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Oracle Support Update for Oracle running on Linux on System z

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Agenda

- Oracle RDBMS on Linux on Z
 - Version Availability
 - Product Updates including PSU and CPU
 - Useful Notes
- Philosophy of Performance Management in a Virtualised Environment
- Q&A

Product Availability

- 10.2.x
 - Latest is 10.2.0.5
 - Extended Support fee will be waived from August 2010 – July 2012.

- 11.2.x
 - Latest is 11.2.0.3 (Grid Infrastructure is now available)
 - Premier Support Ends Jan 2015
 - Extended Support Ends Jan 2018

Supported/Certified Linux on Z

- **10.2**

OS versions and minimum levels:

OS	Version	Minimum Update Level	Minimum Kernel Version
Redhat Enterprise Linux	4	Update 2	2.6.9-22.EL
	5	Update 4	2.6.18
SUSE Linux	9	SP2	2.6.5-139
Enterprise Server	10	SP3	2.6.16.21
	11	SP1	2.6.27.19

Supported/Certified Linux on Z

- **11.2**

OS versions and minimum levels:

OS	Version	Minimum Update Level	Minimum Kernel Version
Redhat Enterprise Linux	4	Update 8	2.6.9
	5	Update 4	2.6.18
SUSE Linux	10	SP3	2.6.16.21
Enterprise Server	11	SP1	2.6.27.19

Problems to be aware of when installing/upgrading to 11.2.0.3

- Missing LIBSTDC++-33-3.2.3-47.3
 - Prereq check fails in Grid installation about missing rpm compat-libstdc++-33.3.2.3-47.3 (or not installed)
 - What to do:
 - Ignore but need to make sure that all rpm pre-requisites are met.

Problems to be aware of when installing/upgrading to 11.2.0.3 (cont.)

- The following notes will help in this problem:
 - 11.2.0.3 PREREQ CHECK WARNING FOR MISSING compat-libstdc++-33.3.2.3-47.3 ON IBM: LINUX ON SYSTEM Z ON SLES 11 (Doc ID 1383381.1)
 - Getting Started - 11gR2 Grid Infrastructure, SI(Single Instance), ASM and DB (IBM: Linux on System z) [Doc ID 1306465.1](#)
 - Ensure you have prerequisite rpms to install Oracle Database and AS10g(midtier) on IBM: Linux on System z (s390x) (Doc ID 1086769.1)

Common Problems when installing/upgrading to 11.2.0.3

- DASD STORAGE DEVICE with a SOFT LINK
 - This is another show stopper when installing 11.2.0.3
 - This is very critical because ASMLIB is no longer supported/available on zlinux platform.
 - The problem occurs when ECKD/DASD devices are configured → which is necessary for device persistence and easy manipulation/selection of ASM devices
 - This is only applicable for multiple nodes, single node still works fine

Common Problems when installing/upgrading to 11.2.0.3 (cont.)

REFERENCES:

- [BUG 13497268 - GRID INSTALL HANGS AT 75% WHEN USING DASD STORAGE DEVICE WITH A "SOFT LINK"](#)
- [How to Manually Configure Disk Storage devices for use with Oracle ASM 11.2 on IBM: Linux on System z under SLES \(Doc ID 1350008.1\)](#)

Problems to be aware of when installing/upgrading to 11.2.0.3

- UPGRADING from 10g to 11g
 - **Bug 5100163** - ASM diskgroup created in 10g can have unformatted blocks - may become unmountable
 - Discussed in detail → Doc ID 5100163.8
- OPATCH AUTO availability
 - OPATCH AUTO is not fully supported on z/Linux
 - It will be available soon

BUG 13722527 - OPATCH AUTO FUNCTIONALITY NOT AVAILABLE IN 11.2.0.1.9 VERSION ON IBM: ZLINUX

Product Updates (incl. PSU and CPU)

- 10.2.0.5

Latest PSU

Patch 13343471: DATABASE PATCH SET UPDATE 10.2.0.5.6
(INCLUDES CPU JAN2012)

- 11.2.0.2

Latest PSU

Patch 13343424: DATABASE PATCH SET UPDATE 11.2.0.2.5
(INCLUDES CPU JAN2012)

Patch 13653086: GRID INFRASTRUCTURE PATCH SET
UPDATE 11.2.0.2.5 (INCLUDES DB PSU 11.2.0.2.5)

Product Updates (incl. PSU and CPU)

- 11.2.0.3
 - Released on Dec. 2nd 2011 under Patch 10404530: 11.2.0.3.0 PATCH SET FOR ORACLE DATABASE SERVER
 - Grid Infrastructure was released on Jan 27th 2012 under Patch 13348650: GRID INFRASTRUCTURE PATCH SET UPDATE 11.2.0.3.1 (INCLUDES DB PSU 11.2.0.3.1)
 - Latest PSU: Patch 13343438: DATABASE PATCH SET UPDATE 11.2.0.3.1 (INCLUDES CPU JAN2012)

Product Updates (Including PSU and CPU)

- DB Replay or RAT (Real Application Testing)
- From 10.2.0.4.4
 - 10.2.0.4.0 Patchset + one-off patch 10239989
 - Patch 10239989 was released on Feb. 7th
- From 10.2.0.5
 - 10.2.0.5 Patchset + one-off patch 9373986
 - Patch 9373986 was released on Feb. 9th
- → To 11.2.0.2
 - 11.2.0.2 + on-off patch 11870615
 - Patch 11870615 was released on Feb. 3rd

What to expect in the APRIL PSU/CPU

- README when installing GRID INFRASTRUCTURE will be better and it will include a clear STEP-by-STEP manual instructions
- **OPATCH AUTO** will be fully available
- **COMPOSITE PATCHES** will be introduced

What to expect in the APRIL PSU/CPU 2012

OPATCH AUTO

- Eliminates the steps (like stopping CRS, instance, nodeapps, asm, running rootprepatch.sh or any other scripts require) to be performed by user while applying or rollingback patch.
- This is the recommended way of applying a patch instead of manual patching.

What to expect in the APRIL PSU/CPU 2012

COMPOSITE PATCHING

- Oracle's new packaging format used for cumulative patches
- Eliminates the need to rollback previously applied composite releases
- Reduces the need to rollback previously applied overlay patches
- Improves patch apply performance

What to expect in the APRIL PSU/CPU

COMPOSITE PATCHING

- It is constructed of one or more sub-patches
 - ➔ The sub-patches are installed separately with the most recent sub-patch being named the composite patch
 - ➔ A new version will include will always include the previous-releases (sub-patches)
 - ➔ If no prior composite patch is installed all sub-patches contained in the composite patch will be installed
 - ➔ If prior sub-patches are installed, only the new sub-patches of the composite patch will be installed and 'will not' rollback previous sub-patches

What to expect in the APRIL PSU/CPU

COMPOSITE PATCHING

- It will appear in the inventory as one patch installed with sub-patches

Interim patches (1) :

Patch 13545268: applied on Fri Dec 09 10:59:28 EST 2011

Patch Description: "Database Patch Set Update : 11.2.0.3.2 (13545268)"

Created on 2 July 2012, 07:52:00 hrs PST8PDT

Sub-patch 13343438; "Database Patch Set Update : 11.2.0.3.1 (13343438)"

Bugs fixed:

9275072, 9352237 ...

What to expect in the APRIL PSU/CPU

COMPOSITE PATCHING

➔ When a later composite patch is installed, the inventory will reflect the new composite patch number as the patch installed, and the previously installed composite patches as sub-patches

Patch 13795248 : applied on Fri Dec 10 10:00:28 EST 2011

Patch Description: "Database Patch Set Update : **11.2.0.3.3 (13795248)**"

Created on 11 May 2012, 09:35:00 hrs PST8PDT

Sub-patch 13545268; "Database Patch Set Update : **11.2.0.3.2 (13545268)**"

Sub-patch 13343438; "Database Patch Set Update : **11.2.0.3.1 (13343438)**"

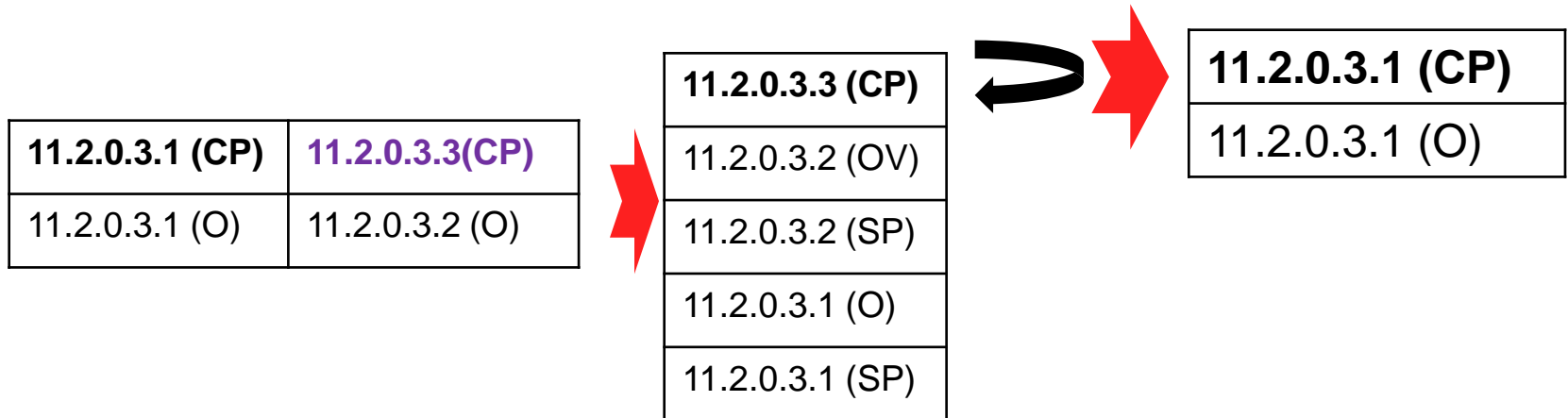
Bugs fixed:

9275072, 9352237 ...

What to expect in the APRIL PSU/CPU

COMPOSITE PATCHING

→ Should the composite patch be rolled back, only the most recently applied sub-patch(es) plus any overlay patch(es) associated to the sub-patch(es) will be rolled back.



CP = Composite Patch

O = Overlay

SP = SubPatch

What to expect in the APRIL PSU/CPU

COMPOSITE PATCHING – Conflict Resolution

- Reduce the need to create overlay patches each time a new composite patch is released
 - Conflicts can occur for any sub-patch of a composite patch
 - Resolutions to conflicts will be against the specific sub-patch that is conflicting

USEFUL NOTE/S:

Patch Set Updates for Oracle Products (Doc ID 854428.1)

=> Notes will be added about composite patching when ready

USEFUL NOTES

Document 1383381.1 11.2.0.3 PREREQ CHECK WARNING FOR MISSING compat-libstdc++-33.3.2.3-47.3 ON IBM: LINUX ON SYSTEM Z ON SLES 11

Document 1306465.1 Getting Started - 11gR2 Grid Infrastructure,SI(Single Instance), ASM and DB (IBM: Linux on System z)

Document 1400185.1 How To Upgrade Oracle Restart i.e. Single Node Grid Infrastructure/ASM from 11.2.0.2 To 11.2.0.3

Document 1345364.1 ORA-00445: Background Process "xxxx" Did Not Start After 120 Seconds

Document ID 1116895.1 Oracle E-Business Suite Installation and Upgrade Notes Release 12 (12.1.2) for IBM: Linux on System z

USEFUL NOTES

Document 1383381.1 11.2.0.3 PREREQ CHECK WARNING FOR MISSING compat-libstdc++-33.3.2.3-47.3 ON IBM: LINUX ON SYSTEM Z ON SLES 11

Document 1086769.1 Ensure you have prerequisite rpms to install Oracle Database and AS10g(midtier) on IBM: Linux on System z (s390x) ← RPM Checker

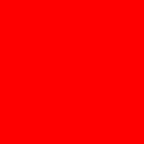
Document 1350008.1 How to Manually Configure Disk Storage devices for use with Oracle ASM 11.2 on IBM: Linux on System z under SLES

Document 1351746.1 How to Manually Configure Disk Storage devices for use with Oracle ASM 11.2 on IBM: Linux on System z under RedHat 5



Philosophy of Performance Management in a Virtualised environment.

- Part 1 – General Philosophy
- Part 2 – Virtual Rules

- 
- Endless Discipline
 - Endless Training
 - Aim for 99% boredom and 1% sheer terror

- "Si Vis Pacem, Para Bellum".
- ("If you want peace, prepare for war")
- - Flavius Vegetius Renatus

Define the target

- Know your systems
 - Know your users
 - Know your targets, goals and SLA
 - Know yourself
-
- So it is said that if you know your enemies and know yourself, you can win a hundred battles without a single loss.
 - If you only know yourself, but not your opponent, you may win or may lose.
 - If you know neither yourself nor your enemy, you will always endanger yourself.
 - Sun Tzu - the Art of War

Buildup

- Define clear, definite procedures to deal with potential issues
- Prepare and install the tools while you don't have a problem, that way they are there when you do
- VMSTAT, sar, LTOM, OSWatcher, AWR, SQL Monitor, OEM, traces
- Prepare operations, system admin, DBA.
- 'put your trust in God; but mind to keep your powder dry'."
- Oliver Cromwell

Advance

- Brief Briefings
- Define the objective
- Define the method
- Define success
- Refine as you approach

- "'Knowledge dominance' does scare us as Marines. General George Armstrong Custer probably thought he had knowledge dominance, too. Any time you think you're smarter than your adversary, you're probably about a half-mile from the Little Big Horn."

- — Colonel Art Corbett, USMC

Battle

- Use the appropriate resources
 - Document the changes to be made
 - Brief the appropriate personnel
 - Apply the solution
 - Measure against success criteria
-
- "The whole art of war is to gain your objective with as little loss as possible."
 - Field Marshall The Viscount Montgomery of Alamein KG, GCB, DSO.

Aftermath

- Review root cause
 - Review avoidance and defensive techniques
 - Rewrite plans
 - Retrain
-
- “No plan of battle survives contact with the enemy “
 - Wellington

Performance management in a virtualised environment

- The world has changed, and some of the rules of thumb don't rule any more.....

Performance management in a virtualised environment

- What were the old rules of thumb?
 - Many of the ‘rules of thumb’ / ‘gospel’ / ‘We’ve always done it that way’ sets of performance management principles were based on having to cater for older technologies:
 - ‘slow disk’ – 20 ms service time
 - ‘slow’ networks
 - Intermittent peaks
 - Slow provisioning / long lead times

Performance management in a virtualised environment

- What has changed?
 - Virtualisation -rapid provisioning and resource sharing
 - Faster disk – 0-10ms
 - Faster networks – Gigabit is normal
 - Need to use 100% capacity,

Performance management in a virtualised environment

- We used to say – ‘because disk IO is slow, make use of large Oracle and OS buffers’
- Now, with much faster disk, especially in the low ms service time range, while disk is still not as fast as memory, it is perfectly possible for random transactional IO to use disk – if a transaction can get its data in a couple of milliseconds, overall transaction time will not be affected.
- Use direct, asynchronous IO to bypass the OPS cache
- Tune the Oracle buffer cache for optimal operation – when migrating from another platform, this usually means chop extensively.

Performance management in a virtualised environment

- We used to say ‘avoid network operations’
- While this is still true, SAN devices over modern channel and network attachments, coupled with multipath/PAV, mean that network or pseudonetwork devices are no longer the slow option they used to be.
- Drive the IO subsystem as hard as you can – you’ve paid for the capacity, so use it !

Performance management in a virtualised environment

- Summary:
- Reduce instance memory to allow maximum sharing between instances and guests
- Principally achieved by driving IO harder
- Use all resources fully – CPU, Memory, IO
- Use measurement tools – AWR and ADDM, sar, OSWatcher Black Box, LTOM
- Understand the component interaction and tune
 - At the Oracle level
 - At the OS level
 - At the VM level

- "Unfortunately, many people do not consider fun an important item on their daily agenda. For me, that was always high priority in whatever I was doing."
- — Chuck Yeager.



Q&A