【PSU】AIX Oracle 11g RAC 自动打 GI PSU5 补丁(11.2.0.3.5)

1.1 BLOG 文档结构图

1.2 前言部分

1.2.1 导读和注意事项

各位技术爱好者，看完本文后，你可以掌握如下的技能，也可以学到一些其它你所不知道的知识，~O(∩_∩)O~：

① 升级 PSU 的一般性方法（重点）

② PSU/CPU/PATCHSET 等的一些相关概念

③ 如何查看 oracle 的 PSU，如何在 MOS 上找到想要的 patch 号

Tips：

① 若文章代码格式有错乱 ,推荐使用 QQ、搜狗或 360 浏览器 ,也可以下载 pdf 格式的文档来查看 ,pdf 文档下载地址 :http://yunpan.cn/cdEQedhCs2kFz （提

取码：ed9b ）

② 本篇 BLOG 中命令的输出部分需要特别关注的地方我都用灰色背景和粉红色字体来表示，比如下边的例子中，thread 1 的最大归档日志号为 33，thread 2

的最大归档日志号为 43 是需要特别关注的地方；而命令一般使用黄色背景和红色字体标注；对代码或代码输出部分的注释一般采用蓝色字体表示。

```
List of Archived Logs in backup set 11
Thrd Seq    Low SCN   Low Time             Next SCN   Next Time
---- ------- ---------- -------------------- ---------- ---------
1    32      1621589   2015-05-29 11:09:52 1625242    2015-05-29 11:15:48
1    33      1625242   2015-05-29 11:15:48 1625293    2015-05-29 11:15:58
2    42      1613951   2015-05-29 10:41:18 1625245    2015-05-29 11:15:49
2    43      1625245   2015-05-29 11:15:49 1625253    2015-05-29 11:15:53




[ZHLHRDB1:root]:/>lsvg -o
T_XDESK_APP1_vg
rootvg
[ZHLHRDB1:root]:/>
00:27:22 SQL> alter tablespace idxtbs read write;


====》2097152*512/1024/1024/1024=1G
```

本文如有错误或不完善的地方请大家多多指正，ITPUB 留言或 QQ 皆可，您的批评指正是我写作的最大动力。

1.2.2　　相关参考文章链接

【MOS】PSU 等 补丁号码快速参考 (ID 1922396.1 和 756671.1) ： http://blog.itpub.net/26736162/viewspace-2096650/

Oracle 11g 升级 PSU 详细步骤：http://blog.itpub.net/26736162/viewspace-2096696/

如何获取 oracle 的补丁通告信息以及下载补丁 ： http://blog.itpub.net/26736162/viewspace-2096695/

1.2.3　　本文简介

　　工作中一直没碰到过打 PSU 的问题，最近系统要求安装的库必须和生产库一致，必须打 PSU，那么就顺便学习了一下 PSU 的安装，记下来分享给大家。

1.3　相关知识点扫盲(摘自网络+MOS)

每个数据库版本都有自己的 PSU，PSU 版本号体现在数据库版本的最后一位，MOS 站点中 Oracle Recommended Patches ── Oracle Database [ID 756671.1] 文档中查到各个

产品版本最新的 PSU。

PSU (Patch Set Updates)
PSU(补丁集更新)是累积型补丁──即某个特定的补丁集，它先前所有的 PSU 被包含于最近的 PSU 中，例如：11.2.0.3.11 的所有 bug 修复被包含于 11.2.0.3.12 中。PSU 包含推荐的 bug 修复，

及最近的 CPU，PSU 每个季度发布一次。

Oracle 对于其产品每个季度发行一次的补丁包，包含了 bug 的修复。Oracle 选取被用户下载数量多的，并且被验证过具有较低风险的补丁放入到每个季度的 PSU 中。在每个 PSU 中不但包含 Bug 的修复而且还包含了最新的 CPU。

CPU: Critical Patch Update   （SPU: Security Patch Update）

Oracle 对于其产品每个季度发行一次的安全补丁包，通常是为了修复产品中的安全隐患。

名称	说明
Release	¤ 标准产品发布。如 Oracle Database 10g Release 2 的第一个发行版本为 10.2.0.1,可以在 OTN、edelivery 等站点上公开下载
Patch Set Release	¤ 就是早期大家常说的 PSR。这是在主版本号上发布的补丁集，修复了较多的 Bug，可能会包含一些增强功能（Enhancement）。比如 11.2.0.1 是一个主版本，那么 11.2.0.2、11.2.0.3 就是 2 个不同的 Patch set。这种补丁集经过了严格的集成测试，也是累积型的。所以推荐安装最新的 Patch Set。
Patch Set Update	¤ 就是 DBA&DMA 们常论道的 PSU。Oracle 选取在每个季度用户下载数量最多，并且得到验证具有较低风险的补丁放入到每个季度的 PSU 中，修复比较严重的一些问题，包含每个季度的 CPU，是累积型的。虽然在描述 PSU 的时候会用到数据库版本第 5 位，比如 Database PSU 11.2.0.3.5,但实际上打完 PSU 后并不会真正改变数据库的版本,从 v$version 中看到的版本还是 4 位的(11.2.0.3.0)第 5 位仍然是 0。 ¤ 注意 (1)Windows 上没有 CPU 和 PSU，对于 Windows 和 Exadata，Oracle 使用 Bundle Patch 代替 PSU，Bundle Patch 会包含 PSU 的内容 (2)从 11.2.0.2 版本开始,一个新的补丁策略被引入,11.2.0.1 之后发布的 Patch Set 本身就是一个完整的安装包,不再需要基础的 Release 版本安装。
Critical Patch Update	¤ 这个指的就是 CPU 补丁。每季度发布一次，用来修复安全方面的一些补丁，是累积型的。目前(2012 年 10 月）已经更名为 Security Patch Update (SPU) ¤ 这类问题本来不属于软件错误,在正常使用中不会出现任何问题。但是别有用心的人可以通过运行非常精巧设计的代码 ，绕过数据库系统的安全管理机制,达到非授权存取的目的。
Interim Patch/One-OffPatch	¤ 是我们常说的小补丁，为了修复某(几)个 Bug 而发布的补丁。这种补丁推荐在测试库上测试无误后再安装在生产库上。
Merged Patch	¤ 合并的补丁。当几个小补丁之间有冲突，不能同时安装的时候，需要提供这种 Merged Patch。补丁冲突主要是由于 2 个或者多个补丁修改同一个文件，但是修改的内容是不同的。
Bundle Patch(BP)	¤ 补丁集，修复多个 Bug。在 Windows 平台上的 Oracle 没有小补丁，只有这种 Bundle Patch。 这种累积型的补丁集会周期性的发布（至少每季一次),也就是每个 Bundle Patch 会包含之前所有的 Bundle Patch。比如 Windows Bundle Patch 16，它会包含之前所有 15 个 Bundle Patch，所以我们总是推荐安装最新的 Bundle Patch。Oracle 的集群软件和数据库软件的 Window Bundle Patch 是同一个，比如 Windows Bundle Patch 16(补丁号 16167942，既可以打在集群上，也可以打在数据库上）。 ■要了解 Windows Bundle Patch 的补丁号，可以参考 MOS 文档： Note 161549.1 Oracle Database, Networking and Grid Agent Patches for Microsoft Platforms ■这部分有待补充
Diagnostic Patch	诊断补丁。顾名思义，这类补丁不是用来解决问题的，而是用来寻找问题的原因的。这类补丁只在 Oracle 技术支持部门要求安装时

名称	说明
	才需要安装。在得到需要的诊断信息后 ，应立即卸载这一补丁。
Composite Patch	¤ 从 2012 年 4 月份的 Database PSU 11.2.0.3.2 和 11.2.0.2.0.7 开始 ,推出一种新的概念叫 Composite Patches。这是一种新型的补丁包，它不同于其他的累积型补丁包。如果是第一次安装 Composite Patches，那么该 Composite Patches 所包括的全部补丁都会被安装，后续安装的 Composite Patches，只会安装对比前一次 Composite Patches 有变化的部分和新增加的补丁。 ¤ Composite Patche 的改进包括减少补丁安装时间，减少回滚以前应用的 overlay patches 的需要。 新的 Composite Patches 格式，使以前 PSU 应用的 overlay patches 和新安装的 PSU 并存成为可能。更多信息 ,请参考 Document 1376691.1 'Composite Patches for Oracle Products' 和 `Oracle Database Support NEWS April edition`. ■ PSU 就是一种 Composite Patch ¤第一次安装的 composite patch 为 PSU 11.2.0.3.5 : Installed Top-level Products (1): Oracle Database 11g 11.2.0.3.0 There are 1 products installed in this Oracle Home. Interim patches (1) : Patch 14727310: applied on Fri Dec 09 10:59:28 EST 2011 Patch Description: "Database Patch Set Update : 11.2.0.3.5 (14727310)" <==变化和新增的部分 Created on 14 Jan 2013, 07:56:00 hrs PST8PDT Sub-patch 14275605; "Database Patch Set Update : 11.2.0.3.4 (14275605)"<==Sub-patch Sub-patch 13923374; "Database Patch Set Update : 11.2.0.3.3 (13923374)"<==Sub-patch Sub-patch 13696216; "Database Patch Set Update : 11.2.0.3.2 (13696216)"<==Sub-patch Sub-patch 13343438; "Database Patch Set Update : 11.2.0.3.1 (13343438)"<==Sub-patch Bugs fixed: 13566938, 13593999, 10350832, 14138130 … ¤安装下一个 composite patch PSU 11.2.0.3.6 时，只需要安装有变化的部分和新增加的 patches，不需要再安装之前已经安装的 11.2.0.3.1 、11.2.0.3.2,11.2.0.3.4 和 11.2.0.3.5，之前已经安装的这部分就称为 sub-patch： Patch 16056266: applied on Sun Apr 28 12:42:57 CST 2013 Patch Description: "Database Patch Set Update : 11.2.0.3.6 (16056266)" <==变化和新增的部分 Created on 12 Mar 2013, 02:14:47 hrs PST8PDT Sub-patch 14727310; "Database Patch Set Update : 11.2.0.3.5 (14727310)"<==Sub-patch Sub-patch 14275605; "Database Patch Set Update : 11.2.0.3.4 (14275605)"<==Sub-patch Sub-patch 13923374; "Database Patch Set Update : 11.2.0.3.3 (13923374)"<==Sub-patch Sub-patch 13696216; "Database Patch Set Update : 11.2.0.3.2 (13696216)"<==Sub-patch Sub-patch 13343438; "Database Patch Set Update : 11.2.0.3.1 (13343438)"<==Sub-patch Bugs fixed: 13616375, 14035825, 12861463, 12834027, 15862021, 13632809, 13377816 … ¤在 MOS 文档中有针对 Composite Patches 详细的说明：Note 1376691.1 Composite Patches for Oracle Products

1.3.1   Upgrade 与 Update

首先，我们针对所使用的数据库可能会进行如下措施，版本升级或补丁包升级，那何为版本升级、何为补丁包升级呢？

比如我的当前数据库是 10GR2 版本，但公司最近有个升级计划，把这套数据库升级到当下最新的 11GR2，这种大版本间升级动作即为 Upgrade。根据公司计划在原厂工程师和 DBA 共同努力下，数据库已升级到 11GR2，当下版本为 11.2.0.3.0。这时候原厂工程师推荐把最新的 PSU 给打上，获得老板的批准之后，我们又把数据库进行补丁包的升级，应用了 PSU Patch14727310 之后，数据库版本现在成为 11.2.0.3.5，这个过程即是 Update。

不得不再次提醒，Upgrade 和 Update 都希望在获得原厂的支持下进行，尤其是 Upgrade，这对于企业来说是个非常大的动作！

1.3.2   MOS 对概念的解释

Generally patches for Clusterware, Grid Infrastructure and/or the Database are catagorized into the following:

- Patchsets
- Patchset Updates (PSUs)
- Critical Patch Updates (CPUs)
- Bundle Patches
- Interim (one-off) Patches

1.3.2.1 Patchsets Q&A

一、   What's a Patchset?

Compared to all other patch types, a Patchset is released the least frequently. It contains fixes for most known issues for the release and potentially also introduces new features. A patchset is cumulative and when applied it changes the fourth digit of the product release banner - for example, 10.2.0.5 is 4th patch set for 10.2, and 11.2.0.2 is the 1st patch set for 11.2.

A patchset must be installed via the Oracle Universal Installer (OUI) and is generally considered an "upgrade".

Prior to 11gR2, a base release had to be installed before a patchset could be applied. For example, to install 10.2.0.5 on Linux, the 10.2.0.1 base release has to be installed first and then upgraded to 10.2.0.5.

Prior to 11gR2, the same patchset download is used to patch the Clusterware, ASM and Database homes.   For example, Patch 8202632 is the 10.2.0.5 patchset, this same patch (Patch 8202632) will be used to patch the 10.2.0.x Clusterware, 10.2.0.x ASM and 10.2.0.x Database to 10.2.0.5.

Starting with 11gR2, patchset releases are now full releases and no longer require a "base" release, e.g. 11.2.0.2 can be installed directly without having to install 11.2.0.1 first.

Prior to 11gR2 - even though the CRS and RDBMS base releases were provided on separate media (downloadable zip file or separate DVD/CD) - the patchsets for both products were delivered as one i.e. the same patchset could be applied to the CRS as well as the RDBMS home.

Starting with 11gR2 the patchsets for Grid Infrastructure and RDBMS are delivered separately (as they are full releases).

Clusterware patchsets can be applied in a rolling fashion, while database patchsets cannot. For example, you can rolling upgrade clusterware to 11.2.0.2, but you have to shutdown database on all nodes to upgrade to database 11.2.0.2.

1.3.2.2 Patch Set Updates (PSUs) Q&A

一、 What's a Patch Set Update (PSU)?

As the name implies PSUs are patches that are applied on top of a given patchset release. They are released on a quarterly basis and contain fixes for known critical issues for the patchset. PSUs are subject to thorough testing and do not include changes that would alter the functionality of the software.   With this in mind, PSUs are designed to provide "low risk" and "high value" allowing for customers to more easily adopt proactive patching strategies. Consider the following PSU facts:

- All PSUs are installed via "opatch" and are not considered an "upgrade".

- Database PSUs always contain the CPU for the respective quarter that the PSU is released in. PSUs and CPUs are NOT compatible meaning if you apply the 11.2.0.2.2 Database PSU and then want to apply the 11.2.0.2 July CPU this would result in the rollback of the 11.2.0.2.2 Database PSU. That said, once a PSU patching strategy is adopted it must be maintained.

- Independent PSUs are released for both the Database and Clusterware or Grid Infrastructure installations.

  o Clusterware PSUs (pre-11.2) are refered to as CRS PSUs
  o Grid Infrastructure PSUs are refered to as GI PSUs

    ▪ GI PSUs do contain the Database PSU for the corresponding release, e.g. 11.2.0.2.3 GI PSU contains the 11.2.0.2.3 Database PSU

  o Database PSUs hold true to their name

- Both Clusterware/Grid Infrastructure and Database PSU patches are cumulative. Clusterware PSU refers to CRS PSU for pre-11gR2 and GI PSU for 11gR2.

- GI PSUs are always cumulative meaning that you can apply higher version GI PSU directly without having to apply a lower version one first. For example, the 11.2.0.2.2 GI PSU can be applied to a 11.2.0.2 home without having to apply GI PSU 11.2.0.2.1 first.
- Database PSUs can be subject to overlay PSU packaging. In these cases, the PSUs are still cumulative, but a higher PSU may require a lower PSU to be applied first; for example, to apply database PSU 10.2.0.4.7, you must apply database PSU 10.2.0.4.4 first. If a previous PSU is a prerequisite to a later PSU the requirement will be clearly documented in the PSU readme.

- For more information on PSUs please review Document 854428.1.

二、 **What's the PSU release schedule?**

Generally speaking PSU are released on quarterly basis for both Clusterware/Grid Infrastructure and Database. There's cases where a Clusterware PSUs is not released for corresponding Database PSU. For example, there's database PSU 10.2.0.5.4 but no CRS PSU 10.2.0.5.4.

三、 **Will the 5th digit of the version be changed after PSU is applied?**

A PSU will not physically update the 5th-digit of the release information, the updates to the 5th digit in the release are for Documentation purposes only. So the third GI PSU that was released for 11.2.0.2 will have a documentation version of 11.2.0.2.3. You will NOT see this change reflected in the actual software version if you query it from the inventory, clusterware or database.

四、 *What's included in a GI PSU ?*

Unlike other Grid Infrastructure patches (discussed later), 11gR2 GI PSUs contains both GI PSU and Database PSU (YES, both GI and DB PSU) for a particular quarter. For example, 11.2.0.2.2 GI PSU contains both the 11.2.0.2.2 GI PSU and the 11.2.0.2.2 Database PSU.

You are able to take note of this when you extract a GI PSU, you will see 2 directories (named with the Patch number) one for the GI PSU and one for the RDBMS PSU.

How do I find out whether a bug is fixed in a Clusterware or Grid Infrastructure PSU ? To find out, check the patch readme and the following notes:

Document 405820.1 - 10.2 CRS PSU Known issues

Document 810663.1 - 11.1 CRS PSU Known issues

Document 1082394.1 - 11.2.0.1 GI PSU Known issues

Document 1272288.1 - 11.2.0.2 GI PSU Known Issues

Document 1508641.1 - 11.2.0.3.x Grid Infrastructure Bundle/PSU Known Issues

Once the GI PSU is applied, "opatch lsinventory" will show that both GI PSU and DB PSU are applied, i.e.:

```
Interim patches (2) :

Patch   9654983          : applied on Thu Feb 02 20:36:47 PST 2012
Patch   9655006          : applied on Thu Feb 02 20:35:53 PST 2012
```

And "opatch lsinventory -bugs_fixed" will list each individual bugs that have been fixed by all installed patches, i.e.:

```
List of Bugs fixed by Installed Patches:

Bug            Fixed by   Installed at                        Description
               Patch
___            _____   _____                        _____


7519406        9654983    Thu Feb 02 20:36:47 PST 2012        'J000' TRACE FILE REGARDING GATHER_STATS_JOB INTER
..
9783609        9655006    Thu Feb 02 20:35:53 PST 2012        CRS 11.2.0.1.0 Bundle
```

五、   *Can a Database PSU be applied to a clusterware home?*

No, only CRS PSUs, GI PSUs or other Clusterware/GI patches can be applied to a Clusterware/GI home.

1.3.2.3 Critical Patch Updates (CPUs) Q&A

一、   *What are Critical Patch Updates (CPUs)?*

CPU Patches are collection of high-priority fixes for security related issues and are only applicable to the Database Home (and pre-11.2 ASM Home(s)). CPUs are released quarterly on the same cycle as PSUs and are cumulative with respect to prior security fixes but may contain other fixes in order to address patch conflicts with non-security patches. PSUs always contain the CPU for that respective quarter. PSUs and CPUs are NOT compatible meaning if you apply the 11.2.0.2.2 Database PSU and then want to apply the 11.2.0.2 July CPU this would result in the rollback of the 11.2.0.2.2 Database PSU. That said, once a PSU patching strategy is adopted it must be maintained. PSU patching is preferred over CPU Patching.

1.3.2.4 Bundle Patches Q&A

一、 **What's the difference between a Clusterware/Grid Infrastructure bundle patch and a PSU?**

A Clusterware or Grid Infrastructure (GI) patch can be in the form of bundle or Patchset Update (PSU). The biggest difference between a GI/Clusterware bundle and a PSU is that PSUs are bound to a quarterly release schedule while a bundle may be released at any time throughout the course of a given quarter. If a GI/Clusterware bundle is released in a given quarter, the fixes in that bundle will be included in the PSU that will be released for that quarter. This concept allows for development to provide critical bug fixes in a more granular timeline if necessary.

1.3.2.5 Interim (one-off) Patch Q&A

一、 **What's an interim patch (one-off patch)?**

An interim patch contains fixes for one or in some cases several bugs (merge patch).

Clusterware interim patches are rare, they usually are build on top of the latest PSU (at the time) and include the entire PSU they were built on.

The same does not hold true for database interim patches, they usually do not include a PSU.

An interim clusterware patch on top of a PSU includes the PSU, for example, 11.2.0.2.2 patch 12647618 includes 11.2.0.2 GI PSU2

(11.2.0.2.2). But the same is not true for database interim patch, for example, 11.2.0.2.2 database patch 11890804 can only be applied on top of a 11.2.0.2.2 database home.

1.3.2.6 General Patch Q&A

一、 What's the difference between Clusterware/Grid Infrastructure patches and Database patches?

Generally speaking Clusterware/Grid Infrastructure patches modify files that belong to the Clusterware or Grid Infrastructure product, while Database patches change files that belong to the database product. As they apply to different sets of files, they do not conflict with each other.

Please note:

- "files" in this context can refer to binaries/executables, scripts, libraries etc
- Clusterware files can reside in all types of Oracle software homes like clusterware home, database home and ASM home
- Prior to 11gR2, RDBMS files reside in DB/ASM homes only, while with 11gR2 RDBMS files will also reside in the GI home (as ASM is now part of GI)
- A GI PSU is a special type of clusterware patch as it also includes a database PSU and modifies database binaries.

1.3.3 安装 PSU 的一般性步骤

每个 PSU 安装包中都包含一个 README.html 或 README.TXT 文档，其中描述了如何安装该 PSU，有些 PSU 是可以直接安装的，而有些 PSU 则必须要求安装了上一个版本的 PSU 之后才能继续安装。比如对于 10.2.0.4 版本的数据库来说，PSU 10.2.0.4.4 可以直接安装在最原始的 10.2.0.4.0 版本中，而最新的 PSU 10.2.0.4.8 则必须要求先安装 10.2.0.4.4。这些信息在 README.html 中都可以找到，所以请仔细阅读该文档。

通常安装 PSU 是比较简单的，步骤如下：

1）安装 PSU 需要使用到 opatch，在 README.html 中有描述该 PSU 需要的最低版本 opatch，如果当前 opatch 版本过低，则需要先下载 Patch 6880880，该 Patch 中包含最新的 opatch，只需要解压覆盖原先的$ORACLE_HOME/OPatch 目录即可。

查看当前的 opatch 版本，可以使用 opatch version 命令。

```
$ opatch version
Invoking OPatch 10.2.0.5.2
OPatch Version: 10.2.0.5.2
OPatch succeeded.
```

2）安装 PSU，请仔细阅读 README.html，确认安装命令，通常是简单的 opatch apply。

$opatch apply

3）更新数据库，将修改过的 SQL 文件应用到数据库中，很多 DBA 在执行完上述安装命令以后就不再进行这一步，那么实际上 PSU 是没有完整安装的。

cd $ORACLE_HOME/rdbms/admin
sqlplus / as sysdba
SQL> STARTUP
SQL> @catbundle.sql psu apply
SQL> QUIT

注意：如果 PSU 是 overlay PSU，比如 10.2.0.4.8，则需要执行@catbundle.sql opsu apply，同样这些在 README.html 中都有详细描述。

1.3.4　如何确认当前数据库已经安装了什么 PSU/CPU？

数据库版本 sqlplus -v
检查数据库 PSU 号命令为 su - oracle -> opatch lsinventory

集群数据库

10205 版本，CRS 为 PSU2，补丁号为 9952245 | DB 有 PSU3，补丁号为 11724962、DB 有 PSU6，补丁号为 13343471、DB 有 PSU7，补丁号为 13632743

10205 版本单库无 CRS，只有 DB 的 PSU，如：DB 有 PSU3，补丁号为 11724962、DB 有 PSU6，补丁号为 13343471、DB 有 PSU7，补丁号为 13632743

11G 单库或集群都有 GI 和 DB PSU,opatch lsinventory 显示具体的 PSU 号，如:

```
--------------------------------------------------------------------------------------
Patch    13923374      : applied on Tue Sep 04 10:53:32 GMT+08:00 2012
Unique Patch ID:   14912546
Patch description:    "Database Patch Set Update : 11.2.0.3.3 (13923374)"   ---->DB PSU3 补丁
Sub-patch    13696216; "Database Patch Set Update : 11.2.0.3.2 (13696216)" ---->DB PSU2 补丁
Sub-patch    13343438; "Database Patch Set Update : 11.2.0.3.1 (13343438)" ---->DB PSU1 补丁


Patch    13919095      : applied on Tue Sep 04 10:50:02 GMT+08:00 2012
Unique Patch ID:   14912546
Patch description:    "Grid Infrastructure Patch Set Update : 11.2.0.3.3 (13919095)" ---->GI PSU3 补丁
--------------------------------------------------------------------------------------
```

上面的例子是 11203 版本的集群,DB 安装了 PSU1、PSU2、PSU3，取最大 PSU 号，即 DB 为 PSU3，PSU3 包括 PSU2、PSU1，GI 为 PSU3

不同的版本类推即可！！！

```
opatch lsinventory -bugs_fixed | grep 'PSU'
opatch lsinv
opatch lspatches

[ZFLHRDB1:grid]:/home/grid>opatch lspatches
13343438;Database Patch Set Update : 11.2.0.3.1 (13343438)
13348650;Grid Infrastructure Patch Set Update : 11.2.0.3.1 (13348650)
[ZFLHRDB1:grid]:/home/grid>

col action_time   for a30
col action       for a10
col namespace     for a10
col version      for a10
col bundle_series for a10
col comments     for a30

SELECT to_char(action_time, 'YYYY-MM-DD HH24:MI:SS') action_time,
     action,
     namespace,
     version,
     id,
```

```
    bundle_series,
    comments
FROM dba_registry_history D;
```

第 2 章　　PSU 升级正文部分

2.1 准备工作

2.1.1　　数据库环境

项目	SOURCE DB	PSU DB
db 类型	rac	rac
db version	11.2.0.3.0	11.2.0.3.5
grid version	11.2.0.3.0	11.2.0.3.5
opatch version	11.2.0.1.7	11.2.0.3.12
db 存储	ASM	ASM

主机 IP 地址/hosts 配置	33.155.174.171　　ZHLHRDB1 33.155.174.172　　ZHLHRDB2 33.155.174.173　　ZHLHRDB1-vip 33.155.174.174　　ZHLHRDB2-vip 33.155.174.175　　ZHLHRDB-scan 133.155.174.171　ZHLHRDB1-priv 133.155.174.172　ZHLHRDB2-priv	33.155.174.171　　ZHLHRDB1 33.155.174.172　　ZHLHRDB2 33.155.174.173　　ZHLHRDB1-vip 33.155.174.174　　ZHLHRDB2-vip 33.155.174.175　　ZHLHRDB-scan 133.155.174.171　ZHLHRDB1-priv 133.155.174.172　ZHLHRDB2-priv
OS 版本及 kernel 版本	AIX 64 位 6100-07-05-1228	AIX 64 位 6100-07-05-1228
OS hostname	ZHLHRDB1 ZHLHRDB2	ZHLHRDB1 ZHLHRDB2
platform_name	AIX-Based Systems (64-bit)	AIX-Based Systems (64-bit)
字符集	ZHS16GBK	ZHS16GBK
compatible	11.2.0.0.0	11.2.0.0.0
归档模式	Archive Mode	Archive Mode
ORACLE_SID	oralhr1/oralhr2	oralhr1/oralhr2
db_name/GLOBAL_DBNAME /db_unique_name	oralhr	oralhr
磁盘组	+DATA1	+DATA1
归档路径	GPFS 方式共享路径： /arch	GPFS 方式共享路径： /arch
ORACLE_HOME	/oracle/app/oracle/product/11.2.0/db	/oracle/app/oracle/product/11.2.0/db
dbid	4080341205	4080341205
注：标红的选项是必填，且需要特别关注的项目		

2.1.2　软件准备

我们需要准备的软件如下表格所示，至于这些内容怎么来的我们不要急，且看下边的 MOS 上下载安装软件：

项目	SOURCE DB

OPatch version	根据 readme.html 要求为 11.2.0.3.0 or later，这里我们下载的是 11.2.0.3.12，,具体文件为 p6880880_112000_AIX64-5L.zip
GI PSU	patch 号为 14727347 (11.2.0.3.5)，具体文件为 p14727347_112030_AIX64-5L.zip

说明：GI PSU 包括 DB PSU,CPU。

2.1.2.1   **MOS 上下载安装软件**

一、   **PSU 下载**

首先我们登录 MOS 网站，https://support.oracle.com，然后查找文档号为：**1922396.1**，找到 11.2.0.3，如下图所示：

Description	PSU	SPU(CPU)	GI PSU	Bundle Patch (Windows 64bit)	Bundle Patch (Windows 32bit)
ªJUL2015	20760997 (11.2.0.3.15)	20803576	20996944 (11.2.0.3.15)	21104036	21104035
APR2015	20299017 (11.2.0.3.14)	20299010	20485830 (11.2.0.3.14)	20420395	20420394
JAN2015	19769496 (11.2.0.3.13)	19854461	19971343 (11.2.0.3.13)	20233168	20233167
OCT2014	19121548 (11.2.0.3.12)	19271438	19440385 (11.2.0.3.12)	19618575	19618574
JUL2014	18522512 (11.2.0.3.11)	18681866	18706488 (11.2.0.3.11)	18940194	18940193
APR2014	18031683 (11.2.0.3.10)	18139695	18139678 (11.2.0.3.10)	18372244	18372243
JAN2014	17540582 (11.2.0.3.9)	17478415	17735354 (11.2.0.3.9)	18075406	17906981
OCT2013	16902043 (11.2.0.3.8)	17082364	17272731 (11.2.0.3.8)	17363850	17363844
JUL2013	16619892 (11.2.0.3.7)	16742095	16742216 (11.2.0.3.7)	16803775	16803774
APR2013	16056266 (11.2.0.3.6)	16294378	16083653 (11.2.0.3.6)	16345834	16345833
JAN2013	14727310 (11.2.0.3.5)	14841409	14727347 (11.2.0.3.5)	16042648	16042647
OCT2012	14275605 (11.2.0.3.4)	14390252	14275572 (11.2.0.3.4)	14613223	14613222
JUL2012	13923374 (11.2.0.3.3)	14038787	13919095 (11.2.0.3.3)	14223718	14223717
APR2012	13696216 (11.2.0.3.2)	13632717	13696251 (11.2.0.3.2)	13885389	13885388
JAN2012	13343438 (11.2.0.3.1)	13466801	13348650 (11.2.0.3.1)	13413168	13413167

或者文档 ID 1922396.1 的文件小麦苗已经下载下来了，大家可以去 http://blog.itpub.net/26736162/viewspace-1624453 进行下载，不止如此，小麦苗还把其他需要阅读的文档也下载下来了，可以去云盘下载。

AIX_README_11202_PSU4.html	2014/4/2 11:07	QQBrowser HT...	132 KB
AIX_README_11202_PSU11.html	2014/3/10 16:08	QQBrowser HT...	112 KB
AIX_README_11203_PSU1.html	2012/9/5 10:55	QQBrowser HT...	106 KB
AIX_README_11203_PSU2.html	2012/9/6 12:24	QQBrowser HT...	107 KB
AIX_README_11203_PSU3.html	2012/8/31 10:57	QQBrowser HT...	109 KB
AIX_README_11203_PSU5.html	2013/1/13 20:07	QQBrowser HT...	54 KB
AIX_README_11203_PSU7.html	2013/7/16 0:53	QQBrowser HT...	59 KB
AIX_README_11203_PSU9.html	2014/7/30 13:46	QQBrowser HT...	59 KB
AIX_README_11204_PSU4.html	2015/1/16 16:40	QQBrowser HT...	57 KB
AIX_README_HP_11203_PSU7.html	2015/8/5 9:06	QQBrowser HT...	57 KB
文档 274526.1 How To Download And Install The ...	2016/5/16 22:27	QQBrowser HT...	2,626 KB
文档 756671.1 Oracle Recommended Patches -- O...	2016/5/16 22:38	QQBrowser HT...	851 KB
文档 966023.1 How to Create an OCM Response f...	2016/5/16 22:35	QQBrowser HT...	837 KB
文档 1339140.1 OPatchPatch QuestionsIssues for ...	2016/5/16 22:23	QQBrowser HT...	910 KB
文档 1494646.1 Patch Installation and Deinstallatio...	2016/5/16 22:30	QQBrowser HT...	2,342 KB
文档 1922396.1 数据库 PSU，SPU(CPU)，Bundle Pa...	2016/5/16 22:33	QQBrowser HT...	1,180 KB

文档 1922396.1 数据库 PSU，SPU(CPU)，Bundle Patches 和 Patchsets 补丁号码快速参考 (文档 ID 1922396.1).mhtml

找到 11.2.0.3.5，由于我们是 rac 环境，所以下载 GI PSU 即可，所以对应的就是 14727347 (11.2.0.3.5)，如上图中所示，点击相应的连接进入下载页面，然后在右边选择我们

需要的平台，AIX 64 位，如下图所示：

文件下载

ℹ 单击各个文件名可下载所选文件。
提示：使用下载管理器　了解详细信息...

☐ 包括先决条件

GRID INFRASTRUCTURE PATCH SET UPDATE 11.2.0.3.5 (INCLUDES DB PSU 11.2.0.3.5) (补丁程序)

💾 p14727347_112030_AIX64-5L.zip　　　　　　　　　　　　　　　　　　　　　　　1.1 GB

| 在新标签页中打开链接(T) |
| 在新窗口中打开链接(W) |
| 在隐身窗口中打开链接(G) |
| 链接另存为(K)... |
| 复制链接地址(E) |
| 检查(N) |

⚠ 此补丁程序已被取代。
原因
Patch 16083653 is super s
替换选项
16083653　　GRID INFRASTR　　　　　　　　　(INCLUDES DB PSU 11.2.0.3.6) 补丁程序
17272731　　GRID INFRASTRU　　　　　　　　(INCLUDES DB PSU 11.2.0.3.8) 补丁程序

共 1 个文件（1 个补丁程序）　　　　　　　　　大约 18 分钟以上（1024 KB/秒）　　　1.1 GB

注：单个补丁程序或产品包可以包含多个文件。

下载文件元数据　　查看摘要详细信息　　WGET 选项

复制连接地址到迅雷或直接点击即可下载。

接下来就是等 PSU 下载完成后，我们用 2345 好压软件或其它解压缩软件打开，把其中的 readme.html 文件先拿出来，
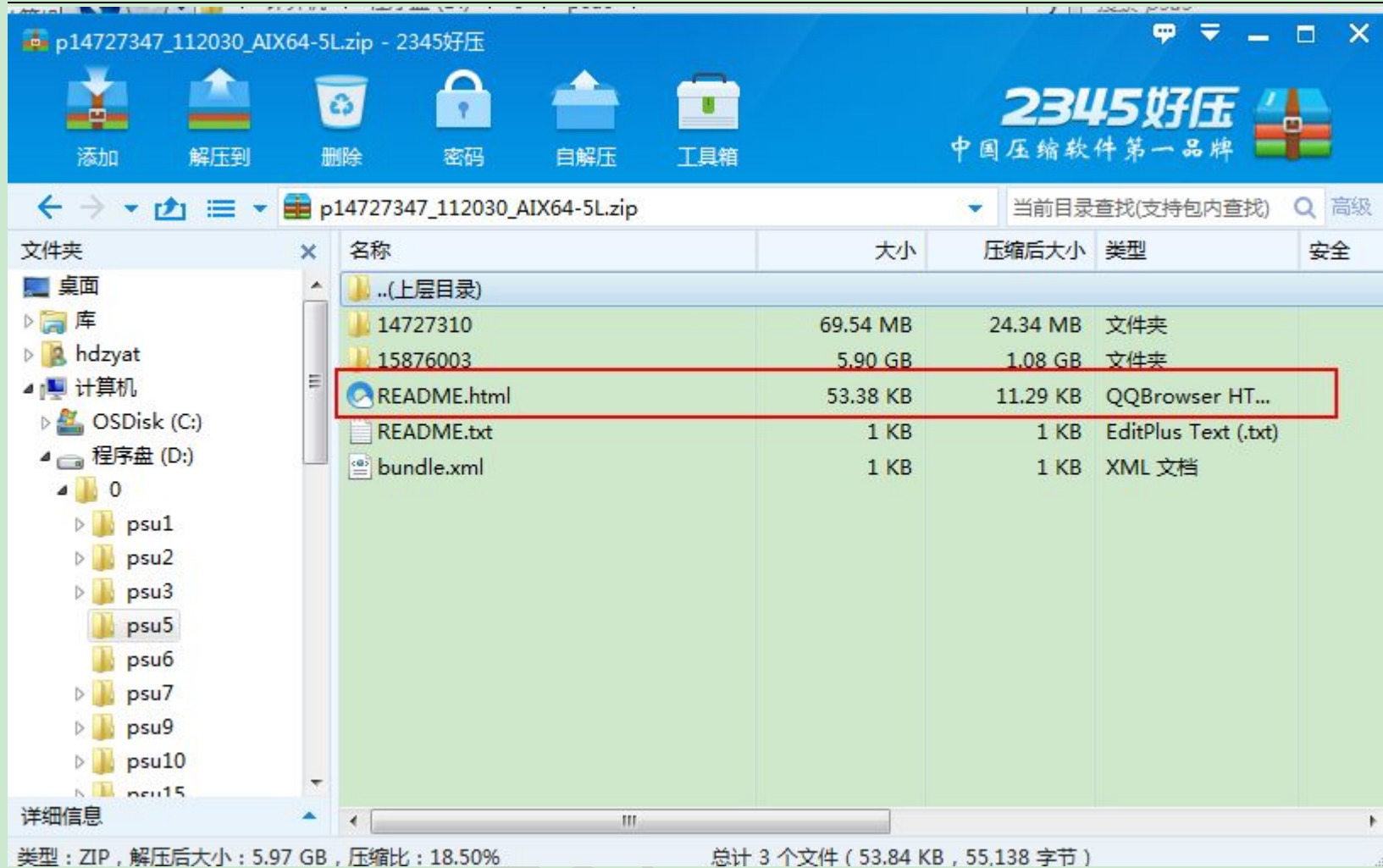
打开：

Oracle® Database

Oracle Grid Infrastructure Patch Set Update 11.2.0.3.5 (Includes Database PSU 11.2.0.3.5) - 14727347

Released: January 15, 2013

In this document Oracle Database Home refers to Enterprise Edition or Standard Edition Database software. GI refers to Grid Infrastructure and PSU refers to Patch Set Update.

The GI PSU patch includes updates for both the Clusterware home and Database home that can be applied in a rolling fashion.

This patch is Data Guard Standby First Installable - See My Oracle Support Document <u>1265700.1</u> *Oracle Patch Assurance - Data Guard Standby-First Patch Apply* for details on how to remove risk and reduce downtime when applying this patch.

该文件即 PSU5 的安装说明文档，我们接下来安装这个文档来安装就可以了。

二、　　OPatch 下载

我们从上边的 readme.html 中得到 opatch 的最低要求是 11.2.0.3.0，而目前我们的版本为 11.2.0.1.7，所以需要下载最新版本，下载的地址下图中也有连接即 6880880，如图所

示：

2.1.1 OPatch Utility Information

You must use the OPatch utility version 11.2.0.3.0 or later to apply this patch. Oracle recommends that you use the latest released OPatch for 11.2 releases, which is available for download from My Oracle Support patch 6880880 by selecting ARU link for the 11.2.0.0.0 release. It is recommended that you download the Opatch utility and the patch in a shared location to be able to access them from any node in the cluster for the patch application on each node.

When patching the GI Home, a shared location on ACFS only needs to be unmounted on the node where the GI Home is being patched.

The new opatch utility should be updated in all the Oracle RAC database homes and the GI home that are being patched.

To update Opatch, use the following instructions:

1. Download the OPatch utility to a temporary directory.

2. For each Oracle RAC database home and the GI home that are being patched, run the following commands as the home owner to extract the OPatch utility.

```
$ unzip <OPATCH-ZIP> -d <ORACLE_HOME>
$ <ORACLE_HOME>/OPatch/opatch version
```

我们也可以直接去 OPatch 下载地址：

https://updates.oracle.com/download/6880880.html
https://updates.oracle.com/ARULink/PatchDetails/process_form?patch_num=6880880

打开相应的连接后，需选择我们需要的平台：

接下来下载即可。

2.2 上传软件到/softtmp 目录并赋权

首先利用 SecureFX 软件上传下载的文件 p14727347_112030_AIX64-5L.zip 和 p6880880_112000_AIX64-5L.zip 到/softtmp 目录，然后赋权。

```
[ZHLHRDB1:root]:/softttmp>chmod 777 p*
[ZHLHRDB1:root]:/softttmp>l
total 2425568
drwxr-xr-x    2 root      system             256 May 05 15:31 lost+found
-rwxrwxrwx    1 oracle    dba         1187252238 May 17 09:44 p14727347_112030_AIX64-5L.zip
-rwxrwxrwx    1 root      system        54636538 May 16 22:13 p6880880_112000_AIX64-5L.zip
[ZHLHRDB1:root]:/softttmp>
```
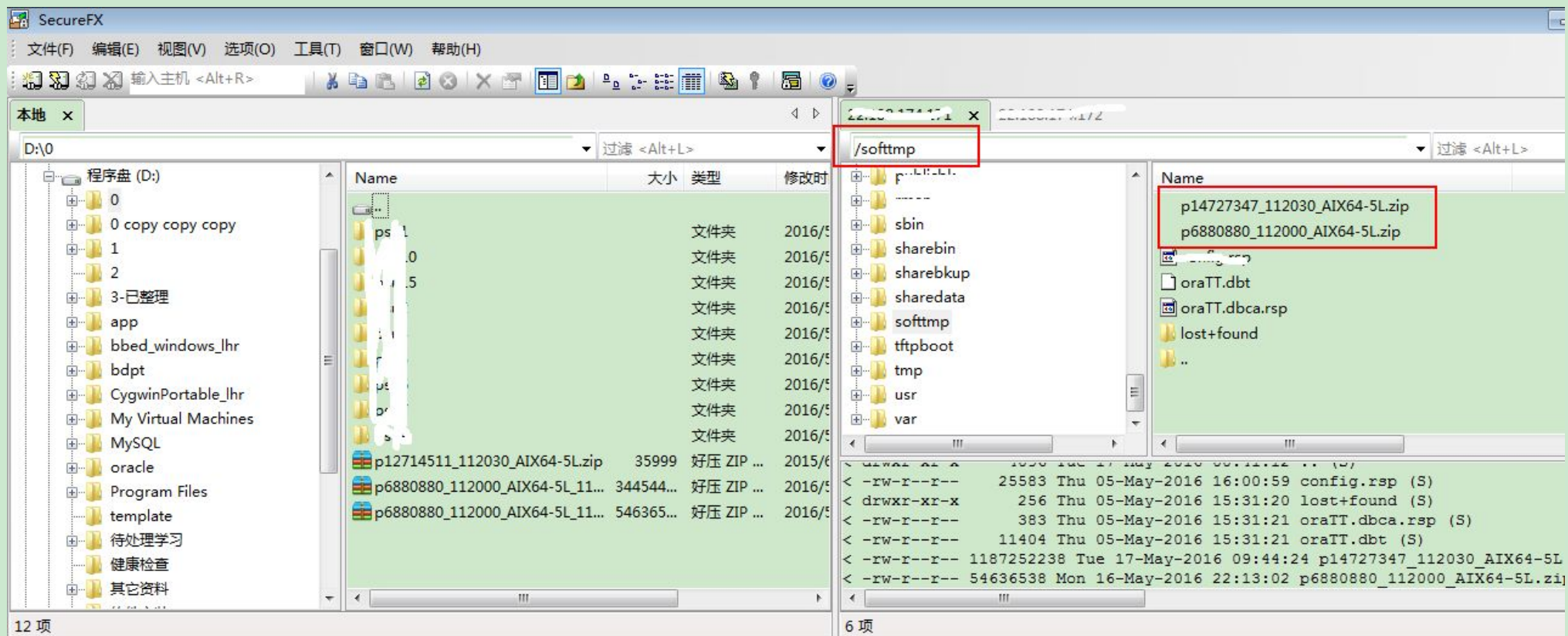
2.3 更新 2 个节点的 OPatch 版本，必须要更新

说明：分别在两个节点更新 GRID_HOME 和 ORACLE_HOME 的 OPatch 版本。

2.3.1 备份 OPatch 目录

分别对 grid 和 oracle 用户下的 OPatch 目录进行备份：

```
[ZHLHRDB1:root]:/softtmp>su - oracle
[ZHLHRDB1:oracle]:/oracle>echo $ORACLE_HOME
/oracle/app/oracle/product/11.2.0/db
[ZHLHRDB1:oracle]:/oracle>su - grid
grid's Password:
[ZHLHRDB1:grid]:/home/grid>echo $ORACLE_HOME
/oracle/app/11.2.0/grid
[ZHLHRDB1:grid]:/home/grid>exit
[ZHLHRDB1:oracle]:/oracle>exit
[ZHLHRDB1:root]:/softtmp>
[ZHLHRDB1:root]:/softtmp>cp -r /oracle/app/oracle/product/11.2.0/db/OPatch /oracle/app/oracle/product/11.2.0/db/OPatch_bk
[ZHLHRDB1:root]:/softtmp>cp -r /oracle/app/11.2.0/grid/OPatch /oracle/app/11.2.0/grid/OPatch_bk
[ZHLHRDB1:root]:/softtmp>
```

2.3.2 grid 目录 OPatch 替换

```
[ZHLHRDB1:root]:/softtmp>su - grid
[ZHLHRDB1:grid]:/home/grid>which opatch
/oracle/app/11.2.0/grid/OPatch/opatch
[ZHLHRDB1:grid]:/home/grid>opatch version
Invoking OPatch 11.2.0.1.7

OPatch Version: 11.2.0.1.7

OPatch succeeded.
[ZHLHRDB1:grid]:/home/grid>unzip /softtmp/p6880880_112000_AIX64-5L.zip -d $ORACLE_HOME
Archive:  /softtmp/p6880880_112000_AIX64-5L.zip
 extracting: /oracle/app/11.2.0/grid/OPatch/version.txt
replace /oracle/app/11.2.0/grid/OPatch/opatch.bat? [y]es, [n]o, [A]ll, [N]one, [r]ename: A
  inflating: /oracle/app/11.2.0/grid/OPatch/opatch.bat
  inflating: /oracle/app/11.2.0/grid/OPatch/opatchprereqs/opatch/opatch_prereq.xml
  inflating: /oracle/app/11.2.0/grid/OPatch/opatchprereqs/opatch/rulemap.xml
  inflating: /oracle/app/11.2.0/grid/OPatch/opatchprereqs/opatch/runtime_prereq.xml
  《《《《。。。。。。。。篇幅原因，有省略。。。。。。。》》》》
  inflating: /oracle/app/11.2.0/grid/OPatch/oplan/jlib/EMrepoDrivers.jar
  inflating: /oracle/app/11.2.0/grid/OPatch/oplan/jlib/bundle.jar
```

```
  inflating: /oracle/app/11.2.0/grid/OPatch/oplan/README.txt
  inflating: /oracle/app/11.2.0/grid/OPatch/opatchdiag
[ZHLHRDB1:grid]:/home/grid>which opatch
/oracle/app/11.2.0/grid/OPatch/opatch
[ZHLHRDB1:grid]:/home/grid>opatch version
OPatch Version: 11.2.0.3.12    ====》grid 用户的 OPatch 软件升级成功


OPatch succeeded.
[ZHLHRDB1:grid]:/home/grid>
```

2.3.3   oracle 目录 OPatch 替换

```
[ZHLHRDB1:root]:/softtmp>su - oracle
[ZHLHRDB1:oracle]:/oracle>which opatch
/oracle/app/oracle/product/11.2.0/db/OPatch/opatch
[ZHLHRDB1:oracle]:/oracle>opatch version
Invoking OPatch 11.2.0.1.7

OPatch Version: 11.2.0.1.7

OPatch succeeded.
[ZHLHRDB1:oracle]:/oracle>unzip /softtmp/p6880880_112000_AIX64-5L.zip -d $ORACLE_HOME
Archive:  /softtmp/p6880880_112000_AIX64-5L.zip
 extracting: /oracle/app/oracle/product/11.2.0/db/OPatch/version.txt
replace /oracle/app/oracle/product/11.2.0/db/OPatch/opatch.bat? [y]es, [n]o, [A]ll, [N]one, [r]ename: A
  inflating: /oracle/app/oracle/product/11.2.0/db/OPatch/opatch.bat
  inflating: /oracle/app/oracle/product/11.2.0/db/OPatch/opatchprereqs/opatch/opatch_prereq.xml
  inflating: /oracle/app/oracle/product/11.2.0/db/OPatch/opatchprereqs/opatch/rulemap.xml
  《《《《。。。。。。。篇幅原因，有省略。。。。。。。》》》》
  inflating: /oracle/app/oracle/product/11.2.0/db/OPatch/oplan/jlib/bundle.jar
  inflating: /oracle/app/oracle/product/11.2.0/db/OPatch/oplan/README.txt
  inflating: /oracle/app/oracle/product/11.2.0/db/OPatch/opatchdiag
[ZHLHRDB1:oracle]:/oracle>opatch version
OPatch Version: 11.2.0.3.12   ====》grid 用户的 OPatch 软件升级成功

OPatch succeeded.
```

2.4 root 用户分别在节点 1 和节点 2 生成 ocm.rsp 文件

The OPatch utility will prompt for your OCM (Oracle Configuration Manager) response file when it is run. You should enter a complete path of OCM response file if you already have

created this in your environment. OCM response file is required and is not optional.

```
[ZHLHRDB1:root]:/softtmp>$ORACLE_HOME/OPatch/ocm/bin/emocmrsp -no_banner -output /softtmp/ocm_11gR2_psu5_lhr.rsp
Provide your email address to be informed of security issues, install and
initiate Oracle Configuration Manager. Easier for you if you use your My
Oracle Support Email address/User Name.
Visit http://www.oracle.com/support/policies.html for details.
Email address/User Name:

You have not provided an email address for notification of security issues.
Do you wish to remain uninformed of security issues ([Y]es, [N]o) [N]:  Y
The OCM configuration response file (/softtmp/ocm_11gR2_psu5_lhr.rsp) was successfully created.
[ZHLHRDB1:root]:/softtmp>l
total 2425576
drwxr-xr-x    2 root     system          256 May 05 15:31 lost+found
-rw-r--r--    1 root     system          621 May 17 10:10 ocm_11gR2_psu5_lhr.rsp
-rwxrwxrwx    1 oracle   dba        1187252238 May 17 09:44 p14727347_112030_AIX64-5L.zip
-rwxrwxrwx    1 root     system       54636538 May 16 22:13 p6880880_112000_AIX64-5L.zip
[ZHLHRDB1:root]:/softtmp>
```

2.5 开始升级 GI PSU 软件包

说明：一定要按照顺序一个节点一个节点的打，会同时升级当前节点的 GRID 和 DB SOFTWARE。

2.5.1　解压 PSU 包

首先升级节点一：

```
[ZHLHRDB1:root]:/softtmp>mkdir psu5
[ZHLHRDB1:root]:/softtmp>l
total 2425576
drwxr-xr-x    2 root     system          256 May 05 15:31 lost+found
-rw-r--r--    1 root     system          621 May 17 10:10 ocm_11gR2_psu5_lhr.rsp
-rwxrwxrwx    1 oracle   dba        1187252238 May 17 09:44 p14727347_112030_AIX64-5L.zip
```

```
-rwxrwxrwx    1 root      system        54636538 May 16 22:13 p6880880_112000_AIX64-5L.zip
drwxr-xr-x    2 root      system             256 May 17 10:17 psu5
[ZHLHRDB1:root]:/softtmp>unzip p14727347_112030_AIX64-5L.zip -d ./psu5/
Archive:  p14727347_112030_AIX64-5L.zip
   creating: ./psu5/14727310/
   creating: ./psu5/14727310/14727310/
   creating: ./psu5/14727310/14727310/etc/
   creating: ./psu5/14727310/14727310/etc/xml/
  inflating: ./psu5/14727310/14727310/etc/xml/ShiphomeDirectoryStructure.xml
    《《《《。。。。。。。篇幅原因，有省略。。。。。。。》》》》
  inflating: ./psu5/15876003/files/srvm/lib/ins_srvm.mk
   creating: ./psu5/15876003/files/inventory/
   creating: ./psu5/15876003/files/inventory/Scripts/
   creating: ./psu5/15876003/files/inventory/Scripts/ext/
   creating: ./psu5/15876003/files/inventory/Scripts/ext/jlib/
  inflating: ./psu5/15876003/files/inventory/Scripts/ext/jlib/cvu.jar
  inflating: ./psu5/README.html
 extracting: ./psu5/README.txt
  inflating: ./psu5/bundle.xml
[ZHLHRDB1:root]:/softtmp>l
total 2425576
drwxr-xr-x    2 root      system             256 May 05 15:31 lost+found
-rw-r--r--    1 root      system             621 May 17 10:10 ocm_11gR2_psu5_lhr.rsp
-rwxrwxrwx    1 oracle    dba         1187252238 May 17 09:44 p14727347_112030_AIX64-5L.zip
-rwxrwxrwx    1 root      system        54636538 May 16 22:13 p6880880_112000_AIX64-5L.zip
drwxr-xr-x    4 root      system             256 May 17 10:18 psu5
[ZHLHRDB1:root]:/softtmp>chmod -R 777 psu5
[ZHLHRDB1:root]:/softtmp>l ./psu5
total 128
drwxrwxrwx    7 root      system             256 Jan 12 2013 14727310
drwxrwxrwx    5 root      system             256 Jan 12 2013 15876003
-rwxrwxrwx    1 root      system           54667 Jan 14 2013 README.html
-rwxrwxrwx    1 root      system              21 Jan 12 2013 README.txt
-rwxrwxrwx    1 root      system             450 Jan 12 2013 bundle.xml
[ZHLHRDB1:root]:/softtmp>
```

2.5.2　测试兼容性

Before beginning patch application, check the consistency of inventory information for GI home and each database home to be patched. Run the following command as respective Oracle

home owner to check the consistency.

分别对 oracle 和 grid 用户进行检查：

```
$ORACLE_HOME/OPatch/opatch lsinventory -detail -oh $ORACLE_HOME
$ORACLE_HOME/OPatch/opatch prereq CheckConflictAgainstOHWithDetail -phBaseDir /softtmp/psu5 -oh $ORACLE_HOME
```

其实在安装过程中也会自动校验是否有冲突，若有冲突也会退出安装的。

```
[ZHLHRDB1:oracle]:/oracle>$ORACLE_HOME/OPatch/opatch lsinventory -detail -oh $ORACLE_HOME

Oracle Interim Patch Installer version 11.2.0.3.12
Copyright (c) 2016, Oracle Corporation.   All rights reserved.


Oracle Home       : /oracle/app/oracle/product/11.2.0/db
Central Inventory : /oracle/app/oraInventory
   from           : /oracle/app/oracle/product/11.2.0/db/oraInst.loc
OPatch version    : 11.2.0.3.12
OUI version       : 11.2.0.3.0
Log file location : /oracle/app/oracle/product/11.2.0/db/cfgtoollogs/opatch/opatch2016-05-17_10-35-15AM_1.log

Lsinventory Output file location : /oracle/app/oracle/product/11.2.0/db/cfgtoollogs/opatch/lsinv/lsinventory2016-05-17_10-35-15AM.txt

--------------------------------------------------------------------------------
Local Machine Information::
Hostname: ZHLHRDB1
ARU platform id: 212
ARU platform description:: IBM_AIX

Installed Top-level Products (1):

Oracle Database 11g                                    11.2.0.3.0
There are 1 products installed in this Oracle Home.


Installed Products (136):

Agent Required Support Files                           10.2.0.4.3
Assistant Common Files                                 11.2.0.3.0
Bali Share                                             1.1.18.0.0
Buildtools Common Files                                11.2.0.3.0
Character Set Migration Utility                        11.2.0.3.0
Cluster Verification Utility Common Files              11.2.0.3.0
```

```
Database Configuration and Upgrade Assistants          11.2.0.3.0
Database SQL Scripts                                    11.2.0.3.0
Database Workspace Manager                              11.2.0.3.0
Deinstallation Tool                                     11.2.0.3.0
Enterprise Edition Options                              11.2.0.3.0
Enterprise Manager Agent                               10.2.0.4.3
Enterprise Manager Agent Core Files                    10.2.0.4.4
Enterprise Manager Common Core Files                   10.2.0.4.4
Enterprise Manager Common Files                        10.2.0.4.3
Enterprise Manager Database Plugin -- Agent Support     11.2.0.3.0
Enterprise Manager Database Plugin -- Repository Support 11.2.0.3.0
Enterprise Manager Grid Control Core Files             10.2.0.4.4
Enterprise Manager plugin Common Files                  11.2.0.3.0
Enterprise Manager Repository Core Files               10.2.0.4.4
Exadata Storage Server                                  11.2.0.1.0
Expat libraries                                          2.0.1.0.1
Generic Connectivity Common Files                       11.2.0.3.0
HAS Common Files                                        11.2.0.3.0
HAS Files for DB                                        11.2.0.3.0
Installation Common Files                               11.2.0.3.0
Installation Plugin Files                               11.2.0.3.0
Installer SDK Component                                 11.2.0.3.0
JAccelerator (COMPANION)                                11.2.0.3.0
LDAP Required Support Files                             11.2.0.3.0
OLAP SQL Scripts                                        11.2.0.3.0
Oracle 11g Warehouse Builder Required Files            11.2.0.3.0
Oracle Advanced Security                                11.2.0.3.0
Oracle Application Express                              11.2.0.3.0
Oracle Call Interface (OCI)                             11.2.0.3.0
Oracle Clusterware RDBMS Files                          11.2.0.3.0
Oracle Code Editor                                       1.2.1.0.0I
Oracle Configuration Manager                           10.3.5.0.1
Oracle Configuration Manager Client                    10.3.2.1.0
Oracle Configuration Manager Deconfiguration           10.3.1.0.0
Oracle Containers for Java                              11.2.0.3.0
Oracle Core Required Support Files                      11.2.0.3.0
Oracle Data Mining RDBMS Files                          11.2.0.3.0
Oracle Database 11g                                     11.2.0.3.0
Oracle Database 11g                                     11.2.0.3.0
Oracle Database 11g Multimedia Files                    11.2.0.3.0
Oracle Database Deconfiguration                         11.2.0.3.0
Oracle Database Gateway for ODBC                        11.2.0.3.0
Oracle Database User Interface                           2.2.13.0.0
Oracle Database Utilities                               11.2.0.3.0
Oracle Database Vault J2EE Application                  11.2.0.3.0
Oracle Database Vault option                            11.2.0.3.0
Oracle DBCA Deconfiguration                             11.2.0.3.0
Oracle Display Fonts                                     9.0.2.0.0
```

```
Oracle Enterprise Manager Console DB                        11.2.0.3.0
Oracle Extended Windowing Toolkit                           3.4.47.0.0
Oracle Globalization Support                                11.2.0.3.0
Oracle Globalization Support                                11.2.0.3.0
Oracle Help For Java                                        4.2.9.0.0
Oracle Help for the  Web                                    2.0.14.0.0
Oracle Ice Browser                                          5.2.3.6.0
Oracle Internet Directory Client                            11.2.0.3.0
Oracle Java Client                                          11.2.0.3.0
Oracle JDBC Server Support Package                          11.2.0.3.0
Oracle JDBC/OCI Instant Client                              11.2.0.3.0
Oracle JDBC/THIN Interfaces                                 11.2.0.3.0
Oracle JFC Extended Windowing Toolkit                       4.2.36.0.0
Oracle JVM                                                  11.2.0.3.0
Oracle Label Security                                       11.2.0.3.0
Oracle LDAP administration                                  11.2.0.3.0
Oracle Locale Builder                                       11.2.0.3.0
Oracle Message Gateway Common Files                         11.2.0.3.0
Oracle Multimedia                                           11.2.0.3.0
Oracle Multimedia Annotator                                 11.2.0.3.0
Oracle Multimedia Client Option                             11.2.0.3.0
Oracle Multimedia Java Advanced Imaging                     11.2.0.3.0
Oracle Multimedia Locator                                   11.2.0.3.0
Oracle Multimedia Locator RDBMS Files                       11.2.0.3.0
Oracle Net                                                  11.2.0.3.0
Oracle Net Listener                                         11.2.0.3.0
Oracle Net Required Support Files                           11.2.0.3.0
Oracle Net Services                                         11.2.0.3.0
Oracle Netca Client                                         11.2.0.3.0
Oracle Notification Service                                 11.2.0.3.0
Oracle Notification Service (eONS)                          11.2.0.3.0
Oracle ODBC Driver                                          11.2.0.3.0
Oracle ODBC Driverfor Instant Client                        11.2.0.3.0
Oracle OLAP                                                 11.2.0.3.0
Oracle OLAP API                                             11.2.0.3.0
Oracle OLAP RDBMS Files                                     11.2.0.3.0
Oracle One-Off Patch Installer                              11.2.0.1.7
Oracle Partitioning                                         11.2.0.3.0
Oracle Programmer                                           11.2.0.3.0
Oracle Quality of Service Management (Client)               11.2.0.3.0
Oracle RAC Deconfiguration                                  11.2.0.3.0
Oracle RAC Required Support Files-HAS                       11.2.0.3.0
Oracle Real Application Testing                             11.2.0.3.0
Oracle Recovery Manager                                     11.2.0.3.0
Oracle Security Developer Tools                             11.2.0.3.0
Oracle Spatial                                              11.2.0.3.0
Oracle SQL Developer                                        11.2.0.3.0
Oracle Starter Database                                     11.2.0.3.0
```

```
Oracle Text                                            11.2.0.3.0
Oracle Text Required Support Files                     11.2.0.3.0
Oracle UIX                                             2.2.24.6.0
Oracle Universal Connection Pool                       11.2.0.3.0
Oracle Universal Installer                             11.2.0.3.0
Oracle USM Deconfiguration                             11.2.0.3.0
Oracle Wallet Manager                                  11.2.0.3.0
Oracle XML Development Kit                             11.2.0.3.0
Oracle XML Query                                       11.2.0.3.0
Parser Generator Required Support Files               11.2.0.3.0
Perl Interpreter                                       5.10.0.0.2
Perl Modules                                           5.10.0.0.1
PL/SQL                                                 11.2.0.3.0
PL/SQL Embedded Gateway                               11.2.0.3.0
Platform Required Support Files                        11.2.0.3.0
Precompiler Common Files                               11.2.0.3.0
Precompiler Required Support Files                     11.2.0.3.0
Provisioning Advisor Framework                         10.2.0.4.3
RDBMS Required Support Files                           11.2.0.3.0
RDBMS Required Support Files for Instant Client        11.2.0.3.0
RDBMS Required Support Files Runtime                   11.2.0.3.0
regexp                                                  2.1.9.0.0
Required Support Files                                 11.2.0.3.0
Sample Schema Data                                     11.2.0.3.0
Secure Socket Layer                                    11.2.0.3.0
SQL*Plus                                               11.2.0.3.0
SQL*Plus Files for Instant Client                      11.2.0.3.0
SQL*Plus Required Support Files                        11.2.0.3.0
SQLJ Runtime                                           11.2.0.3.0
SSL Required Support Files for InstantClient           11.2.0.3.0
Sun JDK                                                1.5.0.12.4
XDK Required Support Files                             11.2.0.3.0
XML Parser for Java                                    11.2.0.3.0
XML Parser for Oracle JVM                             11.2.0.3.0
There are 136 products installed in this Oracle Home.


There are no Interim patches installed in this Oracle Home.


Rac system comprising of multiple nodes
   Local node = ZHLHRDB1
   Remote node = ZHLHRDB1
   Remote node = ZHLHRDB2


--------------------------------------------------------------------------------

OPatch succeeded.
```

```
[ZHLHRDB1:oracle]:/oracle>
[ZHLHRDB1:oracle]:/oracle>$ORACLE_HOME/OPatch/opatch prereq CheckConflictAgainstOHWithDetail -phBaseDir /softtmp/psu5 -oh $ORACLE_HOME
Oracle Interim Patch Installer version 11.2.0.3.12
Copyright (c) 2016, Oracle Corporation.   All rights reserved.

PREREQ session

Oracle Home       : /oracle/app/oracle/product/11.2.0/db
Central Inventory : /oracle/app/oraInventory
   from           : /oracle/app/oracle/product/11.2.0/db/oraInst.loc
OPatch version    : 11.2.0.3.12
OUI version       : 11.2.0.3.0
Log file location : /oracle/app/oracle/product/11.2.0/db/cfgtoollogs/opatch/opatch2016-05-17_10-35-23AM_1.log

Invoking prereq "checkconflictagainstohwithdetail"

Prereq "checkConflictAgainstOHWithDetail" passed.

OPatch succeeded.
[ZHLHRDB1:oracle]:/oracle>
```

oracle 检查成功不存在冲突，下边对 grid 进行检查：

```
[ZHLHRDB1:oracle]:/oracle>su - grid
grid's Password:
[ZHLHRDB1:grid]:/home/grid>$ORACLE_HOME/OPatch/opatch lsinventory -detail -oh $ORACLE_HOME
Oracle Interim Patch Installer version 11.2.0.3.12
Copyright (c) 2016, Oracle Corporation.   All rights reserved.


Oracle Home       : /oracle/app/11.2.0/grid
Central Inventory : /oracle/app/oraInventory
   from           : /oracle/app/11.2.0/grid/oraInst.loc
OPatch version    : 11.2.0.3.12
OUI version       : 11.2.0.3.0
Log file location : /oracle/app/11.2.0/grid/cfgtoollogs/opatch/opatch2016-05-17_10-36-01AM_1.log

Lsinventory Output file location : /oracle/app/11.2.0/grid/cfgtoollogs/opatch/lsinv/lsinventory2016-05-17_10-36-01AM.txt

--------------------------------------------------------------------------------
Local Machine Information::
Hostname: ZHLHRDB1
ARU platform id: 212
```

```
ARU platform description:: IBM_AIX


Installed Top-level Products (1):


Oracle Grid Infrastructure                          11.2.0.3.0
There are 1 products installed in this Oracle Home.



Installed Products (88):


Agent Required Support Files                        10.2.0.4.3
Assistant Common Files                              11.2.0.3.0
Automatic Storage Management Assistant              11.2.0.3.0
Bali Share                                          1.1.18.0.0
Buildtools Common Files                             11.2.0.3.0
Character Set Migration Utility                     11.2.0.3.0
Cluster Ready Services Files                        11.2.0.3.0
Cluster Verification Utility Common Files           11.2.0.3.0
Cluster Verification Utility Files                  11.2.0.3.0
Database SQL Scripts                                11.2.0.3.0
Deinstallation Tool                                 11.2.0.3.0
Enterprise Manager Common Core Files                10.2.0.4.4
Enterprise Manager Common Files                     10.2.0.4.3
Enterprise Manager plugin Common Files              11.2.0.3.0
Expat libraries                                     2.0.1.0.1
HAS Common Files                                    11.2.0.3.0
HAS Files for DB                                    11.2.0.3.0
Installation Common Files                           11.2.0.3.0
Installation Plugin Files                           11.2.0.3.0
Installer SDK Component                             11.2.0.3.0
LDAP Required Support Files                         11.2.0.3.0
OLAP SQL Scripts                                    11.2.0.3.0
Oracle Clusterware RDBMS Files                      11.2.0.3.0
Oracle Configuration Manager Deconfiguration        10.3.1.0.0
Oracle Containers for Java                          11.2.0.3.0
Oracle Core Required Support Files                  11.2.0.3.0
Oracle Database 11g                                 11.2.0.3.0
Oracle Database 11g Multimedia Files                11.2.0.3.0
Oracle Database Deconfiguration                     11.2.0.3.0
Oracle Database User Interface                      2.2.13.0.0
Oracle Database Utilities                           11.2.0.3.0
Oracle DBCA Deconfiguration                         11.2.0.3.0
Oracle Extended Windowing Toolkit                   3.4.47.0.0
Oracle Globalization Support                        11.2.0.3.0
Oracle Globalization Support                        11.2.0.3.0
Oracle Grid Infrastructure                          11.2.0.3.0
Oracle Help For Java                                4.2.9.0.0
Oracle Ice Browser                                  5.2.3.6.0
```

Oracle Internet Directory Client	11.2.0.3.0
Oracle Java Client	11.2.0.3.0
Oracle JDBC/OCI Instant Client	11.2.0.3.0
Oracle JDBC/THIN Interfaces	11.2.0.3.0
Oracle JFC Extended Windowing Toolkit	4.2.36.0.0
Oracle JVM	11.2.0.3.0
Oracle LDAP administration	11.2.0.3.0
Oracle Locale Builder	11.2.0.3.0
Oracle Multimedia	11.2.0.3.0
Oracle Multimedia Client Option	11.2.0.3.0
Oracle Multimedia Java Advanced Imaging	11.2.0.3.0
Oracle Multimedia Locator	11.2.0.3.0
Oracle Multimedia Locator RDBMS Files	11.2.0.3.0
Oracle Net	11.2.0.3.0
Oracle Net Listener	11.2.0.3.0
Oracle Net Required Support Files	11.2.0.3.0
Oracle Netca Client	11.2.0.3.0
Oracle Notification Service	11.2.0.3.0
Oracle Notification Service (eONS)	11.2.0.3.0
Oracle One-Off Patch Installer	11.2.0.1.7
Oracle Quality of Service Management (Client)	11.2.0.3.0
Oracle Quality of Service Management (Server)	11.2.0.3.0
Oracle RAC Deconfiguration	11.2.0.3.0
Oracle RAC Required Support Files-HAS	11.2.0.3.0
Oracle Recovery Manager	11.2.0.3.0
Oracle Security Developer Tools	11.2.0.3.0
Oracle Text Required Support Files	11.2.0.3.0
Oracle Universal Installer	11.2.0.3.0
Oracle USM Deconfiguration	11.2.0.3.0
Oracle Wallet Manager	11.2.0.3.0
Parser Generator Required Support Files	11.2.0.3.0
Perl Interpreter	5.10.0.0.2
Perl Modules	5.10.0.0.1
PL/SQL	11.2.0.3.0
PL/SQL Embedded Gateway	11.2.0.3.0
Platform Required Support Files	11.2.0.3.0
Precompiler Required Support Files	11.2.0.3.0
RDBMS Required Support Files	11.2.0.3.0
RDBMS Required Support Files for Instant Client	11.2.0.3.0
RDBMS Required Support Files Runtime	11.2.0.3.0
Required Support Files	11.2.0.3.0
Secure Socket Layer	11.2.0.3.0
SQL*Plus	11.2.0.3.0
SQL*Plus Files for Instant Client	11.2.0.3.0
SQL*Plus Required Support Files	11.2.0.3.0
SSL Required Support Files for InstantClient	11.2.0.3.0
Sun JDK	1.5.0.12.4
Universal Storage Manager Files	11.2.0.3.0

```
XDK Required Support Files                              11.2.0.3.0
XML Parser for Java                                     11.2.0.3.0
There are 88 products installed in this Oracle Home.


There are no Interim patches installed in this Oracle Home.


Rac system comprising of multiple nodes
  Local node = ZHLHRDB1
  Remote node = ZHLHRDB1
  Remote node = ZHLHRDB2


--------------------------------------------------------------------------------


OPatch succeeded.
[ZHLHRDB1:grid]:/home/grid>$ORACLE_HOME/OPatch/opatch prereq CheckConflictAgainstOHWithDetail -phBaseDir /softtmp/psu5 -oh $ORACLE_HOME
Oracle Interim Patch Installer version 11.2.0.3.12
Copyright (c) 2016, Oracle Corporation.  All rights reserved.

PREREQ session

Oracle Home       : /oracle/app/11.2.0/grid
Central Inventory : /oracle/app/oraInventory
   from           : /oracle/app/11.2.0/grid/oraInst.loc
OPatch version    : 11.2.0.3.12
OUI version       : 11.2.0.3.0
Log file location : /oracle/app/11.2.0/grid/cfgtoollogs/opatch/opatch2016-05-17_10-36-07AM_1.log

Invoking prereq "checkconflictagainstohwithdetail"

Prereq "checkConflictAgainstOHWithDetail" passed.

OPatch succeeded.
[ZHLHRDB1:grid]:/home/grid>
```

grid 用户也不存在冲突，可以安装 PSU 升级了。

2.5.3　升级前的 PSU

```
opatch lsinventory -bugs_fixed | grep 'PSU'
opatch lspatches
```

```
set line 9999
col action_time   for a30
col action        for a10
col namespace     for a10
col version       for a10
col bundle_series for a10
col comments      for a30

SELECT to_char(action_time, 'YYYY-MM-DD HH24:MI:SS') action_time,
       action,
       namespace,
       version,
       id,
       bundle_series,
       comments
  FROM dba_registry_history D;
```

```
[ZHLHRDB1:oracle]:/oracle>opatch lsinventory -bugs_fixed | grep 'PSU'
[ZHLHRDB1:oracle]:/oracle>opatch lspatches
There are no Interim patches installed in this Oracle Home "/oracle/app/oracle/product/11.2.0/db".

OPatch succeeded.
[ZHLHRDB1:oracle]:/oracle>sqlplus / as sysdba

SQL*Plus: Release 11.2.0.3.0 Production on Tue May 17 10:41:58 2016

Copyright (c) 1982, 2011, Oracle.  All rights reserved.


Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, OLAP,
Data Mining and Real Application Testing options
SQL> set line 9999
SQL> col action_time   for a30
SQL> col action        for a10
SQL> col namespace     for a10
SQL> col version       for a10
SQL> col bundle_series for a10
SQL> col comments      for a30
SQL>
SQL> SELECT to_char(action_time, 'YYYY-MM-DD HH24:MI:SS') action_time,
  2         action,
  3         namespace,
  4         version,
  5         id,
```

```
  6        bundle_series,
  7        comments
  8   FROM dba_registry_history D;

ACTION_TIME              ACTION     NAMESPACE  VERSION        ID BUNDLE_SER COMMENTS
----------------------   ---------- ---------- ----------  ----- ---------- ------------------------------------
2011-10-21 04:48:04      APPLY      SERVER     11.2.0.3       0 PSU         Patchset 11.2.0.2.0
2016-05-05 16:36:06      APPLY      SERVER     11.2.0.3       0 PSU         Patchset 11.2.0.2.0

SQL>
```

2.5.4   开始升级

root 用户依次节点 1，节点 2 上执行，升级前 db 是 open，升级的过程中是关闭状态

```
[ZHLHRDB1:root]:/softtmp>crsctl stat res -t
--------------------------------------------------------------------------------
NAME           TARGET  STATE        SERVER                   STATE_DETAILS
--------------------------------------------------------------------------------
Local Resources
--------------------------------------------------------------------------------
ora.DATA1.dg
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.LISTENER.lsnr
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.asm
               ONLINE  ONLINE       ZHLHRDB1                 Started
               ONLINE  ONLINE       ZHLHRDB2                 Started
ora.gsd
               OFFLINE OFFLINE      ZHLHRDB1
               OFFLINE OFFLINE      ZHLHRDB2
ora.net1.network
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.ons
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.registry.acfs
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
--------------------------------------------------------------------------------
```

```
Cluster Resources
--------------------------------------------------------------------------------
ora.LISTENER_SCAN1.lsnr
      1        ONLINE  ONLINE        ZHLHRDB1
ora.cvu
      1        ONLINE  ONLINE        ZHLHRDB1
ora.oc4j
      1        ONLINE  ONLINE        ZHLHRDB1
ora.oralhr.db
      1        ONLINE  ONLINE        ZHLHRDB1            Open
      2        ONLINE  ONLINE        ZHLHRDB2            Open
ora.scan1.vip
      1        ONLINE  ONLINE        ZHLHRDB1
ora.ZHLHRDB1.vip
      1        ONLINE  ONLINE        ZHLHRDB1
ora.ZHLHRDB2.vip
      1        ONLINE  ONLINE        ZHLHRDB2
[ZHLHRDB1:root]:/softtmp>
[ZHLHRDB1:root]:/softtmp>opatch auto /softtmp/psu5 -ocmrf /softtmp/ocm_11gR2_psu5_lhr.rsp
Executing /oracle/app/11.2.0/grid/perl/bin/perl /oracle/app/11.2.0/grid/OPatch/crs/patch11203.pl -patchdir /softtmp -patchn psu5 -ocmrf /softtmp/ocm_11gR2_psu5_lhr.rsp -paramfile
/oracle/app/11.2.0/grid/crs/install/crsconfig_params

This is the main log file: /oracle/app/11.2.0/grid/cfgtoollogs/opatchauto2016-05-17_10-44-24.log

This file will show your detected configuration and all the steps that opatchauto attempted to do on your system:
/oracle/app/11.2.0/grid/cfgtoollogs/opatchauto2016-05-17_10-44-24.report.log

2016-05-17 10:44:24: Starting Clusterware Patch Setup
Using configuration parameter file: /oracle/app/11.2.0/grid/crs/install/crsconfig_params

Stopping RAC /oracle/app/oracle/product/11.2.0/db ...
Stopped RAC /oracle/app/oracle/product/11.2.0/db successfully

patch /softtmp/psu5/15876003/custom/server/15876003  apply successful for home  /oracle/app/oracle/product/11.2.0/db
patch /softtmp/psu5/14727310  apply successful for home  /oracle/app/oracle/product/11.2.0/db

Stopping CRS...
Stopped CRS successfully

patch /softtmp/psu5/15876003  apply successful for home  /oracle/app/11.2.0/grid
patch /softtmp/psu5/14727310  apply successful for home  /oracle/app/11.2.0/grid

Starting CRS...
CRS-4123: Oracle High Availability Services has been started.

Starting RAC /oracle/app/oracle/product/11.2.0/db ...
Started RAC /oracle/app/oracle/product/11.2.0/db successfully
```

```
opatch auto succeeded.

[ZHLHRDB1:root]:/softtmp>crsctl stat res -t
--------------------------------------------------------------------------------
NAME           TARGET  STATE        SERVER                   STATE_DETAILS
--------------------------------------------------------------------------------
Local Resources
--------------------------------------------------------------------------------
ora.DATA1.dg
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.LISTENER.lsnr
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.asm
               ONLINE  ONLINE       ZHLHRDB1                 Started
               ONLINE  ONLINE       ZHLHRDB2                 Started
ora.gsd
               OFFLINE OFFLINE      ZHLHRDB1
               OFFLINE OFFLINE      ZHLHRDB2
ora.net1.network
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.ons
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.registry.acfs
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
--------------------------------------------------------------------------------
Cluster Resources
--------------------------------------------------------------------------------
ora.LISTENER_SCAN1.lsnr
      1        ONLINE  ONLINE       ZHLHRDB2
ora.cvu
      1        ONLINE  ONLINE       ZHLHRDB2
ora.oc4j
      1        ONLINE  ONLINE       ZHLHRDB2
ora.oralhr.db
      1        ONLINE  ONLINE       ZHLHRDB1                 Open
      2        ONLINE  ONLINE       ZHLHRDB2                 Open
ora.scan1.vip
      1        ONLINE  ONLINE       ZHLHRDB2
ora.ZHLHRDB1.vip
      1        ONLINE  ONLINE       ZHLHRDB1
ora.ZHLHRDB2.vip
      1        ONLINE  ONLINE       ZHLHRDB2
[ZHLHRDB1:root]:/softtmp>
```

升级完成后，数据库自动 OPEN.

2.5.4.1　**PSU 升级日志**

下边我们对升级过程简单分析，首先会升级 DB 的，该过程自动进行关闭 DB：

```
[ZHLHRDB1:root]:/>crsctl stat res -t
--------------------------------------------------------------------------------
NAME           TARGET  STATE        SERVER              STATE_DETAILS
--------------------------------------------------------------------------------
Local Resources
--------------------------------------------------------------------------------
ora.DATA1.dg
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.LISTENER.lsnr
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.asm
               ONLINE  ONLINE       ZHLHRDB1            Started
               ONLINE  ONLINE       ZHLHRDB2            Started
ora.gsd
               OFFLINE OFFLINE      ZHLHRDB1
               OFFLINE OFFLINE      ZHLHRDB2
ora.net1.network
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.ons
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
ora.registry.acfs
               ONLINE  ONLINE       ZHLHRDB1
               ONLINE  ONLINE       ZHLHRDB2
--------------------------------------------------------------------------------
Cluster Resources
--------------------------------------------------------------------------------
ora.LISTENER_SCAN1.lsnr
      1        ONLINE  ONLINE       ZHLHRDB1
```

```
ora.cvu
       1         ONLINE   ONLINE        ZHLHRDB1
ora.oc4j
       1         ONLINE   ONLINE        ZHLHRDB1
ora.oralhr.db
       1         OFFLINE  OFFLINE                              Instance Shutdown
       2         ONLINE   ONLINE        ZHLHRDB2              Open
ora.scan1.vip
       1         ONLINE   ONLINE        ZHLHRDB1
ora.ZHLHRDB1.vip
       1         ONLINE   ONLINE        ZHLHRDB1
ora.ZHLHRDB2.vip
       1         ONLINE   ONLINE        ZHLHRDB2
[ZHLHRDB1:root]:/>
```

主日志文件，/oracle/app/11.2.0/grid/cfgtoollogs/opatchauto2016-05-17_10-44-24.log，详细日志：

```
[ZHLHRDB1:root]:/oracle/app/11.2.0/grid/cfgtoollogs/opatch>cd
[ZHLHRDB1:root]:/>cd /oracle/app/11.2.0/grid/cfgtoollogs/opatch
[ZHLHRDB1:root]:/oracle/app/11.2.0/grid/cfgtoollogs/opatch>l -lrt
total 896
-rw-r-----    1 grid     dba          13094 May 17 10:26 opatch2016-05-17_10-26-28AM_1.log
-rw-r-----    1 grid     dba           1343 May 17 10:29 opatch2016-05-17_10-29-00AM_1.log
-rw-r-----    1 grid     dba          19352 May 17 10:29 opatch2016-05-17_10-29-11AM_1.log
-rw-r-----    1 grid     dba           1334 May 17 10:31 opatch2016-05-17_10-31-30AM_1.log
-rw-r-----    1 grid     dba           6140 May 17 10:32 opatch2016-05-17_10-32-46AM_1.log
-rw-r-----    1 grid     dba           6140 May 17 10:33 opatch2016-05-17_10-33-09AM_1.log
-rw-r-----    1 grid     dba          13094 May 17 10:36 opatch2016-05-17_10-36-01AM_1.log
-rw-r-----    1 grid     dba           6140 May 17 10:36 opatch2016-05-17_10-36-07AM_1.log
-rw-r-----    1 grid     dba           3324 May 17 10:40 opatch2016-05-17_10-40-04AM_1.log
drwxr-xr-x    2 grid     dba           8192 May 17 10:40 lsinv
-rw-r-----    1 grid     dba           1850 May 17 10:40 opatch2016-05-17_10-40-23AM_1.log
-rw-r-----    1 grid     dba           1787 May 17 10:44 opatch2016-05-17_10-44-25AM_1.log
-rw-r-----    1 grid     dba           2182 May 17 10:44 opatch2016-05-17_10-44-28AM_1.log
-rw-r-----    1 grid     dba           2395 May 17 10:44 opatch2016-05-17_10-44-45AM_1.log
-rw-r-----    1 grid     dba           2499 May 17 10:44 opatch2016-05-17_10-44-48AM_1.log
-rw-r-----    1 grid     dba           2317 May 17 10:45 opatch2016-05-17_10-45-34AM_1.log
-rw-r-----    1 grid     dba           3372 May 17 10:45 opatch2016-05-17_10-45-36AM_1.log
-rw-r-----    1 grid     dba           2764 May 17 10:45 opatch2016-05-17_10-45-39AM_1.log
-rw-r--r--    1 grid     dba          25061 May 17 10:45 opatch_history.txt
-rw-r-----    1 grid     dba           2901 May 17 10:45 opatch2016-05-17_10-45-42AM_1.log
[ZHLHRDB1:root]:/oracle/app/11.2.0/grid/cfgtoollogs/opatch>
```

升级 CRS 的时候，节点一上的 ha 进程就会全部停掉：

```
[ZHLHRDB2:root]:/softtmp>crsctl stat res -t
--------------------------------------------------------------------------------
NAME           TARGET  STATE        SERVER               STATE_DETAILS
--------------------------------------------------------------------------------
Local Resources
--------------------------------------------------------------------------------
ora.DATA1.dg
               ONLINE  ONLINE       ZHLHRDB2
ora.LISTENER.lsnr
               ONLINE  ONLINE       ZHLHRDB2
ora.asm
               ONLINE  ONLINE       ZHLHRDB2              Started
ora.gsd
               OFFLINE OFFLINE      ZHLHRDB2
ora.net1.network
               ONLINE  ONLINE       ZHLHRDB2
ora.ons
               ONLINE  ONLINE       ZHLHRDB2
ora.registry.acfs
               ONLINE  ONLINE       ZHLHRDB2
--------------------------------------------------------------------------------
Cluster Resources
--------------------------------------------------------------------------------
ora.LISTENER_SCAN1.lsnr
      1        ONLINE  ONLINE       ZHLHRDB2
ora.cvu
      1        ONLINE  ONLINE       ZHLHRDB2
ora.oc4j
      1        ONLINE  ONLINE       ZHLHRDB2
ora.oralhr.db
      1        OFFLINE OFFLINE
      2        ONLINE  ONLINE       ZHLHRDB2              Open
ora.scan1.vip
      1        ONLINE  ONLINE       ZHLHRDB2
ora.ZHLHRDB1.vip
      1        ONLINE  INTERMEDIATE ZHLHRDB2              FAILED OVER
ora.ZHLHRDB2.vip
      1        ONLINE  ONLINE       ZHLHRDB2
[ZHLHRDB2:root]:/softtmp>

[ZHLHRDB1:root]:/>
[ZHLHRDB1:root]:/>ps -ef|grep d.bin
    root 2426158 2294074   0 10:57:38  pts/8  0:00 grep d.bin
[ZHLHRDB1:root]:/>
```

从详细日志/oracle/app/11.2.0/grid/cfgtoollogs/opatchauto2016-05-17_10-44-24.report.log 中可以看到自动升级过程中的所有的命令，这也是

手动打 PSU 的步骤，一共 32 个命令：

```
[ZHLHRDB1:root]:/>cat /oracle/app/11.2.0/grid/cfgtoollogs/opatchauto2016-05-17_10-44-24.report.log
********** Configuration Data **********
* It shows only those targets that will be patched in this session *


crs_home=/oracle/app/11.2.0/grid        owner=grid        opatch_ver=11.2.0.3.12
rac_home=/oracle/app/oracle/product/11.2.0/db        owner=oracle        opatch_ver=11.2.0.3.12

********** Steps to be executed as owner unless specified as root **********


1: /oracle/app/oracle/product/11.2.0/db/OPatch/opatch prereq CheckComponents -ph /softtmp/psu5/15876003/custom/server/15876003 -oh /oracle/app/oracle/product/11.2.0/db

2: /oracle/app/oracle/product/11.2.0/db/OPatch/opatch prereq CheckComponents -ph /softtmp/psu5/14727310 -oh /oracle/app/oracle/product/11.2.0/db

3: /oracle/app/oracle/product/11.2.0/db/OPatch/opatch prereq CheckConflictAgainstOH -ph /softtmp/psu5/15876003/custom/server/15876003 -oh /oracle/app/oracle/product/11.2.0/db

4: /oracle/app/oracle/product/11.2.0/db/OPatch/opatch prereq CheckConflictAgainstOH -ph /softtmp/psu5/14727310 -oh /oracle/app/oracle/product/11.2.0/db

5: /oracle/app/11.2.0/grid/OPatch/opatch prereq CheckComponents -ph /softtmp/psu5/15876003 -oh /oracle/app/11.2.0/grid

6: /oracle/app/11.2.0/grid/OPatch/opatch prereq CheckComponents -ph /softtmp/psu5/14727310 -oh /oracle/app/11.2.0/grid

7: /oracle/app/11.2.0/grid/OPatch/opatch prereq CheckConflictAgainstOH -ph /softtmp/psu5/15876003 -oh /oracle/app/11.2.0/grid

8: /oracle/app/11.2.0/grid/OPatch/opatch prereq CheckConflictAgainstOH -ph /softtmp/psu5/14727310 -oh /oracle/app/11.2.0/grid

9: /oracle/app/oracle/product/11.2.0/db/bin/emctl stop dbconsole

10: /oracle/app/oracle/product/11.2.0/db/bin/emctl stop agent

11: /oracle/app/oracle/product/11.2.0/db/OPatch/opatch prereq CheckApplicable -ph /softtmp/psu5/15876003/custom/server/15876003 -oh /oracle/app/oracle/product/11.2.0/db

12: /oracle/app/oracle/product/11.2.0/db/OPatch/opatch prereq CheckApplicable -ph /softtmp/psu5/14727310 -oh /oracle/app/oracle/product/11.2.0/db

13: /oracle/app/oracle/product/11.2.0/db/bin/srvctl stop home -o /oracle/app/oracle/product/11.2.0/db -s /oracle/app/oracle/product/11.2.0/db/srvm/admin/stophome.txt -n ZHLHRDB1
-f
```

14: /usr/sbin/fuser -k /oracle/app/oracle/product/11.2.0/db/bin/oracle : run as root

15: /softtmp/psu5/15876003/custom/server/15876003/custom/scripts/prepatch.sh -dbhome /oracle/app/oracle/product/11.2.0/db

16: /usr/sbin/slibclean : run as root

17: /oracle/app/oracle/product/11.2.0/db/OPatch/opatch napply /softtmp/psu5/15876003/custom/server/15876003 -local -silent -ocmrf /softtmp/ocm_11gR2_psu5_lhr.rsp -oh /oracle/app/oracle/product/11.2.0/db -invPtrLoc /oracle/app/oracle/product/11.2.0/db/oraInst.loc

18: /oracle/app/oracle/product/11.2.0/db/OPatch/opatch napply /softtmp/psu5/14727310 -local -silent -ocmrf /softtmp/ocm_11gR2_psu5_lhr.rsp -oh /oracle/app/oracle/product/11.2.0/db -invPtrLoc /oracle/app/oracle/product/11.2.0/db/oraInst.loc

19: /softtmp/psu5/15876003/custom/server/15876003/custom/scripts/postpatch.sh -dbhome /oracle/app/oracle/product/11.2.0/db

20: /oracle/app/11.2.0/grid/crs/install/rootcrs.pl -unlock : run as root

21: /usr/sbin/fuser -k /oracle/app/11.2.0/grid/bin/crsctl.bin : run as root

22: /oracle/app/11.2.0/grid/OPatch/opatch prereq CheckApplicable -ph /softtmp/psu5/15876003 -oh /oracle/app/11.2.0/grid

23: /oracle/app/11.2.0/grid/OPatch/opatch prereq CheckApplicable -ph /softtmp/psu5/14727310 -oh /oracle/app/11.2.0/grid

24: /usr/sbin/slibclean : run as root

25: /oracle/app/11.2.0/grid/OPatch/opatch napply /softtmp/psu5/15876003 -local -silent -ocmrf /softtmp/ocm_11gR2_psu5_lhr.rsp -oh /oracle/app/11.2.0/grid -invPtrLoc /oracle/app/11.2.0/grid/oraInst.loc

26: /oracle/app/11.2.0/grid/OPatch/opatch napply /softtmp/psu5/14727310 -local -silent -ocmrf /softtmp/ocm_11gR2_psu5_lhr.rsp -oh /oracle/app/11.2.0/grid -invPtrLoc /oracle/app/11.2.0/grid/oraInst.loc

27: /oracle/app/11.2.0/grid/bin/emctl start dbconsole

28: /oracle/app/11.2.0/grid/rdbms/install/rootadd_rdbms.sh : run as root

29: /oracle/app/11.2.0/grid/crs/install/rootcrs.pl -patch : run as root

30: /oracle/app/oracle/product/11.2.0/db/bin/emctl start dbconsole

31: /oracle/app/oracle/product/11.2.0/db/bin/emctl start agent

32: /oracle/app/oracle/product/11.2.0/db/bin/srvctl start home -o /oracle/app/oracle/product/11.2.0/db -s /oracle/app/oracle/product/11.2.0/db/srvm/admin/stophome.txt -n ZHLHRDB1

[ZHLHRDB1:root]:/>

2.5.5　　检查升级情况

```
[ZHLHRDB1:oracle]:/oracle>
[ZHLHRDB1:oracle]:/oracle>opatch lsinventory -bugs_fixed | grep 'PSU'
12925041    15876003   Tue May 17 10:46:47 GMT+08:00 2016112024GIPSU OLOGGERD CORE DUMP AT 'CRFLOGDB.C
13079948    15876003   Tue May 17 10:46:47 GMT+08:00 2016CVU FILES NOT BEING PICKED UP FOR 11.2.0.2.4GIPSU
                                                      (INCLUDES DB PSU 11.2.0.3.1)
13396284    15876003   Tue May 17 10:46:47 GMT+08:00 201611.2.0.3 GI PSU 1 HAS-CRS TRACKING BUG
13531373    15876003   Tue May 17 10:46:47 GMT+08:00 201611.2.0.3.1GIPSU CVU CHECK FAIL FOR NETWORK
13540563    15876003   Tue May 17 10:46:47 GMT+08:00 2016MERGE REQUEST ON TOP OF 11.2.0.3.1PSU FOR BUGS
13569812    15876003   Tue May 17 10:46:47 GMT+08:00 201611.2.0.3.1GIPSU CVU FAIL TO DETERMINE IF ORACLE
                                                      NETWORK HICCUP PSU4 HAS BEEN APP
                                                      (INCLUDES DB PSU 11.2.0.3.2)
                                                      (INCLUDES DB PSU 11.2.0.3.3)
14001941    15876003   Tue May 17 10:46:47 GMT+08:00 2016DOWNGRADE ISSUE FROM 11.2.0.3.1 TO 11.2.0.2 PSU4
14271305    15876003   Tue May 17 10:46:47 GMT+08:00 201611.2.0.3.3GIPSU SIHA ORAAGENT.BIN ALWAYS CONSUME
                                                      (INCLUDES DB PSU 11.2.0.3.4)
[ZHLHRDB1:oracle]:/oracle>opatch lspatches

14727310;Database Patch Set Update : 11.2.0.3.5 (14727310)
15876003;Grid Infrastructure Patch Set Update : 11.2.0.3.5 (14727347)

OPatch succeeded.
[ZHLHRDB1:oracle]:/oracle>
[ZHLHRDB1:oracle]:/oracle>opatch lsinv
Oracle Interim Patch Installer version 11.2.0.3.12
Copyright (c) 2016, Oracle Corporation.   All rights reserved.


Oracle Home        : /oracle/app/oracle/product/11.2.0/db
Central Inventory : /oracle/app/oraInventory
   from            : /oracle/app/oracle/product/11.2.0/db/oraInst.loc
OPatch version     : 11.2.0.3.12
OUI version        : 11.2.0.3.0
Log file location : /oracle/app/oracle/product/11.2.0/db/cfgtoollogs/opatch/opatch2016-05-17_11-04-31AM_1.log

Lsinventory Output file location : /oracle/app/oracle/product/11.2.0/db/cfgtoollogs/opatch/lsinv/lsinventory2016-05-17_11-04-31AM.txt


--------------------------------------------------------------------------------
Local Machine Information::
Hostname: ZHLHRDB1
ARU platform id: 212
ARU platform description:: IBM_AIX


Installed Top-level Products (1):
```

Oracle Database 11g   11.2.0.3.0
There are 1 products installed in this Oracle Home.

Interim patches (2) :

Patch 14727310   : applied on Tue May 17 10:49:36 GMT+08:00 2016
Unique Patch ID: 15668950
Patch description: "Database Patch Set Update : 11.2.0.3.5 (14727310)"
   Created on 31 Dec 2012, 01:47:37 hrs PST8PDT
Sub-patch 14275605; "Database Patch Set Update : 11.2.0.3.4 (14275605)"
Sub-patch 13923374; "Database Patch Set Update : 11.2.0.3.3 (13923374)"
Sub-patch 13696216; "Database Patch Set Update : 11.2.0.3.2 (13696216)"
Sub-patch 13343438; "Database Patch Set Update : 11.2.0.3.1 (13343438)"
   Bugs fixed:
     12960925, 14469008, 14038787, 12834027, 12764337, 13772618, 14390252
     14263036, 10133521, 13588248, 12894807, 13773133, 13742435, 12829021
     13742434, 9659614, 12585543, 13742433, 13742438, 13742437, 13742436
     12905058, 13503598, 12582664, 13632717, 12861463, 13343438, 13026410
     13080778, 12849688, 13103913, 13457582, 13737746, 13742464, 12873183
     13099577, 13645917, 13036331, 14548763, 12693626, 12656535, 12678920
     13624984, 12401111, 13377816, 13338048, 12913474, 11877623, 11063191
     12964067, 13250244, 12847466, 12797765, 14613900, 13038684, 12617123
     14023636, 12923168, 13035360, 13420224, 12646784, 12857027, 13340388
     14409183, 12583611, 12794305, 10350832, 14480674, 14480675, 14480676
     12998795, 13467683, 12588744, 12594032, 13645875, 13001379, 12797420
     13257247, 13787482, 14841409, 13041324, 13366202, 13385346, 13011409
     13326736, 13981051, 14664355, 15862018, 15862017, 15862016, 13466801
     14205448, 15862019, 12791981, 14063281, 14063280, 13362079, 13732226
     13384182, 13719081, 15862020, 15862021, 15862023, 15862022, 15862024
     9703627, 9858539, 12780098, 13354082, 14062797, 14062796, 14052474
     14062795, 14062794, 13534412, 14062793, 14062792, 12345082, 13550185
     12880299, 13502183, 13059165, 12612118, 13593999, 13916709, 13397104
     13524899, 9761357, 13657605, 13936424, 9873405, 12535346, 14727310
     12971775, 13696216, 13807411, 12917230, 13685544, 12938841, 13499128
     14546673, 11708510, 13699124, 14040433, 14546575, 13705338, 12662040
     12658411, 14262913, 12718090, 12959852, 14035825, 12919564, 12780983
     12950644, 13454210, 14258925, 13544396, 13903046, 13923374, 13572659
     13370330, 14275605, 13464002, 15853081, 13528551, 13612575, 14076523
     12620823, 13358781, 13649031, 14263073, 14138130, 13527323, 13804294
     13492735, 13332439, 13718279, 13035804, 13559697, 13448206, 13419660
     13399435, 14546638, 13070939, 12845115, 12976376, 11840910, 13566938
     13430938, 12748240, 12879027, 10263668, 13476583, 13484963, 13554409

Patch 15876003   : applied on Tue May 17 10:46:47 GMT+08:00 2016
Unique Patch ID: 15701232
Patch description: "Grid Infrastructure Patch Set Update : 11.2.0.3.5 (14727347)"
   Created on 11 Jan 2013, 08:27:57 hrs PST8PDT

```
  Bugs fixed:
    15876003, 14275572, 13919095, 13696251, 13348650, 12659561, 13039908
    14277586, 13987807, 14625969, 13938166, 13825231, 13036424, 12794268
    13011520, 13569812, 12758736, 13000491, 13498267, 13077654, 13001901
    13550689, 13430715, 13806545, 13634583, 11675721, 14082976, 14271305
    12771830, 12538907, 13947200, 12996428, 14102704, 13066371, 13483672
    12594616, 13879428, 13540563, 12897651, 12897902, 13241779, 12896850
    12726222, 12829429, 12728585, 13079948, 12876314, 13090686, 12925041
    12995950, 13251796, 12650672, 12398492, 12848480, 13582411, 13652088
    12990582, 13857364, 12975811, 12917897, 13653178, 13082238, 12947871
    13037709, 13371153, 12878750, 10114953, 11772838, 13058611, 13001955
    14001941, 11836951, 12965049, 13440962, 12765467, 13727853, 13425727
    12885323, 14407395, 13965075, 13339443, 12784559, 14242977, 13332363
    13074261, 12971251, 13811209, 12709476, 14168708, 14096821, 13993634
    13460353, 13523527, 12857064, 13719731, 13396284, 12899169, 13111013
    12558569, 13323698, 12867511, 12639013, 10260842, 12959140, 13085732
    12829917, 10317921, 13843080, 12934171, 12849377, 12349553, 13924431
    13869978, 12680491, 12914824, 13789135, 12730342, 13334158, 12950823
    10418841, 12832204, 13355963, 13531373, 13776758, 12720728, 13620816
    13002015, 13023609, 13024624, 12791719


Rac system comprising of multiple nodes
  Local node = ZHLHRDB1
  Remote node = ZHLHRDB1
  Remote node = ZHLHRDB2


--------------------------------------------------------------------------------


OPatch succeeded.
[ZHLHRDB1:oracle]:/oracle>sqlplus / as sysdba

SQL*Plus: Release 11.2.0.3.0 Production on Tue May 17 11:07:00 2016

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Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, OLAP,
Data Mining and Real Application Testing options

SQL> set line 9999
SQL> col action_time   for a30
SQL> col action        for a10
SQL> col namespace     for a10
SQL> col version       for a10
```

```
SQL> col bundle_series for a10
SQL> col comments     for a30
SQL>
SQL> SELECT to_char(action_time, 'YYYY-MM-DD HH24:MI:SS') action_time,
  2         action,
  3         namespace,
  4         version,
  5         id,
  6         bundle_series,
  7         comments
  8    FROM dba_registry_history D;

ACTION_TIME                     ACTION     NAMESPACE  VERSION          ID BUNDLE_SER COMMENTS
------------------------------- ---------- ---------- ----------- ------- ---------- ------------------------------
2011-10-21 04:48:04             APPLY      SERVER     11.2.0.3          0 PSU        Patchset 11.2.0.2.0
2016-05-05 16:36:06             APPLY      SERVER     11.2.0.3          0 PSU        Patchset 11.2.0.2.0

SQL> exit
Disconnected from Oracle Database 11g Enterprise Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, OLAP,
Data Mining and Real Application Testing options

====》看下节点二的 opatch 情况
[ZHLHRDB2:oracle]:/oracle>opatch lspatches
There are no Interim patches installed in this Oracle Home "/oracle/app/oracle/product/11.2.0/db".

OPatch succeeded.
[ZHLHRDB2:oracle]:/oracle>
```

可以看到节点一的 grid 和 db 软件都是 11.2.0.3.5 了，但是数据库还不是的，这个需要等 2 个节点的软件都升级完毕后再执行脚本$ORACLE_HOME/rdbms/admin/catbundle.sql

psu apply 才可以，下边先对节点二执行升级 GI PSU 后然后再升级 DB 实例的 PUS，过程和节点一一样，这里省略，对节点二升级完成后查看：

```
[ZHLHRDB2:root]:/softtmp>su - oracle
[ZHLHRDB2:oracle]:/oracle>opatch lspatches
14727310;Database Patch Set Update : 11.2.0.3.5 (14727310)
15876003;Grid Infrastructure Patch Set Update : 11.2.0.3.5 (14727347)

OPatch succeeded.
[ZHLHRDB2:oracle]:/oracle>
```

2.6 升级数据库数据字典

登录任意一个实例，执行升级数据字典脚本，@$ORACLE_HOME/rdbms/admin/catbundle.sql psu apply：

```
[ZHLHRDB1:root]:/>su - oracle
[ZHLHRDB1:oracle]:/oracle>
[ZHLHRDB1:oracle]:/oracle>
[ZHLHRDB1:oracle]:/oracle>sqlplus / as sysdba

SQL*Plus: Release 11.2.0.3.0 Production on Tue May 17 11:33:14 2016

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Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, Real Application Clusters, Automatic Storage Management, OLAP,
Data Mining and Real Application Testing options

SQL>
SQL>
SQL> @$ORACLE_HOME/rdbms/admin/catbundle.sql psu apply

PL/SQL procedure successfully completed.


PL/SQL procedure successfully completed.


PL/SQL procedure successfully completed.


Generating apply and rollback scripts...
Check the following file for errors:
/oracle/app/oracle/cfgtoollogs/catbundle/catbundle_PSU_oralhr_GENERATE_2016May17_11_33_49.log
Apply script: /oracle/app/oracle/product/11.2.0/db/rdbms/admin/catbundle_PSU_oralhr_APPLY.sql
Rollback script: /oracle/app/oracle/product/11.2.0/db/rdbms/admin/catbundle_PSU_oralhr_ROLLBACK.sql

PL/SQL procedure successfully completed.

Executing script file...
《《《《。。。。。。。。篇幅原因，有省略。。。。。。。。》》》》
```

```
SQL> SPOOL off
SQL> SET echo off
Check the following log file for errors:
/oracle/app/oracle/cfgtoollogs/catbundle/catbundle_PSU_oralhr_APPLY_2016May17_11_33_51.log
SQL>
SQL>
SQL> set line 9999
SQL> col action_time   for a30
SQL> col action        for a10
SQL> col namespace     for a10
SQL> col version       for a10
SQL> col bundle_series for a10
SQL> col comments      for a30
SQL>
SQL> SELECT to_char(action_time, 'YYYY-MM-DD HH24:MI:SS') action_time,
  2        action,
  3        namespace,
  4        version,
  5        id,
  6        bundle_series,
  7        comments
  8    FROM dba_registry_history D;


ACTION_TIME                     ACTION     NAMESPACE  VERSION            ID BUNDLE_SER COMMENTS
------------------------------- ---------- ---------- ---------- ---------- ---------- ------------------------------
2011-10-21 04:48:04             APPLY      SERVER     11.2.0.3            0 PSU        Patchset 11.2.0.2.0
2016-05-05 16:36:06             APPLY      SERVER     11.2.0.3            0 PSU        Patchset 11.2.0.2.0
2016-05-17 11:34:14             APPLY      SERVER     11.2.0.3            5 PSU        PSU 11.2.0.3.5

3 rows selected.

SQL>
```

可以看到数据库里边数据字典也升级成功，到此 PSU 升级成功。

第 3 章　PSU 总结

● 本次安装过程所涉及到的所有软件和文档阅读都可以去云盘（http://blog.itpub.net/26736162/viewspace-1624453）进行下载

● 安装 PSU 之前需要检查是否有冲突，$ORACLE_HOME/OPatch/opatch prereq CheckConflictAgainstOHWithDetail -phBaseDir /softtmp/psu5 -oh $ORACLE_HOME，若有冲

突需要先回滚掉以前的 patch 再进行安装，回滚的办法也在 readme 里边。

```
--opatch auto /softtmp/psu5 -rollback -ocmrf /softtmp/ocm_11gR2_psu5_lhr.rsp
$ORACLE_HOME/OPatch/opatch rollback -local -id 13348650 -oh /oracle/app/oracle/product/11.2.0/db
$ORACLE_HOME/OPatch/opatch rollback -local -id 13004894 -oh /oracle/app/oracle/product/11.2.0/db
--@$ORACLE_HOME/rdbms/admin/catbundle_PSU_<database SID PREFIX>_ROLLBACK.sql
```

About Me

....

本文作者：小麦苗，只专注于数据库的技术，更注重技术的运用

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于 2016-04-06 10:00~ 2016-04-11 19:00 在中行完成