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# Silent Installation Experiences with Oracle Database 11gR2 Real Application Clusters on Linux on System z

## Introduction

This IBM® Redpaper™ publication includes information about Version 11.2.0.3 Oracle Database on Linux on IBM System z®. It describes our experiences when we installed a two-node Oracle Grid 11.2.0.3 infrastructure in silent mode with a response file on Linux. It also describes our experiences when we installed Oracle Real Application Clusters (RACs) and created a database on two nodes. The silent mode installation can be used to create multiple Linux guests that run the same level of the database. It can be used for a single instance or to create the Grid Infrastructure for a RAC database.

**Special note:** This procedure is not the same for Oracle Database 11.2.0.2. This IBM Redpaper publication applies to 11.2.0.3 only.

You can learn about optional methods to install an Oracle database on Linux on System z and to use the silent installation process in cloning in the My Oracle Support (MOS) note, *How to create a Cluster by Cloning 11.2 Grid Infrastructure Home and Clusterware*, Doc ID 1413846.1. We explore the following topics in this paper:

- ▶ Oracle Database 11.2.0.3 general information
- ▶ Oracle environment
- ▶ Oracle Grid Infrastructure silent mode installation
- ▶ Oracle RAC silent mode installation
- ▶ Upgrading with the latest patch set update
- ▶ Optional methods to install and clone 11.2.0.3 Oracle Database on Linux on z:
  - Installing and cloning a single instance
  - Installing and cloning a two-node RAC database
  - Installing and cloning a new cluster
- ▶ Cleaning up after a failed installation to perform a fresh installation

## Oracle Database 11.2.0.3 general information

Oracle Database Version 11gR2 (11.2.0.3) was released in December 2011 as a patch set. It is a complete replacement for the 11.2.0.2 version, so you do not need to install 11.2.0.2 for a new installation. To download the six files in this patch set, which is known as Patch 10404530, log on to the Oracle support site:

<https://support.oracle.com>

Review the Oracle installation manuals. Also, you need to review the following My Oracle Support (MOS) documents:

- ▶ *Oracle Database Patch Set Notes 11g Release 2 (11.2.0.3) Patch Set 2 Part Number E26115-01*
- ▶ *Getting Started - 11gR2 Grid Infrastructure, SI (Single Instance), ASM and DB (IBM: Linux on System z)*, ID 1306465.1. This Getting Started note provides links to these key documents:
  - *Requirements for Installing Oracle 11gR2 on RHEL 5 on IBM: Linux on System z (s390x)*, Note 1306889.1
  - *Requirements for Installing Oracle 11gR2 64-bit on SLES 11 on IBM: Linux on System z (s390x)*, Note 1290644.1
  - *Requirements for Installing Oracle 11gR2 on SLES 10 on IBM: Linux on System z (s390x)*, Note 1308859.1
  - Check release notes for SUSE Linux Enterprise Server 11 Service Pack 1, specifically IBM System z Architecture Level Set (ALS) preparation to verify your machine type:  
[http://www.novell.com/linux/releasenotes/x86\\_64/SUSE-SLES/11-SP1/#s390x](http://www.novell.com/linux/releasenotes/x86_64/SUSE-SLES/11-SP1/#s390x)
  - *Ensure that you have prerequisite RPMs to install Oracle Database and AS10g (midtier) on IBM: Linux on System z (s390x)*, ID 1086769.1

The IBM Redpaper *Installing Oracle 11gR2 RAC on Linux on System z*, REDP-4788, offers valuable information:

<http://www.redbooks.ibm.com/abstracts/redp4788.html?Open>

**Support note:** Any known problems are documented in the Getting Started MOS note 1306465.1, for example with 11.2.0.3:

- ▶ The Oracle Universal Installer (OUI) might fail during prerequisite checking on 11.2.0.3 with a warning that you are missing `compat-libstdc++-33.3.2.3-47.3` on SLES platforms. You can safely ignore this warning.
- ▶ Your system might stop with “`exectask getsttype with UDEV devices with symlinks in 11.2.0.3GI installation.`” A programming problem report (bug 13497268) exists, and a patch is being developed.

The first patch set updates for 11.2.0.3 became available in January 2012. These patch set updates are issued quarterly, and you download them to update the database to the latest level. The January 2012 patches update the database to the 11.2.0.3.1 level:

- ▶ 11.2.0.3.1 Patch Set Update (PSU), Patch 13343438
- ▶ 11.2.0.3.1 Grid Infrastructure Patch Set Update (GI PSU), Patch 13348650

## Oracle environment

The Oracle lab environment that we used to write this paper provided two Linux guests, pazxxt18 and pazxxt19. The Linux systems are SLES 11 SP1 running on IBM z/VM® 5.4. The installation uses two multipath Fibre Channel Protocol (FCP) logical unit numbers (LUNs) for Automatic Storage Management (ASM) storage.

This paper is divided into two sections:

- ▶ Oracle Grid Infrastructure silent mode installation
- ▶ Oracle Real Application Cluster silent mode installation

The first section begins with information about the network configuration and ASM disk setup. Then, we describe the details of the runInstaller response file.

## Oracle Grid Infrastructure silent mode installation

This section describes the steps to install a two-node Oracle Grid 11203 Infrastructure in silent mode with a response file on Linux. The Linux system is SLES 11 SP1 running on z/VM 5.4. The installation uses two multipath FCP LUNs for ASM storage.

You can obtain details about other prerequisites to install an Oracle Grid Infrastructure in *Installing Oracle 11gR2 RAC on Linux on System z*, REDP-4788:

<http://www.redbooks.ibm.com/abstracts/redp4788.html?open>

We ran this command to verify the cluster and the output before running the silent installation:

```
runcluvfy.sh stage -pre crsinst -n pazxxt18,pazxxt19
```

Another reference to help you perform a silent installation is Appendix B, “Installing and Configuring Oracle Database using Response Files,” in the *Oracle Grid Infrastructure Installation Guide*, E17212-11:

[http://docs.oracle.com/cd/E11882\\_01/install.112/e17212.pdf](http://docs.oracle.com/cd/E11882_01/install.112/e17212.pdf)

## Network configuration

The two Linux nodes in our cluster are pazxxt18 and pazxxt19. Example 1 shows the public, private, and virtual IP addresses from the "/etc/hosts" file in use on both nodes.

*Example 1 Public, private, and virtual IP addresses*

---

```
#partial "/etc/hosts" in use on both pazxxt18 and pazxxt19
# The public IP addresses for the two nodes
130.35.55.236 pazxxt18.us.oracle.com pazxxt18
130.35.53.99 pazxxt19.us.oracle.com pazxxt19
#The private IP addresses
10.10.90.18 pazxxt18-pr.us.oracle.com pazxxt18-pr
10.10.90.19 pazxxt19-pr.us.oracle.com pazxxt19-pr
#The virtual IP addresses. The difference in the names
#was an "accident" and is not a recommendation.
130.35.52.65 vip-pazxxt18.us.oracle.com vip-pazxxt18
130.35.52.214 pazxxt19-vip.us.oracle.com pazxxt19-vip
```

---

## Single client access name (SCAN) for the cluster

The installation uses the single client access name (SCAN), pazxxt1819-r. Oracle 11gR2 clients connect to the database by using the SCAN name. The SCAN is configured in the domain name service (DNS). Issuing the `nslookup` command by using the scan name results in the output that is shown in Example 2.

*Example 2 Output of nslookup command*

---

```
oracle@pazxxt18:~> nslookup pazxxt1819-r
Server:          130.35.249.41
Address:         130.35.249.41#53
Name:   pazxxt1819-r.us.oracle.com
Address: 130.35.52.134
Name:   pazxxt1819-r.us.oracle.com
Address: 130.35.52.135
Name:   pazxxt1819-r.us.oracle.com
Address: 130.35.52.133
```

---

## ASM disk configuration

The Oracle note, *How to Manually Configure Disk Storage devices for use with Oracle ASM 11.2 on IBM: Linux on System z under SLES*, ID 1350008.1, provides details about configuring multipathing FCP/Small Computer System Interface (SCSI) devices with Linux on System z as a guest on z/VM. You can read this note at this website:

<https://support.oracle.com>

Example 3 shows a part of the multipathing config files. This section shows the connection to the ASM disk names that are in the response file.

*Example 3 Part of multipath.conf file in use on both pazxxt18 and pazxxt19*

---

```
multipaths {
    multipath {
        wwid          36005076306ffc115000000000000108a
        alias         lun01
        path_grouping_policy  failover
        uid 502
        gid 55536
        mode 660
    }
    multipath {
        wwid          36005076306ffc115000000000000108b
        alias         lun02
        path_grouping_policy  failover
        uid 502
        gid 55536
        mode 660
    }
}
```

---

The ASM disk names that are used in the response file are `/dev/mapper/lun01` and `/dev/mapper/lun02`. These names are created by multipath from the alias names that are shown in the config file in Example 3.

## Cluster verify command

We ran the `cluster verify` command before running the silent installation:

```
runcluvfy.sh stage -pre crsinst -n pazxxt18,pazxxt19
```

### Failure 1

The first failure that we encountered involved insufficient swap space:

Swap space check failed

Check failed on nodes:

```
pazxxt19,pazxxt18
```

We ignored this cluster verify failure for lack of swap space.

### Failure 2

The second failure that we encountered involved a missing software package:

Package existence check failed for "compat-libstdc++-33"

Check failed on nodes:

```
pazxxt19,pazxxt18
```

This failure can also be safely ignored. The library that was flagged as missing is available in the RPM `libstdc++33-32bit-3.3.3-11.9.s390x` on the SLES 11 SP 1.

Doc ID 1383381.1, which you can access by logging in to <https://support.oracle.com>, describes this issue.

## Installer command: runInstaller

Example 4 shows the command to perform the silent Oracle Grid Infrastructure installation on nodes `pazxxt18` and `pazxxt19`.

*Example 4 runInstaller command with options*

---

```
runInstaller -ignorePrereq -silent -force -responseFile /home/oracle/grid.rsp
```

---

We used the following options in this installation:

**-ignorePrereq** Use this option to ignore the prerequisite checks.

**-silent** For silent mode operations, the inputs can be a response file or a list of command-line variable value pairs.

**-force** This option allows a silent mode installation into a non-empty directory.

**-responseFile /home/oracle/grid.rsp**

This option specifies the response file and path to use.

We used the **-ignorePrereq** option to verify the cluster:

```
runcluvfy.sh stage -pre crsinst -n pazxxt18,pazxxt19
```

We ran the command. The prerequisites were already checked. The **-silent** option is the objective of this paper. The **-force** option was selected in case a rerun was necessary, because this option allows the use of a non-empty directory. The response file is given in "Response file: runInstaller" on page 6.

## Response file: runInstaller

We downloaded the six compressed files for patch 10404530: 11.2.0.3.0 PATCH SET FOR ORACLE DATABASE SERVER from the My Oracle Support metalink and uncompressed them. We used the template in the `<unzip directory>/grid/response/grid_install.rsp` file to create the response file `/"home/oracle/grid.rsp"` for this installation. Example 5 is a section of this response file that shows the values for the variables that we used.

### Example 5 Excerpt from the response file

```
#####
## Copyright(c) Oracle Corporation 1998,2011. All rights reserved.
##
## Specify values for the variables listed below to customize
##
## your installation.
...
#####
#-----
# Do not change the following system generated value.
#-----
oracle.install.responseFileVersion=/oracle/install/rspfmt_crsinstall_response_sche
ma_v11_2_0
#####
#-----
# Specify the hostname of the system as set during the install.
#-----
ORACLE_HOSTNAME=pazxxt18.us.oracle.com
#-----
# Specify the location which holds the inventory files.
#-----
INVENTORY_LOCATION=/oracle/oraInventory
#-----
# Specify the languages in which the components will be installed.
#-----
SELECTED_LANGUAGES=en
#-----
# CRS_CONFIG - To configure Grid Infrastructure for cluster
#-----
oracle.install.option=CRS_CONFIG
#-----
# Specify the complete path of the Oracle Base.
#-----
ORACLE_BASE=/oracle/BASE
#-----
# Specify the complete path of the Oracle Home.
#-----
ORACLE_HOME=/oracle/GRID
...
#####
#-----
# The DBA_GROUP is the OS group which is to be granted OSDBA privileges.
#-----
oracle.install.asm.OSDBA=dba
#-----
# The OPER_GROUP is the OS group which is to be granted OSOPER privileges.
```

```

# The value to be specified for OSOPER group is optional.
#-----
oracle.install.asm.OSOPER=oinstall
#-----
# The OSASM_GROUP is the OS group which is to be granted OSASM privileges. This
# must be different from the previous two.
#-----
oracle.install.asm.OSASM=oinstall
...
#####
#-----
# Specify a name for SCAN
#-----
oracle.install.crs.config.gnp.scanName=pazxt1819-r
#-----
# Specify an unused port number for SCAN service
#-----
oracle.install.crs.config.gnp.scanPort=1521
...
#####
#-----
# Specify a name for the Cluster you are creating.
#-----
oracle.install.crs.config.clusterName=pazxt1819-r
#-----
# Specify 'true' if you would like to configure Grid Naming Service(GNS), else
# specify 'false'
#-----
oracle.install.crs.config.gnp.configureGNS=false
...
#-----
oracle.install.crs.config.gnp.gnsSubDomain=
oracle.install.crs.config.gnp.gnsVIPAddress=
oracle.install.crs.config.autoConfigureClusterNodeVIP=false
#-----
# Specify a list of public node names, and virtual hostnames that have to be
# part of the cluster.
#-----
oracle.install.crs.config.clusterNodes=pazxt18.us.oracle.com:vip-pazxt18.us.orac
le.com,pazxt19.us.oracle.com:pazxt19-vip.us.oracle.com
#-----
# The value should be a comma-separated strings where each string is as shown
below
# InterfaceName:SubnetMask:InterfaceType
# where InterfaceType can be either "1", "2", or "3"
# (1 indicates public, 2 indicates private, and 3 indicates that the interface is
not used)
#-----
oracle.install.crs.config.networkInterfaceList=eth1:10.10.90.0:2,eth0:130.35.52.0:1
...
#-----
oracle.install.crs.config.storageOption=ASM_STORAGE
#-----
oracle.install.crs.config.sharedFileSystemStorage.diskDriveMapping=
#-----

```

```

...
#####
oracle.install.crs.config.useIPMI=false
...
#-----
# Specify a password for SYSASM user of the ASM instance
#-----
oracle.install.asm.SYSASMPassword=Oracle_01
#-----
# The ASM DiskGroup
#-----
oracle.install.asm.diskGroup.name=DATA
#-----
# Redundancy level to be used by ASM.
#-----
oracle.install.asm.diskGroup.redundancy=EXTERNAL
#-----
# Allocation unit size to be used by ASM.
#-----
oracle.install.asm.diskGroup.AUSize=4
#-----
# List of disks to create an ASM DiskGroup
#
#-----
oracle.install.asm.diskGroup.disks=/dev/mapper/lun01,/dev/mapper/lun02
...
#-----
oracle.install.asm.diskGroup.diskDiscoveryString=/dev/mapper/lun0*
#-----
# oracle.install.asm.monitorPassword=password
#-----
oracle.install.asm.monitorPassword=Oracle_01
...
#####
oracle.install.asm.upgradeASM=false
#-----
# Specify the auto-updates option. It can be one of the following:
#-----
oracle.installer.autoupdates.option=SKIP_UPDATES
#-----
oracle.installer.autoupdates.downloadUpdatesLoc=
#-----
AUTOUPDATES_MYORACLESUPPORT_USERNAME=
AUTOUPDATES_MYORACLESUPPORT_PASSWORD=
PROXY_HOST=
PROXY_PORT=0
PROXY_USER=
PROXY_PWD=
PROXY_REALM=

```

---



## Response file execution output: runInstaller

The execution of **runInstaller** with a response file and by using the **-silent** mode option generated the messages on the console that are shown in Example 6.

### *Example 6 Output messages from the runInstaller command*

---

The installation of Oracle Grid Infrastructure was successful. Please check '/oracle/oraInventory/logs/silentInstall2012-01-12\_10-52-49AM.log' for more details.

As a root user, execute the following script(s):

1. /oracle/oraInventory/orainstRoot.sh
2. /oracle/GRID/root.sh

Execute /oracle/oraInventory/orainstRoot.sh on the following nodes:

[pazxxt18, pazxxt19]

Execute /oracle/GRID/root.sh on the following nodes:

[pazxxt18, pazxxt19]

As install user, execute the following script to complete the configuration.

1. /oracle/GRID/cfgtoollogs/configToolAllCommands

Note:

1. This script must be run on the same system from where installer was run.
2. This script needs a small password properties file for configuration assistants that require passwords (refer to install guide documentation).

Successfully Setup Software.

---

The orainstRoot.sh scripts were run on both nodes to set up the Oracle Inventory. The root.sh scripts were run on both nodes to configure the Oracle Grid Infrastructure for the two node cluster of pazxxt18 and pazxxt19. Because the **runInstaller** command was run from node pazxxt18, the final step was to run the **configToolAllCommands** script from pazxxt18. From the console output that is shown in Example 6 and the *Grid Installation Guide*, this script needs a configuration file. This configuration file contains the ASM passwords so that the Oracle Automatic Storage Management Configuration Assistant (ASMCA) can run successfully. The file "cfgrsp.properties" was created in the Oracle home directory with the following three entries:

```
oracle.assistants.asm|S_ASMPASSWORD=Oracle_01
oracle.assistants.asm|S_ASMMONITORPASSWORD=Oracle_01
oracle.crs|S_BMCPASSWORD=
```

The first two entries contain the ASM passwords that were specified in the runInstaller response file. The third entry is for the Intelligent Platform Management Interface Configuration Assistant (IPMICA). It is left blank, because the IPMI feature was specified as "false" in the runInstaller response file.

Use the following syntax to run this script. You must run all of this syntax on one line:

```
/oracle/GRID/cfgtoollogs/configToolAllCommands
RESPONSE_FILE=/home/oracle/cfgrsp.properties
```

The output shows that the Grid Infrastructure and ASM are available (online) on both pazxxt18 and pazxxt19, as shown in Example 7.

### *Example 7 Output from configToolAllCommands script with the correct properties file*

---

The script runs netca to start the ASM listener on both nodes and the script also does a post install check with the cluster verification utility. It produces some

console output and the most important output is the location of the config log file, "/oracle/GRID/cfgtoollogs/oui/configActions2012-01-12\_12-48-25-PM.log ". This log has details of the listener starting and the cluvfy post install checks.

A check at this point shows that the grid infrastructure and ASM are available on both pazxxt18 and pazxxt19.

```
pazxxt18:/oracle/GRID/bin # ./crs_stat -t
```

Name	Type	Target	State	Host
ora.DATA.dg	ora....up.type	ONLINE	ONLINE	pazxxt18
ora....ER.lsnr	ora....er.type	ONLINE	ONLINE	pazxxt18
ora....N1.lsnr	ora....er.type	ONLINE	ONLINE	pazxxt19
ora....N2.lsnr	ora....er.type	ONLINE	ONLINE	pazxxt18
ora....N3.lsnr	ora....er.type	ONLINE	ONLINE	pazxxt18
ora.asm	ora.asm.type	ONLINE	ONLINE	pazxxt18
ora.cvu	ora.cvu.type	ONLINE	ONLINE	pazxxt18
ora.gsd	ora.gsd.type	OFFLINE	OFFLINE	
ora....network	ora....rk.type	ONLINE	ONLINE	pazxxt18
ora.oc4j	ora.oc4j.type	ONLINE	ONLINE	pazxxt18
ora.ons	ora.ons.type	ONLINE	ONLINE	pazxxt18
ora....SM1.asm	application	ONLINE	ONLINE	pazxxt18
ora....18.lsnr	application	ONLINE	ONLINE	pazxxt18
ora....t18.gsd	application	OFFLINE	OFFLINE	
ora....t18.ons	application	ONLINE	ONLINE	pazxxt18
ora....t18.vip	ora....t1.type	ONLINE	ONLINE	pazxxt18
ora....SM2.asm	application	ONLINE	ONLINE	pazxxt19
ora....19.lsnr	application	ONLINE	ONLINE	pazxxt19
ora....t19.gsd	application	OFFLINE	OFFLINE	
ora....t19.ons	application	ONLINE	ONLINE	pazxxt19
ora....t19.vip	ora....t1.type	ONLINE	ONLINE	pazxxt19
ora.scan1.vip	ora....ip.type	ONLINE	ONLINE	pazxxt19
ora.scan2.vip	ora....ip.type	ONLINE	ONLINE	pazxxt18
ora.scan3.vip	ora....ip.type	ONLINE	ONLINE	pazxxt18

## Oracle Real Application Cluster silent mode installation

This section describes the installation of an Oracle Real Application Cluster (RAC) and a sample database on a two-node Oracle Grid 11203 Infrastructure that is already running. We install the RAC in silent mode by using a response file. The Linux system is SLES 11 SP1 running on z/VM 5.4. The installation uses ASM and storage that is also running on the 11203 Grid Infrastructure. Our main focus is the "runInstaller" response file.

You can obtain details about other prerequisites to install an Oracle RAC in *Installing Oracle 11gR2 RAC on Linux on System z*, REDP-4788:

<http://www.redbooks.ibm.com/redpapers/abstracts/redp4788.html?Open>

We ran the cluster verify command **runcluvfy.sh stage -pre dbinst -n pazxxt18,pazxxt19 -r 11gR2 -verbose** and verified the output before running the silent installation.

Another reference for installing a RAC with a response file is Appendix B, "Using Scripts or Response Files to Create Oracle Real Application Clusters Databases", in the *Oracle Real Application Clusters Installation Guide*, E17214-08:

[http://docs.oracle.com/cd/E11882\\_01/install.112/e24660/scripts.htm#CIHBDCAJ](http://docs.oracle.com/cd/E11882_01/install.112/e24660/scripts.htm#CIHBDCAJ)

## Using the cluster verify command

We ran the following cluster verify command before running the silent installation:

```
runcluvfy.sh stage -pre dbinst -n pazxxt18,pazxxt19 -r 11gR2 -verbose
```

This command reported two failures.

### Failure 1

The first failure that we encountered involved insufficient swap space:

Check: Swap space

Node Name	Available	Required	Status
pazxxt19	2GB (2097136.0KB)	7.8539GB (8235384.0KB)	failed
pazxxt18	2GB (2097136.0KB)	7.8539GB (8235384.0KB)	failed

Result: Swap space check failed

We ignored this cluster verify failure for lack of swap space.

### Failure 2

The second failure that we encountered involved a missing software package:

Check: Package existence for "compat-libstdc++-33"

Node Name	Available	Required	Status
pazxxt19	missing	compat-libstdc++-33-3.2.3-47.3	failed
pazxxt18	missing	compat-libstdc++-33-3.2.3-47.3	failed

Result: Package existence check failed for "compat-libstdc++-33"

We also ignored this failure. The library that is flagged as missing is available in the RPM `libstdc++33-32bit-3.3.3-11.9.s390x` on the SLES 11 SP 1.

Doc ID 1383381.1, which you can access by logging in to <https://support.oracle.com>, describes this issue.

## Installer command: runInstaller

Example 8 shows the command that is used to perform the silent Oracle 11203 RAC installation on nodes pazxxt18 and pazxxt19.

*Example 8 runInstaller command with options*

```
runInstaller -ignorePrereq -silent -force -responseFile /home/oracle/rac.rsp
```

We used the following options in this installation:

- ignorePrereq** Use this option to ignore the prerequisite checks.
- silent** For silent mode operations, the inputs can be a response file or a list of command-line variable value pairs.

**-force** This option allows a silent mode installation into a non-empty directory.

**-responseFile /home/oracle/rac.rsp**

This option specifies the response file and path to use.

We used the **-ignorePrereq** option to verify the cluster:

```
runcluvfy.sh stage -pre dbinst -n pazxxt18,pazxxt19 -r 11gR2 -verbose
```

We ran the command, previously checked the prerequisites, and noted the two failures. The **-silent** option is the objective of this paper. The **-force** option was selected in case a rerun was necessary, because this option allows the use of a non-empty directory. The response file is given in "Response file: runInstaller" on page 6.

## Response file: runInstaller

We downloaded the six compressed files for patch 10404530: 11.2.0.3.0 PATCH SET FOR ORACLE DATABASE SERVER from the My Oracle Support metalink and uncompressed them. We used a template in `<unzip directory>/database/response/db_install.rsp` to create the response file, `/"home/oracle/rac.rsp"`, for this installation. Example 9 is a section of this response file, which shows the values for the variables that we used.

*Example 9 Excerpt from the response file*

```
#####  
## Copyright(c) Oracle Corporation 1998,2011. All rights reserved.  
#-----  
# Do not change the following system generated value.  
#-----  
oracle.install.responseFileVersion=/oracle/install/rspfmt_dbinstall_response_schem  
a_v11_2_0  
...  
#-----  
oracle.install.option=INSTALL_DB_AND_CONFIG  
#-----  
# Specify the hostname of the system as set during the install. It can be used  
...  
#-----  
ORACLE_HOSTNAME=pazxxt18.us.oracle.com  
#-----  
# Specify the UNIX group to be set for the inventory directory.  
#-----  
UNIX_GROUP_NAME=oinstall  
#-----  
# Specify the location which holds the inventory files.  
#-----  
INVENTORY_LOCATION=/oracle/oraInventory  
#-----  
# Specify the languages in which the components will be installed.  
#-----  
SELECTED_LANGUAGES=en  
#-----  
# Specify the complete path of the Oracle Home.  
#-----  
ORACLE_HOME=/oracle/RAC
```

```

#-----
# Specify the complete path of the Oracle Base.
#-----
ORACLE_BASE=/oracle/BASE
...
#-----
# Specify the installation edition of the component.
#-----
oracle.install.db.InstallEdition=EE
#-----
..oracle.install.db.EEOptionsSelection=false
#-----
oracle.install.db.optionalComponents=oracle.rdbms.partitioning:11.2.0.3.0,oracle.o
raolap:11.2.0.3.0,oracle.rdbms.dm:11.2.0.3.0,oracle.rdbms.dv:11.2.0.3.0,oracle.rdb
ms.lbac:11.2.0.3.0,oracle.rdbms.rat:11.2.0.3.0

oracle.install.db.DBA_GROUP=dba

oracle.install.db.OPER_GROUP=dba

oracle.install.db.CLUSTER_NODES=pazxxt18,pazxxt19

oracle.install.db.isRACOneInstall=

oracle.install.db.racOneServiceName=

oracle.install.db.config.starterdb.type=GENERAL_PURPOSE

oracle.install.db.config.starterdb.globalDBName=rac.us.oracle.com

oracle.install.db.config.starterdb.SID=rac

oracle.install.db.config.starterdb.characterSet=AL32UTF8

oracle.install.db.config.starterdb.memoryOption=true

oracle.install.db.config.starterdb.memoryLimit=5124

oracle.install.db.config.starterdb.installExampleSchemas=true

oracle.install.db.config.starterdb.enableSecuritySettings=false
...
#-----
# This variable holds the password that is to be used for all schemas in the
# starter database.
#-----
oracle.install.db.config.starterdb.password.ALL=Oracle_01

#-----
# Specify the SYS password for the starter database.
#-----
oracle.install.db.config.starterdb.password.SYS=

#-----
# Specify the SYSTEM password for the starter database.

```

```

#-----
oracle.install.db.config.starterdb.password.SYSTEM=

#-----
# Specify the SYSMAN password for the starter database.
#-----
oracle.install.db.config.starterdb.password.SYSMAN=

#-----
# Specify the DBSNMP password for the starter database.
#-----
oracle.install.db.config.starterdb.password.DBSNMP=

...
#-----
oracle.install.db.config.starterdb.control=DB_CONTROL

#-----
# Specify the Management Service to use if Grid Control is selected to manage
# the database.
#-----
oracle.install.db.config.starterdb.gridcontrol.gridControlServiceURL=
...
#-----
oracle.install.db.config.starterdb.automatedBackup.enable=false
...
#-----
oracle.install.db.config.starterdb.automatedBackup.osuid=
...
#-----
oracle.install.db.config.starterdb.automatedBackup.ospwd=
...
#-----
oracle.install.db.config.starterdb.storageType=ASM_STORAGE
...
oracle.install.db.config.starterdb.fileSystemStorage.dataLocation=
oracle.install.db.config.starterdb.fileSystemStorage.recoveryLocation=
oracle.install.db.config.asm.diskGroup=DATA
#-----
# Specify the password for ASMSNMP user of the ASM instance.
#
# Applicable only when oracle.install.db.config.starterdb.storage=ASM_STORAGE
#-----
oracle.install.db.config.asm.ASMNSMPPassword=Oracle_01

#-----
# Specify the My Oracle Support Account Username.
#
# Example   : MYORACLESUPPORT_USERNAME=abc@oracle.com
#-----
MYORACLESUPPORT_USERNAME=

#-----
# Specify the My Oracle Support Account Username password.
#

```

```

# Example      : MYORACLESUPPORT_PASSWORD=password
#-----
MYORACLESUPPORT_PASSWORD=

#-----
# Specify whether to enable the user to set the password for
# My Oracle Support credentials. The value can be either true or false.
# If left blank it will be assumed to be false.
#
# Example      : SECURITY_UPDATES_VIA_MYORACLESUPPORT=true
#-----
SECURITY_UPDATES_VIA_MYORACLESUPPORT=false

#-----
# Specify whether user doesn't want to configure Security Updates.
# The value for this variable should be true if you don't want to configure
# Security Updates, false otherwise.
#
# The value can be either true or false. If left blank it will be assumed
# to be false.
#
# Example      : DECLINE_SECURITY_UPDATES=false
#-----
DECLINE_SECURITY_UPDATES=true

#-----
# Specify the Proxy server name. Length should be greater than zero.
#
# Example      : PROXY_HOST=proxy.domain.com
#-----
PROXY_HOST=

#-----
# Specify the proxy port number. Should be Numeric and at least 2 chars.
#
# Example      : PROXY_PORT=25
#-----
PROXY_PORT=

#-----
# Specify the proxy user name. Leave PROXY_USER and PROXY_PWD
# blank if your proxy server requires no authentication.
#
# Example      : PROXY_USER=username
#-----
PROXY_USER=

#-----
# Specify the proxy password. Leave PROXY_USER and PROXY_PWD
# blank if your proxy server requires no authentication.
#
# Example      : PROXY_PWD=password
#-----
PROXY_PWD=

```

```

#-----
# Specify the proxy realm. This value is used if auto-updates option is selected.
#
# Example   : PROXY_REALM=metalink
#-----
PROXY_REALM=

#-----
# Specify the Oracle Support Hub URL.
#
# Example   : COLLECTOR_SUPPORTHUB_URL=https://orasupporthub.company.com:8080/
#-----
COLLECTOR_SUPPORTHUB_URL=

#-----
# Specify the auto-updates option. It can be one of the following:
# a.MYORACLESUPPORT_DOWNLOAD
# b.OFFLINE_UPDATES
# c.SKIP_UPDATES
#-----
oracle.installer.autoupdates.option=SKIP_UPDATES
#-----
# In case MYORACLESUPPORT_DOWNLOAD option is chosen, specify the location where
# the updates are to be downloaded.
# In case OFFLINE_UPDATES option is chosen, specify the location where the updates
# are present.
oracle.installer.autoupdates.downloadUpdatesLoc=
#-----
# Specify the My Oracle Support Account Username which has the patches download
# privileges
# to be used for software updates.
# Example   : AUTOUPDATES_MYORACLESUPPORT_USERNAME=abc@oracle.com
#-----
AUTOUPDATES_MYORACLESUPPORT_USERNAME=

#-----
# Specify the My Oracle Support Account Username password which has the patches
# download privileges
# to be used for software updates.
#
# Example   : AUTOUPDATES_MYORACLESUPPORT_PASSWORD=password
#-----
AUTOUPDATES_MYORACLESUPPORT_PASSWORD=

```

---

The **runInstaller -ignorePrereq -silent -force -responseFile /home/oracle/rac.rsp** command produced the output that is shown in Example 10.

*Example 10 Output of the runInstaller command*

---

Starting Oracle Universal Installer...

```

Checking Temp space: must be greater than 80 MB.   Actual 11846 MB   Passed
Checking swap space: must be greater than 150 MB.  Actual 2047 MB   Passed
Preparing to launch Oracle Universal Installer from
/oracle/tmp/OraInstall2012-01-24_08-11-44AM. Please wait

```



```

...oracle@pazxxt18:/oracle/unzips/p10404530_112030/database> [WARNING] [INS-32018]
The selected Oracle home is outside of Oracle base.
  CAUSE: The Oracle home selected was outside of Oracle base.
  ACTION: Oracle recommends installing Oracle software within the Oracle base
directory. Adjust the Oracle home or Oracle base accordingly.
You can find the log of this install session at:
  /oracle/oraInventory/logs/installActions2012-01-24_08-11-44AM.log
The installation of Oracle Database 11g was successful.
Please check '/oracle/oraInventory/logs/silentInstall2012-01-24_08-11-44AM.log'
for more details.
As a root user, execute the following script(s):
  1. /oracle/RAC/root.sh

```

```

Execute /oracle/RAC/root.sh on the following nodes:
[pazxxt18, pazxxt19]

```

Successfully Setup Software.

---

A warning message appeared, because the ORACLE\_HOME for RAC was not under ORACLE\_BASE, but the silent installation proceeded successfully. The "root.sh" script was run on both nodes.

## Accessing the 11203 RAC system

The newly installed system was accessed by using SQL\*Plus:

```

oracle@pazxxt18:/oracle/RAC/dbs> sqlplus / as sysdba
SQL*Plus: Release 11.2.0.3.0 Production on Tue Jan 24 08:58:07 2012
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

```

The sample data base was accessed after unlocking the "scott" user:

```

SQL> alter user scott identified by tiger account unlock;
User altered.
SQL> connect scott/tiger
Connected.
SQL> select * from dept;

```

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

## OEM 11g database control

After the silent installation is complete, the Oracle Enterprise Manager Database Control is available at the URL (pazxt18 is our local system):

<https://pazxt18.us.oracle.com:1158/em/>

The Grid Infrastructure and RAC database installations are complete.

## Upgrading to the latest Patch Set Update

As shown in the failures, Patch Set Updates for 11.2.0.3 are released quarterly. To keep your database current, download these Patch Set Updates to update the database to the latest level. The January 2012 patches bring the system level to 1.2.0.3.1:

- ▶ 11.2.0.3.1 Patch Set Update (PSU), Patch 13343438
- ▶ 11.2.0.3.1 Grid Infrastructure Patch Set Update (GI PSU), Patch 13348650

## Optional methods to install or clone an 11.2.0.3 Oracle database on Linux on System z

Several methods exist to install and clone an Oracle database on Linux guests on System z. You can install and clone an Oracle database on Linux guests on System z by using the Oracle Universal Installer by using a GUI interface, which is described in *Installing Oracle 11gR2 RAC on Linux on System z*, REDP-4788. Or, you can use the silent installation process that is described in this paper.

Several choices are available:

- ▶ Installing a single instance
- ▶ Installing a one-node RAC database
- ▶ Installing and cloning a two-node RAC database

To add nodes, you can create a tar file and then clone by using the **autoconfig** command. See the MOS note, *How to Configure or Reconfigure Grid Infrastructure With config.sh/config.bat*, ID 1354258.1.

- ▶ Installing a Grid Infrastructure and then creating several databases in the same infrastructure

The support note about cloning with the silent installation, *How to Clone an 11.2 Grid Infrastructure Home and Clusterware - IBM: Linux on System z*, ID 1413846.1, is useful. Log in to <https://support.oracle.com> and enter the support ID 1413846.1 to retrieve this support note. This document describes how to clone an Oracle Grid Infrastructure home and use the cloned home to create a cluster. You perform the cloning procedures by running scripts in silent mode. The cloning procedures are applicable to an 11.2.0.3 Clusterware installation on IBM Linux on System z by using either SUSE Linux Enterprise Server or Red Hat Enterprise Linux.

## Cleaning up after a failed installation

When Oracle installs code, especially Cluster Ready Services (CRS), it writes in the root directory. It is important that the system is cleaned up before attempting a fresh installation. Otherwise, you can experience problems later if the Oracle Inventory and other files use old data.

Review the latest My Oracle Support Document, *How to remove 11.2 Grid Infrastructure, CRS and/or Oracle Restart - IBM: Linux on System z*, ID 1413787.1, by logging in to <https://support.oracle.com> and entering the support document ID 1413787.1.

## The team who wrote this paper

This paper was produced by a team of specialists from around the world working at the International Technical Support Organization, Poughkeepsie Center.

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Oracle

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