Pereira
Principal Technical Support Engineer
Mainframe Information Technology Support



Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decision. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.



Agenda



- Product Updates including PSU and SPU
- 12c Installation Tips/Issues/Opatch
- Multi-Tenant Overview
- Q&A

Future Patch Availability

APR2014

- By the way, OPATCH_AUTO is already available on IBM Linux on System Z
- **11.2.0.3.10**
 - BUG 18031683 - DATABASE PATCH SET UPDATE 11.2.0.3.10 (INCLUDES CPUAPR2014)
 - BUG 18139678 - GRID INFRASTRUCTURE PATCH SET UPDATE 11.2.0.3.10 (INCLUDES DB PSU 11.2.0.3.10)
 - BUG 18139695 - DATABASE SECURITY PATCH UPDATE 11.2.0.3.0 (CPUAPR2014)
- **11.2.0.4.2**
 - BUG 18139609 - GRID INFRASTRUCTURE SYSTEM PATCH 11.2.0.4.2
 - BUG 18139609 - GRID INFRASTRUCTURE SYSTEM PATCH 11.2.0.4.2
 - BUG 18139690 - DATABASE SECURITY PATCH UPDATE 11.2.0.4.0 (CPUAPR2014)
- **12.1.0.1.3**
 - BUG 18031528 - DATABASE PATCH SET UPDATE 12.1.0.1.3
 - NO Grid Infrastructure patch for APR2014*** (also the same with Intel)



Oracle 12c Installation



- RPM Checker

- o Requirements for Installing Oracle Database 12c Release 1 on **SLES 11 on IBM: Linux on System z (s390x)** (Doc ID 1574414.1)

- o Requirements for Installing Oracle Database 12c Release 1 **on RHEL 6 on IBM: Linux on System z (s390x)** (Doc ID 1574413.1)

“Dummy” rpm which validates OS has required rpm dependencies

SuSE - **ora-val-rpm-SL11-DB-12.1.0.1-1.s390x.rpm**

Redhat - **ora-val-rpm-EL6-DB-12.1.0.1-1.s390x.rpm**

- **#rpm -ivh ora-val-rpm-SL11-DB-12.1.0.1-1.s390x.rpm**
- **#yum install ora-val-rpm-EL6-DB-12.1.0.1-1.s390x.rpm**

```
# rpm -ivh /home/oracle/ora-val-rpm-S11-DB-12.1.0.1-1.s390x.rpm
```

```
Preparing... ##### [100%]
```

```
1:ora-val-rpm-S11-DB ##### [100%]
```

```
*****
```

```
*          Validation complete - Your sles11 OS has required rpms for Oracle 12.1          *
```

```
*****
```

Installation Requirement

Minimum Supported/Certified kernel levels:-

- SLES 11 SP2 - 3.0.13-0.27 or later
- RHEL 6.3* - 2.6.32-279.el6 or later

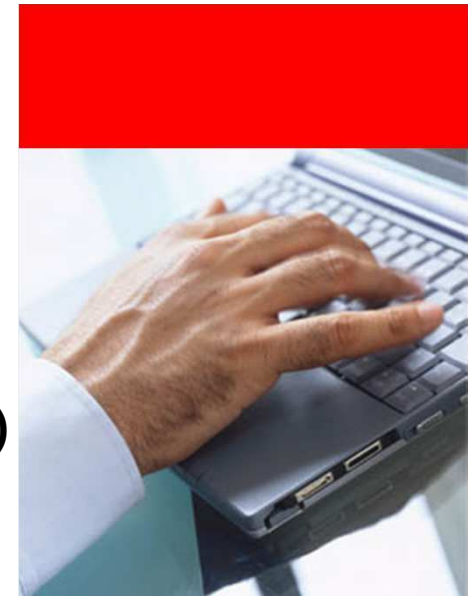
Note: Recommend RHEL 6.4* (errata 1156 mandatory in 6.3)

- RHEL 5.8 also certified

Disk Space Required:

- /tmp - 1024MB (< 2TB)
- /grid - 3.5GB Grid Infrastructure/ASM Home
- /oradb - 5.2GB Database Home
- Database ~ 2GB Preconfigured db file storage
- BASE ~ 3GB

Note: SI (Non-ASM) Oracle DB on RHEL6 – ext4 filesystem recommended



Installation Requirements

Physical RAM:

Grid Infrastructure – 2.0GB min (Recommend 4.0 GB)

Database – 1.0GB min (Recommend 2.0 GB)

Swap space proportional to physical RAM as follows:

Ram	Swap
> 1GB < 8GB	2 times the size of RAM
> 8GB < 32GB	Equal to the size of RAM
> 32GB	32GB

12c Installation - Tips

- **Unset all ORACLE env variables apart from ORACLE_BASE**
setting ORACLE_HOME, PATH, LD_LIBRARY_PATH to include Oracle binaries in .profile, .login file and /etc/profile.d should be **completely** avoided.
- **Unset any JAVA env variables**
- **Hostname should return the fully qualified hostname**
hostname.domainname
- **Redhat 6 has selinux set to “enforcing” by default – this can cause problems. May need to change to permissive for duration of install.**
- **Placeholder Patch 6880880 – Opatch Version 12.1 Version – post install – do not rely on Opatch with installation.**
- **Always use ./runInstaller which comes with software being installed**
- **Silent installs not always “honest” with errors returned!**
- **Problems identified in 11.2 installs with older versions of Exceed ?**

12c Installation – Problems?

Logfiles:

- Early OUI Bootstrap errors → /tmp/Orainstall<datestamp>
- CVU fixup scripts → /tmp/CVU<datestamp>
- OUI logs → oraInventory/logs (dependent upon /var/opt/oracle/orainst.loc)
- Linking issues → \$ORACLE_HOME/install/make.log
- Opatch issues → \$ORACLE_HOME/cfgtoollogs/opatch
- root.sh for Grid Installs → \$GRID_HOME/crsconfig (roothas or rootcrs)
- Catbundle (PSU) → \$ORACLE_BASE/cfgtoollogs/catbundle

12c Installation - NOTES

- **Don't ignore OUI prereq errors!**
 - Exception /tmp space
 - client install
- **root.sh can be rerun multiple times should errors occur**
- **Cleanup Note** - How to completely remove 11.2 and 12.1 Grid Infrastructure, CRS and/or Oracle Restart - IBM: Linux on System z (Doc ID 1413787.1)
- **Zero out ASM devices before reinstall...**
`dd if=/dev/zero of=/dev/<device> bs=1M count=10000`

12c Installation – Potential Problems

- When installing clusterware and Flex ASM configuration you may see the following:

WARNING during the running of root.sh which can safely be ignored:-
CLSRSC-46: Error: '/grid/12101/cfgtoollogs/crsconfig/srvmcfg0.log' does not exist

- Ensure you have ARP enabled on network interfaces.
#ifconfig -a will confirm whether you have NOARP
- Check /etc/multipath.conf file has +r access if you are using multipathed shared storage devices for ASM - this will prevent PRVF-5150 warning during pre-requisite checking.(Redhat 6.3 issue)

```
# ls -la /etc/multipath.conf -rw-r--r--. 1 root root 3084 Aug 5 13:24  
/etc/multipath.conf
```

- SLES 11 SP2 - /etc/inittab – possible KVM hypervisor console(s):
conflict h:1 –
See OHASD fails to start on SuSE 11 SP2 on IBM: Linux on System z (Doc ID 1476511.1)

12c Installation – No worries

- **12c Prereq checking for both GRID and DATABASE install work.**
-ignoreSysPrereqs no longer needed
- **CVU Fixup scripts work!**
- **Documentation for base release and generic documentation includes IBM: Linux on System z sections – including links to MOS articles**
- **runcluvfy can be trusted!**
./runcluvfy.sh stage -pre crsinst -n node1,node2
- **IBM Redbook**
<http://www.redbooks.ibm.com/redpieces/abstracts/sg248159.html?Open>



OPATCH 12.1

Changes in Opatch :

- No Security Patch Updates (CPUs) available on any platform for 12.1 releases - PSUs only which will include Security Fixes.
- Opatch apply remains the same but Steps for Loading Modified SQL Files into the Database in the database have changed.
- For a Non-Container Database

```
SQL> Connect / as sysdba
SQL> startup
cd $ORACLE_HOME/OPatch
[oracle@strkfx OPatch]$ ./datapatch
SQL Patching tool version 12.1.0.1.0 on Thu Feb 13 09:23:50 2014
Copyright (c) 2012, Oracle. All rights reserved.
Connecting to database...OK
Determining current state...done
Nothing to roll back
  Nothing to apply
SQL Patching tool complete on Thu Feb 13 09:24:02 2014
```



OPATCH 12c

- For a Container Database with pluggables after startup as sysdba:

```
SQL> alter pluggable database all open;
[oracle@strkf34 OPatch]$ ./datapatch -verbose
SQL Patching tool version 12.1.0.1.0 on Thu Feb 13 09:34:08 2014
Copyright (c) 2012, Oracle. All rights reserved.
Connecting to database...OK
Determining current state...done
For the following PDBs: CDB$ROOT
  Nothing to roll back
  Nothing to apply
For the following PDBs: PDB$SEED
  Nothing to roll back
  Nothing to apply
For the following PDBs: PDB1
  Nothing to roll back
  Nothing to apply
For the following PDBs: PDB2
  Nothing to roll back
  Nothing to apply
SQL Patching tool complete on Thu Feb 13 09:34:15 2014
```



Opatch 12c – Post Patch

Post patch:

- Check dba_registry_history
- Check dba_registry_sqlpatch – verify status is “SUCCESS”
- Note **1609718.1** What to do if the status of a datapatch action was not SUCCESS!
- Database 12c Post Patch SQL Automation (Doc ID 1585822.1)
- Oracle Database 12.1 : FAQ on Queryable Patch Inventory (Doc ID 1530108.1)



12c Opatch – Useful Tips

- glogin.sql to set SQL prompt to include container name:
vi \$ORACLE_HOME/sqlplus/admin
set sqlprompt "_USER'@'_CONNECT_IDENTIFIER'>"
- dbca – using customised non-seed template:
\$ dbca -silent -createDatabase -templateName Custom_DB_.dbt -gdbName -sid CDB1
-createAsContainerDatabase true -numberOfPDBs 1 -pdbName pdb -sysPassword
<password> -systemPassword <password> -listeners listener
Enter PDBADMIN
- \$OH/rdbms/admin/catcon.pl – perl script to run SQL scripts against multiple PDBS
\$ perl catcon.pl -u SYS -U SYS -d \$ORACLE_HOME/rdbms/admin -l '/home/oracle' -b
catblock_output awrinfo.sql
- Set following to allow CDB to continue running if Pdb loses a datafiles

SQL>alter system set "_datafile_write_errors_crash_instance"=FALSE



Multi-Tenant Database Overview



- Multitenant architecture is introduced in 12c

Terms that needs to know:

- CDB – Multitenant Container
- PDB – Pluggable Database
- seed
 - o system-supplied template that the CDB can use to create new PDBs.
 - PDB\$SEED (cannot add or modify objects)
- root
 - o stores Oracle-supplied metadata and common users



Multi-Tenant Database Overview



- Multitenant architecture is introduced in 12c
- It is currently an option and requires a separate license if you will have more than one PDB
- manage multiple databases as one
- Easier upgrades
- Economical – Resources
- Every pluggable is separated



Multi-Tenant Database Overview



- Tools for Multi-tenancy
 - SQLPLUS
 - Oracle SQL Developer
 - DBCA
 - Cloud Control
 - Server Control Utility (SRVCTL)



Multi-Tenant Database Overview



- Oracle Database features currently NOT supported in a CDB:
 - Continuous Query Notification
 - Flashback Data Archive
 - Heat Maps
 - Automatic Data Optimization



Multi-Tenant Database Common Questions



- Do I need to get a separate license if I will use Multitenant Database?
 - If you are going to use more than 1 PDB then additional license is needed.
- Can I use Multitenant db if I am using Standard Edition?
 - Yes, but limited to one PDB per CDB
- How can I install and setup Pluggable Database?
 - use runInstaller
 - DBCA
- Am I required to use Multitenant database in 12.1+?
 - No. You can still have a non-container database
- Can I convert a pluggable to non-pluggable database?
 - Yes, you can.
 - Datapump Export/Datapump Import

Oracle Multitenant Option - 12c : Frequently Asked Questions
(Doc ID 1511619.1) [← being updated regularly](#)



Useful Notes

Oracle Multitenant Option - 12c : Frequently Asked Questions (Doc ID 1511619.1)

Master Note for the Oracle Multitenant Option (Doc ID 1519699.1)

Multitenant best Practice and Known issues (Doc ID 1604135.1)

<http://dlsunuk11.uk.oracle.com/Public/ARCH/PAPERS/multitenant.pdf>



Working with Support

- One issue One SR policy!
- Performance Issue
 - OSWatcher and AWR
 - Make sure you zip the OSWatcher and provide at least the 12-hour (or 24 hour better).
 - Do not just send the file when the problem occurred or send the individual files.
 - How To Investigate Slow or Hanging Database Performance Issues (Doc ID 1362329.1)
 - Diagnostics for Database Performance Issues (Doc ID 781198.1)
- For database related issues (oracle errors (i.e ORA-0600/7445))
 - Alert log
 - Accompanying trace files (incident file not the .trm) and stack trace
- Installation issues, please provide the following:
 - installation log
 - OS version
 - Output of the RPM checker



Working with Support

- Clusterware issues
 - CRS Diagnostic Data Gathering: A Summary of Common tools and their Usage (Doc ID 783456.1) **
 - Oracle Clusterware 10gR2/ 11gR1/ 11gR2/ 12cR1 Diagnostic Collection Guide (Doc ID 330358.1)
- For NET issues (connection)
 - Files: listener.ora, sqlnet.ora, tnsnames.ora*
 - SQLNET trace (both client and server)
 - listener log
 - listener trace
- FOR RAC/CRS issues
 - Diagnostics required will be for ALL the NODES
- Severity 1 issues



Working with Support

- SRs that have bugs attached
 - More diagnostics maybe needed
 - Dev may create a diagnostic patch for some specific problem
 - Please be pro-active in providing the diagnostics needed
- BACKPORTS/patches
 - If provided a patch for a backport, please apply it right away
 - Please inform us (SUPPORT) if the problem is fixed.
- If sending hundreds of traces/diagnostics*
 - Please indicate when (date and time) the problem occurred
 - If possible PLEASE label the diagnostics you are uploading, once you upload all the files, update the SR with the list and put descriptions
- When SR needs assistance with experts*
 - internal COLLABORATION SR
 - Option: view the collab SR and communicate directly to the engineer or just communicate with the 'parent' SR engineer



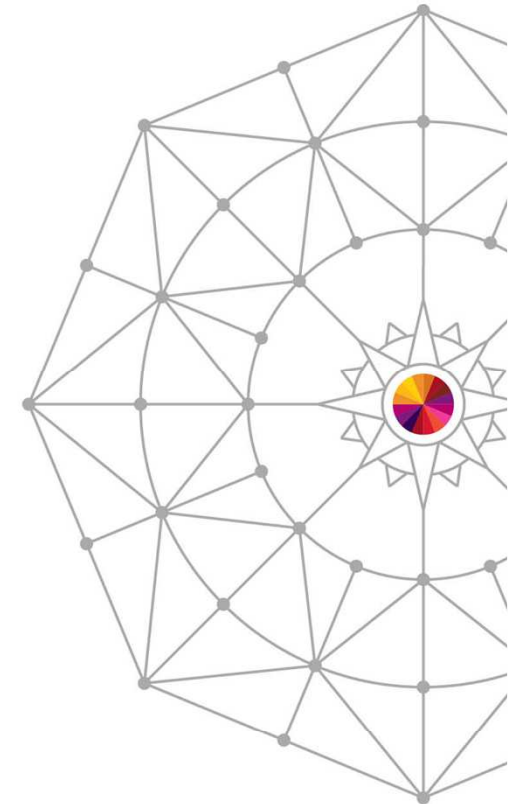
Rhoda.Sarmiento@oracle.com



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Oracle on Linux on System z

Session 14796 Braselton/Sarmiento-Pereira



Thank You

