Enrique Orbegozo
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Minimal Downtime Patching

Sobre mi


The Happiest And Unhappiest Jobs Of 2014
Forbes
No. 1 Happiest Job: Database Administrator
Database administrators (DBAs) use specialized software to store and organize data, such as financial information and customer shipping records. They protect the data


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RIMAC Seguros
Interbank
mibanco
PARAÍSO
MACHU PICCHU Foods
SanPablo Complejo Hospitalario
HERMES
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Mincetur
promperú
VUCE
SUPERINTENDENCIA DE BANCA, SEGUROS Y AFP
COMMIT
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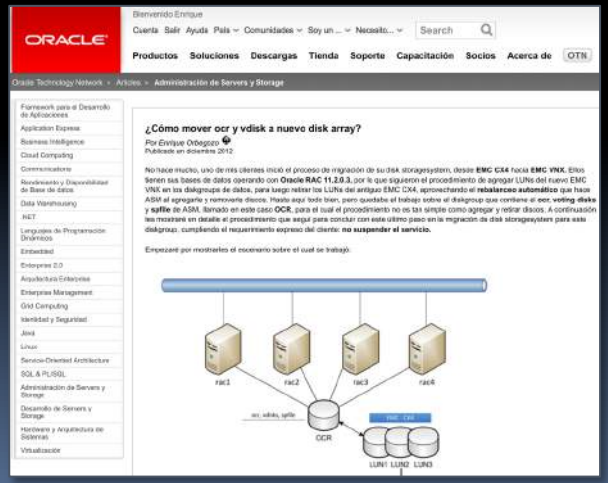
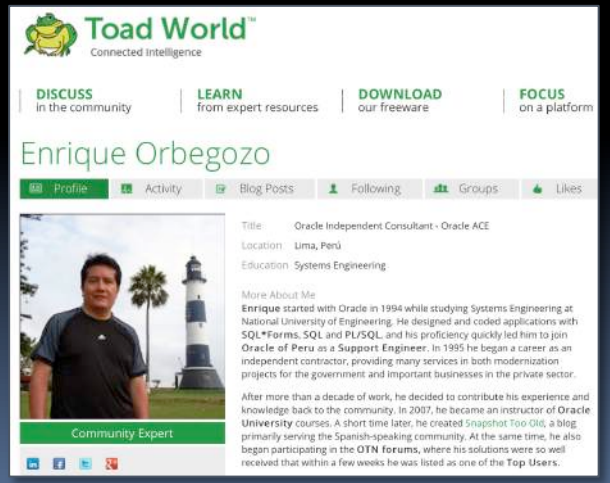
TECHNOLOGY NETWORK
Oracle ACE
2009
Enrique Orbegozo


ORACLE MAGAZINE
Close Encounters
Three peers extol the virtues of in-person classes and conf
DOMINIC DELMOLINO
ORACLE ACE
Company: Agilex Technologies, a technology solution provider serving the national security, healthcare, and public sectors
Job title/description: Vice president of data architecture and engineering, responsible for reviewing and supporting Agilex projects at customer locations
ENRIQUE ORBEGOZO
ORACLE ACE
Company: Self-employed
Job title/description: Independent Oracle consultant, responsible for database upgrade and migration, database and application tuning, incident resolution, and design and configuration of high-availability solutions
Location: Lima, Peru


ORACLE
Productos Soluciones Descargas Tienda Soporte Capacitación Socios Acerca de OTN
¿Cómo mover ocr y vdisk a nuevo disk array?
Por Enrique Orbegozo
Publicado en diciembre 2012
rac1
rac2
rac3
rac4
OCR
LUN1 LUN2 LUN3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Title Oracle Independent Consultant - Oracle ACE
Location Lima, Perú
Education Systems Engineering
More About Me
Enrique started with Oracle in 1994 while studying Systems Engineering at National University of Engineering. He designed and coded applications with SQL*Forms, SQL and PL/SQL, and his proficiency quickly led him to join Oracle of Peru as a Support Engineer. In 1995 he began a career as an independent contractor, providing many services in both modernization projects for the government and important businesses in the private sector.
After more than a decade of work, he decided to contribute his experience and knowledge back to the community. In 2007, he became an instructor of Oracle University courses. A short time later, he created Snapshot Too Old, a blog primarily serving the Spanish-speaking community. At the same time, he also began participating in the OTN forums, where his solutions were so well received that within a few weeks he was listed as one of the Top Users.
Community Expert

Agenda

- Some theory
- Recommended patches
- Patching methods
- Minimal downtime patching
- Conclusions & recommendations
- Q&A

Why patch?

To correct bugs!

- Performance
- Security
- Stability

Why is patching painful?

- Testing required
- Can break things
- Can introduce more bugs
- Downtime!

Oracle Patch Delivery Methods

- Security Patch Update (SPU)
- Patch Set Update (PSU)
- Bundle Patch (BP)
- Interim Patches (IP)

	Interim Patch	PSU, SPU, Bundle
Functional	Functional regression tests for the specific area of database functionality affected by the patch.	Complete set of functional regression tests (tests all areas of database functionality).
	Verification that the fix addresses the known symptoms of the bug issue.	
Stress	None.	Subset of stress tests based on patch content.
Performance	None.	Workload based performance regression testing.
Other	Install testing in unpatched environment.	Install testing in clean environment.
	Installation using EM CC patching.	"Upgrading" from previous PSU, SPU, bundles.
		Installation using EM CC patching.

Patching strategy

- Apply newest available Patch Set Update (PSU)
- Apply Interim Patches for known issues

	Interim Patch	PSU, SPU	Bundle Patch
Install / Rollback	Yes	Yes	Yes
Bug Fix Verification	Where possible and relevant		
Admin Activities	Not required	Basic	Basic
Application Function	Not required	Core applications only	Core and non-core applications
Application Performance	Not required	Not required	Not required

PSU schedule

Released on the Tuesday closest to the 17th day of January, April, July and October

- 20 January 2015
- 14 April 2015
- 14 July 2015
- 20 October 2015
- 19 January 2016
- 19 April 2016
- 19 July 2016

Recommended Patches:PSU

MOS Note 756671.1

12.1.0.2 Current Recommended Patches

Patch Set Updates

Document	Description	Rolling RAC	Patch Download
Note:21150768.8	Combo of 12.1.0.2.4 OJVM PSU and 12.1.0.2.4 DB PSU (Jul 2015)	Part	Patch:21150768
Note:21068507.8	Oracle JavaVM Component 12.1.0.2.4 Database PSU (Jul 2015) (OJVM PSU)	No	Patch:21068507
Note:20831110.8	12.1.0.2.4 (Jul 2015) Database Patch Set Update (DB PSU)	Yes	Patch:20831110

Grid Infrastructure

Document	Description	Rolling RAC	Patch Download
Note:21150782.8	Combo of 12.1.0.2.4 OJVM PSU and 12.1.0.2.4 GI PSU (Jul 2015)	Part	Patch:21150782
Note:20996835.8	12.1.0.2.4 (Jul 2015) Grid Infrastructure Patch Set Update (GI PSU)	Yes	Patch:20996835

Recommended Patches:Optimizer

No PSU	PSU 1	2	3	4	Bugs Fixed
Patch 19855835 for 12.1.0.2.0					Document 19855835.8 Upgrade slow when reorganizing large stats history tables **NB: Only applicable for upgrades from 11.2.0.3 or below. Apply before running the 12.1.0.2 upgrade script. There is no benefit to applying it later on.**
Patch 21386421 for 12.1.0.2.0					Document 20476175.8 High VERSION_COUNT (in V$SQLAREA) for query with OPT_PARAM('_fix_control') hint
					Document 20807398.8 ORA-600 [kgl-hash-collision] with fix to bug 20465582 installed
Patch 21091518 for 12.1.0.2.0					Document 21091518.8 Extend fix of bug 18304693 to Partition Views

MOS Note 2034610.1 (12.1.0.2)
MOS Note 1645862.1 (11.2.0.4)
MOS Note 1392633.1 (11.2.0.3)
MOS Note 1320966.1 (11.2.0.2)

Recommended Patches:OGG

MOS Note 1557031.1

11.2.0.4 PSU level	OGG RDBMS Patch ID	Patch Description
11.2.0.4.7	Patch:21360686	MERGE REQUEST ON TOP OF DATABASE PSU 11.2.0.4.7 FOR BUGS 2990912 14705949
11.2.0.4.6	Patch:21417957	MERGE REQUEST ON TOP OF DATABASE PSU 11.2.0.4.6 FOR BUGS 16674686 17031322
11.2.0.4.5	Patch:20593645	MERGE REQUEST ON TOP OF DATABASE PSU 11.2.0.4.5 FOR BUGS 17201159 17208934
11.2.0.4.3	Patch:20409915	MERGE REQUEST ON TOP OF DATABASE PSU 11.2.0.4.3 FOR BUGS 15913355 16194160

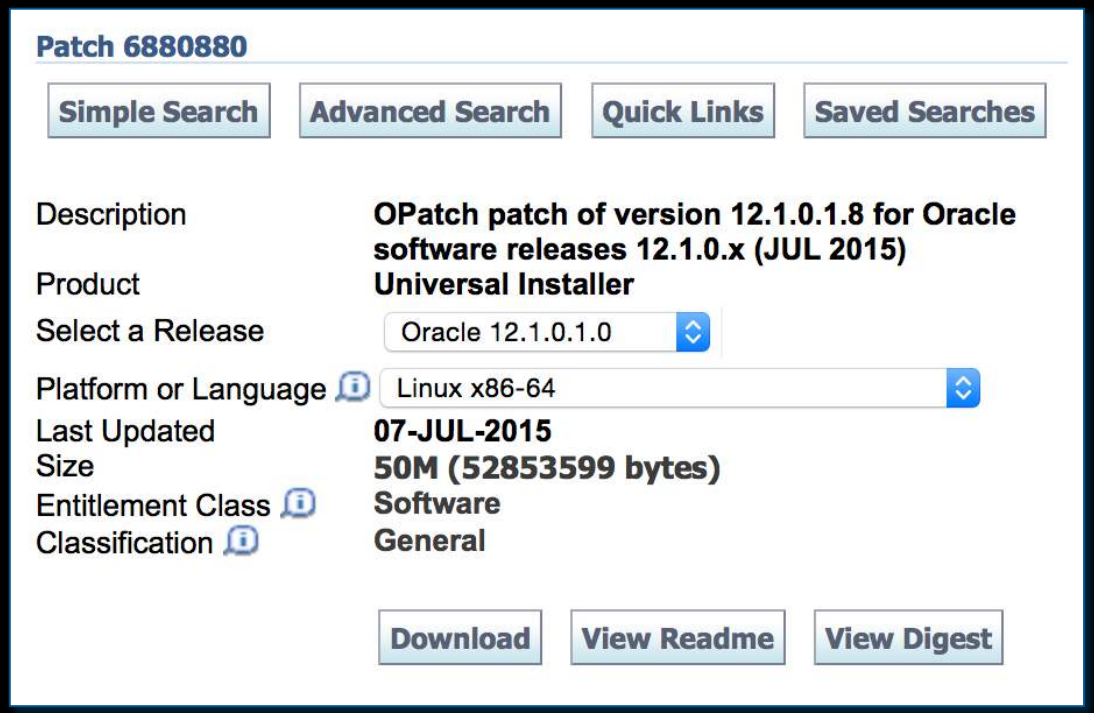
More Recommended Patches

- Recommended Bundle for AIX 11.2.0.4. with Critical Fixes (Doc ID 2022567.1)
- Things to Consider to avoid RDBMS Performance problems on Sparc platforms for 11.2.0.3 and 11.2.0.4 (Doc ID 1680269.1)
- Bug Issues Known to Affect the Shared Pool (Doc ID 102305.1)
- Checklist For Slow Performance Of DataPump Export (expdp) And Import (impdp) (Doc ID 453895.1)

Need new patches?

Release	Patching Ends	Notes and Exceptions*
12.1.0.1	**TBA**	The patching end date for 12.1.0.1 (all editions) will be extended 6 months from the date when 12.1.0.2 for Standard Edition customers is released.
11.2.0.4	**31-Jan-2018**	**HP-UX Itanium: Patching ends Dec 2020**. Beginning Feb 1, 2018, Sev 1 fixes only (no PSU or CPU will be produced). **All other platforms:** Extended Support required starting 1-Feb-2016.
11.2.0.3	**27-Aug-2015**	
11.2.0.2	**31-Oct-2013**	End date extended beyond normal.
11.2.0.1	**13-Sep-2011**	Patch end date for Exadata is 30-Apr-2012
11.1.0.7	**31-Aug-2015**[7]	**HP-UX Itanium - Patching ends Dec 2015.** Beginning Sep 1, 2015 Sev 1 fixes only (no PSU or CPU will be produced). **Extended Support** required starting 1-Sep-2012
11.1.0.6	**18-Sep-2009**	
10.2.0.5	**31-Jul-2015**[7]	**All platforms - standard Extended Support ended 31-Jul-2013.** After that, Limited Extended Support is available from Aug 2013 through July 2015, Sev 1 fixes only (no PSU or SPU will be produced). See Oracle Software Technical Support Policies.

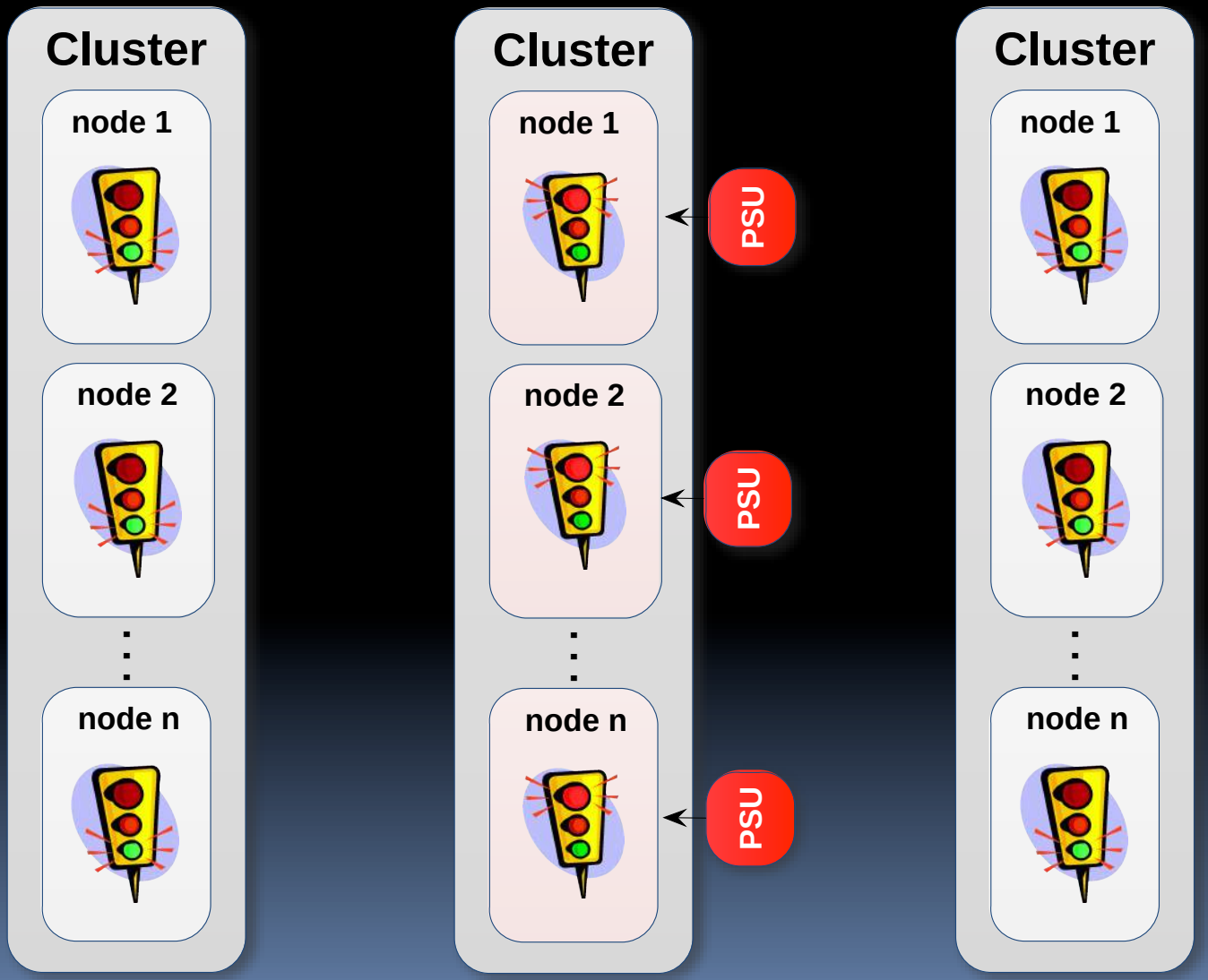
OPatch




```
% mv p6880880_121010_Linux-x86-64.zip $ORACLE_HOME
% cd $ORACLE_HOME
% mv OPatch OPatch_OLD
% unzip p6880880_121010_Linux-x86-64.zip
% $ORACLE_HOME/OPatch/opatch version
```

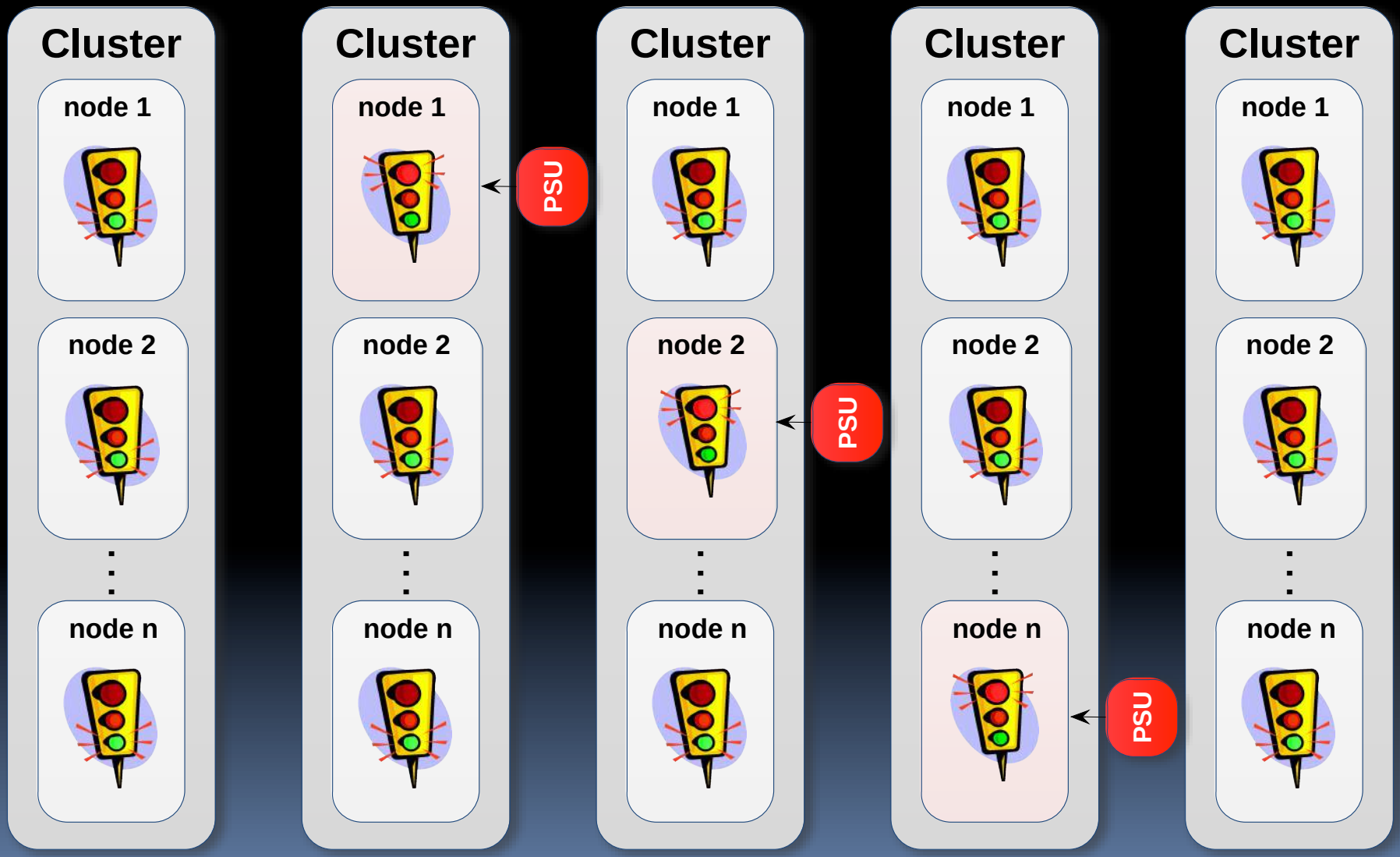
How to apply a patch?

Parallel Patching



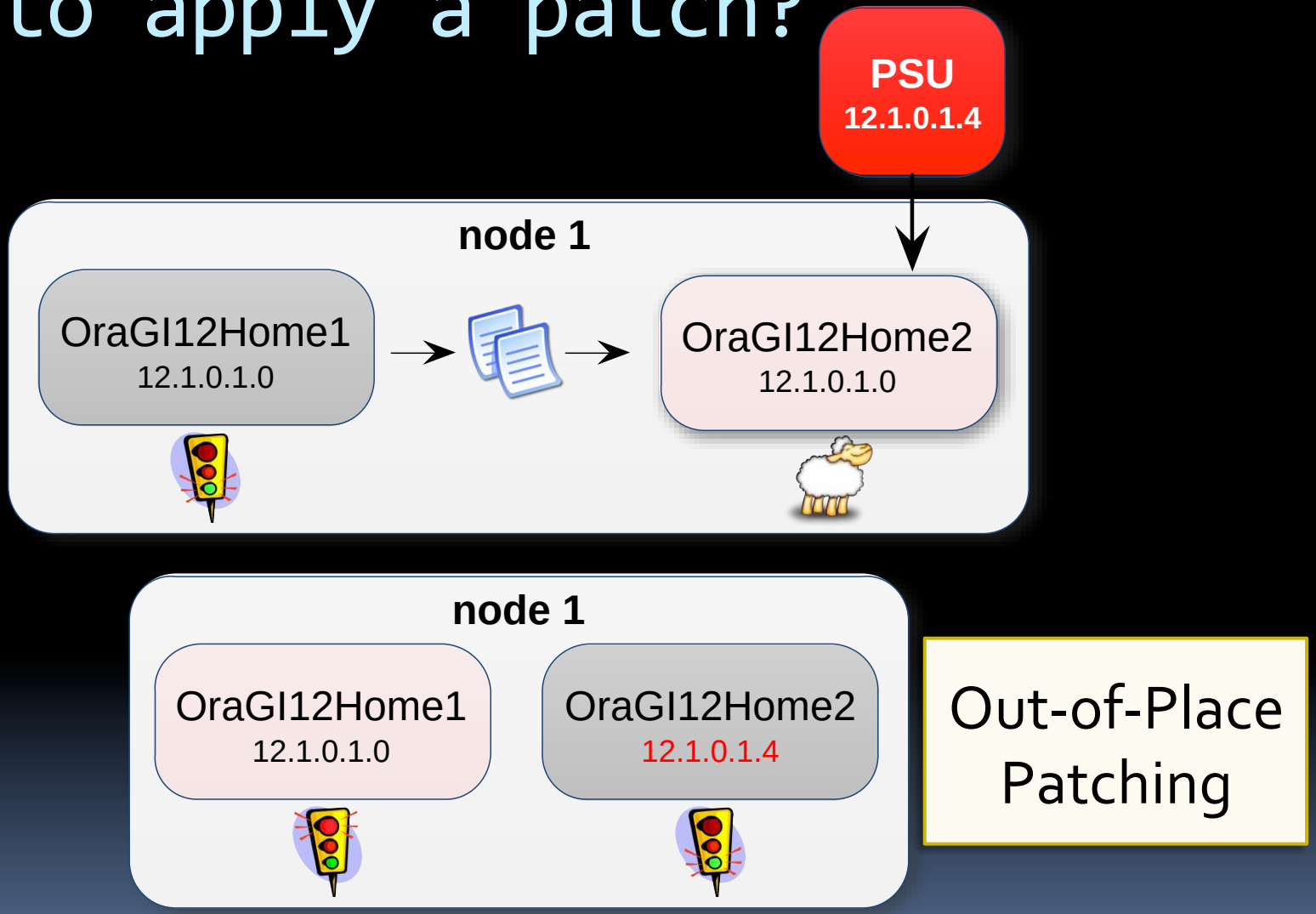
How to apply a patch?

Rolling Patching



How to apply a patch?

How to apply a patch?



Rolling out-of-place patching

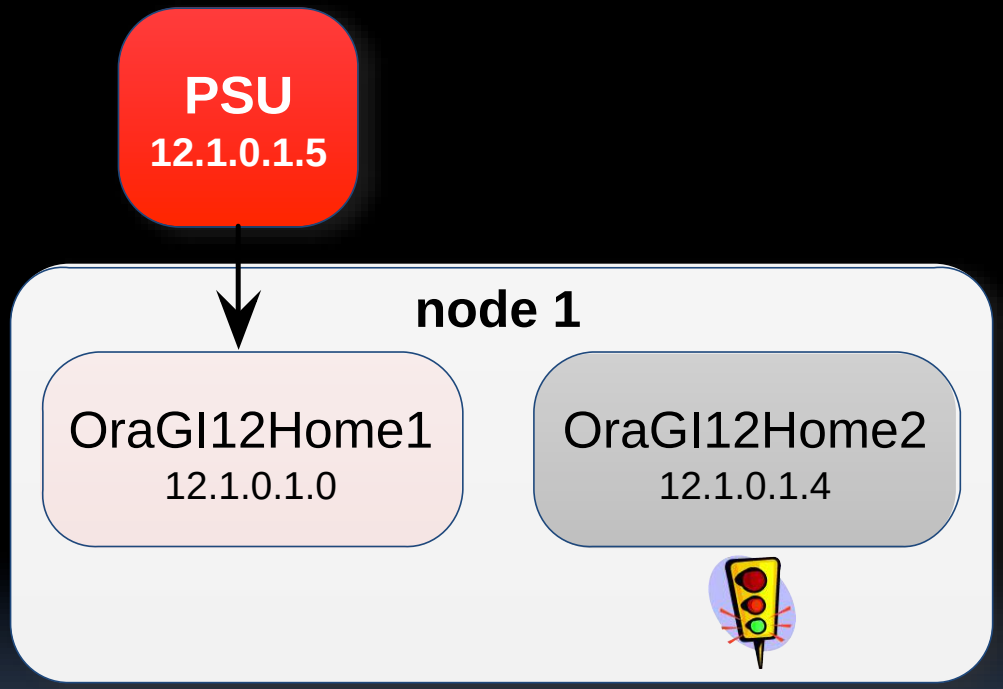
1. Copy software (GI)
2. Unlock new home (GI)
3. Clone new home (GI)
4. Apply PSU -manual (GI)
5. Copy software (DB)
6. Clone new home (DB)
7. Apply PSU -manual (DB)
8. Repeat steps 1-7 on each node

Rolling out-of-place patching

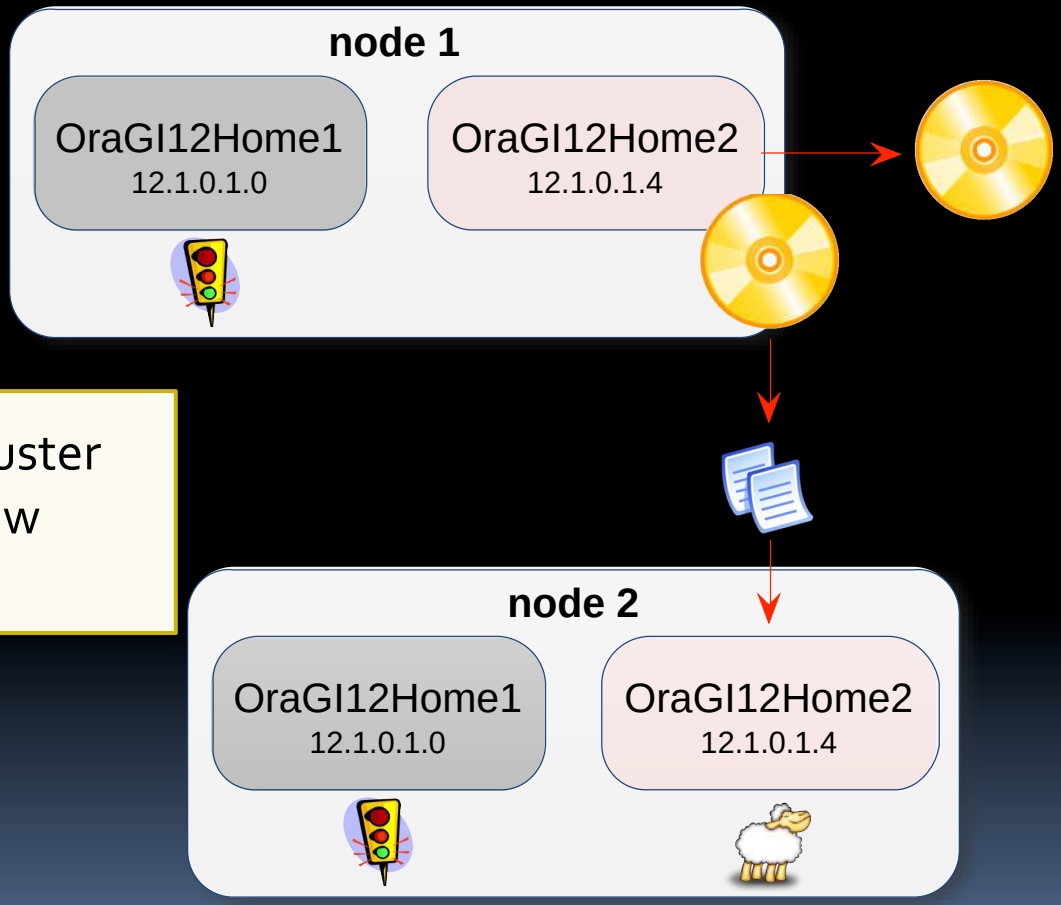
9. First node: stop databases (downtime starts)
10. Switch Grid Infrastructure homes
11. Start databases in new home
12. Repeat steps 9-11 on each node

Patched Cluster !!!

Next patching?



Golden Image



- ✓ Extend Cluster
- ✓ Create New Cluster

Conclusions

Pros:

- Patching performed during daytime hours
- Time to investigate issues
- Rollback by just switching to old home
- Downtime restricted to restart services

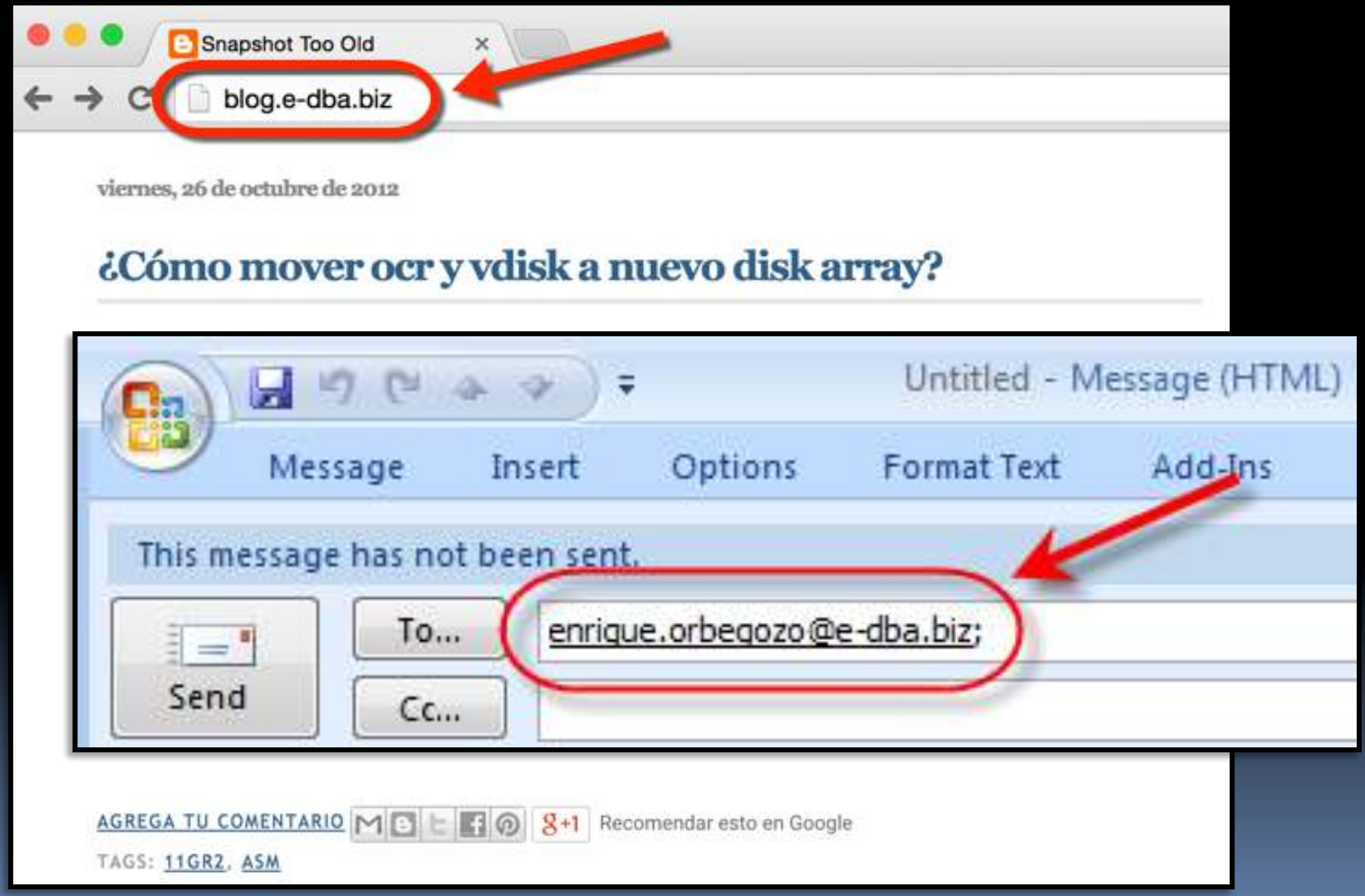
Cons:

- More effort
- Additional disk space

Recommendations

- Apply latest PSU and recommended patches
- Create software filesystem with extra space
- Use VMs to test the patching procedures
- Create Golden Images library
- Use oplan for exact procedure (MOS Note 1306814.1)
- Don't forget:
  - There will not be more patches for versions < 11.2.0.4
  - Upgrade to 12.1.0.2 or 11.2.0.4 to get access to new patches

Thank You!


Snapshot Too Old
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viernes, 26 de octubre de 2012
¿Cómo mover ocr y vdisk a nuevo disk array?
Untitled - Message (HTML)
Message
Insert
Options
Format Text
Add-Ins
This message has not been sent.
Send
To...
Cc...
enrique.orbegozo@e-dba.biz;
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TAGS: 11GR2, ASM