# Hardware

## Memory

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| RAM | >= 4 GB |  | ☐ |
| Swap | 04-08GB: = 2.0xRAM  08-32GB: = 1.5xRAM  > 32GB: = 32 GB |  | ☐ |
| Shared memory | > max(MEMORY\_MAX\_TARGET, MEMORY\_TARGET) |  | ☐ |
| ***Instance 2*** | | | |
| RAM | >= 4 GB |  | ☐ |
| Swap | 04-08GB: = 2.0xRAM  08-32GB: = 1.5xRAM  > 32GB: = 32 GB |  | ☐ |
| Shared memory | > max(MEMORY\_MAX\_TARGET, MEMORY\_TARGET) |  | ☐ |

### Commands

|  |  |
| --- | --- |
| RAM check | |
| # grep MemTotal /proc/meminfo | |
| Swap check | |
| # grep SwapTotal /proc/meminfo | |
| RAM & Swap available | |
| # free | |
| Add more 512 MB swap | |
| # dd if=/dev/zero of=/swapfile1 bs=1024 count=524288  # mkswap /swapfile1  # chown root:root /swapfile1  # chmod 0600 /swapfile1  # swapon /swapfile1  # vi /etc/fstab  /swapfile1 swap swap defaults 0 0 | |
| Shared memory | |
| # df -h /dev/shm/ | |
| ***Check log (please, embeded check log content in the file)*** |  |

## System architect

### check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| System architecture | * RHEL4,OEL4 - update 7 or greater * RHEL5,OEL5 - 5.2 or greater * SLES10 - Kernel 2.6.16.21-0.8 or greater * SLES11 - Kernel 2.6.27.19-5 or greater * Asianux Server 3 SP2 |  | ☐ |
| ***Instance 2*** | | | |
| System architecture | * RHEL4,OEL4 - update 7 or greater * RHEL5,OEL5 - 5.2 or greater * SLES10 - Kernel 2.6.16.21-0.8 or greater * SLES11 - Kernel 2.6.27.19-5 or greater * Asianux Server 3 SP2 |  | ☐ |

### Commands

|  |
| --- |
| # uname -m |

## Disk space

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| Oracle software space | >= 4.35 GB - Enterprise  >= 3.73 GB - Standard |  | ☐ |
| Free space in /tmp | >= 1 GB |  | ☐ |
| ***Instance 2*** | | | |
| Oracle software space | >= 4.35 GB - Enterprise  >= 3.73 GB - Standard |  | ☐ |
| Free space in /tmp | >= 1 GB |  | ☐ |

### Commands

|  |  |
| --- | --- |
| Free space check | |
| # df –h | |
| If free space available in /tmp less than required, add to environment (profile) | |
| export TMP= *<directory>*  export TMPDIR=*<directory>* | |
| ***Check log (please, embeded check log content in the file)*** |  |

## Display

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| Display resolution | 1024 x 768 or higher |  | ☐ |
| ***Instance 2*** | | | |
| Display resolution | 1024 x 768 or higher |  | ☐ |

### Commands

|  |
| --- |
| Resolution check |
|  |
| **Resolution change** |
|  |

## Run level

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| Run level | 5 |  | ☐ |
| ***Instance 2*** | | | |
| Run level | 5 |  | ☐ |

### Commands

|  |  |
| --- | --- |
| Run level check | |
| # who –r | |
| **Run level change** | |
| # /sbin/init *<run level>*  *Or permanent change in /etc/inittab (find the entry “is:3:initdefault:”)* | |
| ***Check log (please, embeded check log content in the file)*** |  |

# Software

## Operating system

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| Version | * Asianux Server 3 SP2 * Oracle Linux 4 Update 7 * Oracle Linux 5 Update 2 * Oracle Linux 5 Update 5 (only if using Oracle Unbreakable Enterprise Kernel) * Red Hat Enterprise Linux 4 Update 7 * Red Hat Enterprise Linux 5 Update 2 * Red Hat Enterprise Linux 5 Update 5 (only if using Red Hat compatible kernel) * SUSE Linux Enterprise Server 10 SP2 * SUSE Linux Enterprise Server 11 |  | ☐ |
| Kernel | * For Oracle Linux 4 and Red Hat Enterprise Linux 4:2.6.9 or later * For Asianux 3, Oracle Linux 5 Update 2, and Red Hat Enterprise Linux 5 Update 2:2.6.18 or later * On Oracle Linux 5 Update 5 and Red Hat Enterprise Linux 5 Update 5:   + The Unbreakable Enterprise Kernel based on the 2.6.32 stable kernel   + The Red Hat compatible kernel for strict Red Hat compatibility |  | ☐ |
| ***Instance 2*** | | | |
| Version | * Asianux Server 3 SP2 * Oracle Linux 4 Update 7 * Oracle Linux 5 Update 2 * Oracle Linux 5 Update 5 (only if using Oracle Unbreakable Enterprise Kernel) * Red Hat Enterprise Linux 4 Update 7 * Red Hat Enterprise Linux 5 Update 2 * Red Hat Enterprise Linux 5 Update 5 (only if using Red Hat compatible kernel) * SUSE Linux Enterprise Server 10 SP2 * SUSE Linux Enterprise Server 11 |  | ☐ |
| Kernel | * For Oracle Linux 4 and Red Hat Enterprise Linux 4:2.6.9 or later * For Asianux 3, Oracle Linux 5 Update 2, and Red Hat Enterprise Linux 5 Update 2:2.6.18 or later * On Oracle Linux 5 Update 5 and Red Hat Enterprise Linux 5 Update 5:   + The Unbreakable Enterprise Kernel based on the 2.6.32 stable kernel   + The Red Hat compatible kernel for strict Red Hat compatibility |  | ☐ |

### Commands

|  |
| --- |
| Check version in /proc/version |
| # cat /proc/version |
| **Check kernel** |
| # uname -r |

## Packages

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| Packages installed | binutils-2.17.50.0.6  compat-libstdc++-33-3.2.3  compat-libstdc++-33-3.2.3 (32 bit)  elfutils-libelf-0.125  elfutils-libelf-devel-0.125  gcc-4.1.2  gcc-c++-4.1.2  glibc-2.5-24  glibc-2.5-24 (32 bit)  glibc-common-2.5  glibc-devel-2.5  glibc-devel-2.5 (32 bit)  glibc-headers-2.5  ksh-20060214  libaio-0.3.106  libaio-0.3.106 (32 bit)  libaio-devel-0.3.106  libaio-devel-0.3.106 (32 bit)  libgcc-4.1.2  libgcc-4.1.2 (32 bit)  libstdc++-4.1.2  libstdc++-4.1.2 (32 bit)  libstdc++-devel 4.1.2  make-3.81  numactl-devel-0.9.8.x86\_64  sysstat-7.0.2  unixODBC-2.2.12 (x86\_64)  unixODBC-2.2.12 (i386)  unixODBC-devel-2.2.12 (x86\_64)  unixODBC-devel-2.2.12 (i386) |  | ☐ |
| ***Instance 2*** | | | |
| Packages installed | binutils-2.17.50.0.6  compat-libstdc++-33-3.2.3  compat-libstdc++-33-3.2.3 (32 bit)  elfutils-libelf-0.125  elfutils-libelf-devel-0.125  gcc-4.1.2  gcc-c++-4.1.2  glibc-2.5-24  glibc-2.5-24 (32 bit)  glibc-common-2.5  glibc-devel-2.5  glibc-devel-2.5 (32 bit)  glibc-headers-2.5  ksh-20060214  libaio-0.3.106  libaio-0.3.106 (32 bit)  libaio-devel-0.3.106  libaio-devel-0.3.106 (32 bit)  libgcc-4.1.2  libgcc-4.1.2 (32 bit)  libstdc++-4.1.2  libstdc++-4.1.2 (32 bit)  libstdc++-devel 4.1.2  make-3.81  numactl-devel-0.9.8.x86\_64  sysstat-7.0.2  unixODBC-2.2.12 (x86\_64)  unixODBC-2.2.12 (i386)  unixODBC-devel-2.2.12 (x86\_64)  unixODBC-devel-2.2.12 (i386) |  | ☐ |

### Commands

|  |  |
| --- | --- |
| Check package | |
| # rpm -q --qf '%{NAME}-%{VERSION}-%{RELEASE} (%{ARCH})\n' binutils \  compat-libstdc++-33 \  elfutils-libelf \  elfutils-libelf-devel \  gcc \  gcc-c++ \  glibc \  glibc-common \  glibc-devel \  glibc-headers \  ksh \  libaio \  libaio-devel \  libgcc \  libstdc++ \  libstdc++-devel \  make \  sysstat \  unixODBC \  unixODBC-devel | |
| ***Check log (please, embeded check log content in the file)*** |  |
| **Install package** | |
| # rpm -ivh | |

## Additional

### 2.3.1 Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| Java version | JDK 6 (1.6.0\_21) or  JDK 5 (1.5.0\_16) |  | ☐ |
| ***Instance 2*** | | | |
| Java version | JDK 6 (1.6.0\_21) or  JDK 5 (1.5.0\_16) |  | ☐ |

### Commands

|  |  |
| --- | --- |
| *Check command* | |
| **# which java**  **# java –version** | |
| ***Check log (please, embeded check log content in the file)*** |  |

## Kernel parameters

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| kernel.shmmni | 4096 |  | ☐ |
| kernel.sem | 250 32000 100 128 |  | ☐ |
| fs.file-max | 6815744 |  | ☐ |
| net.ipv4.ip\_local\_port\_range | 9000 65500 |  | ☐ |
| net.core.rmem\_default | 262144 |  | ☐ |
| net.core.rmem\_max | 4194304 |  | ☐ |
| net.core.wmem\_default | 262144 |  | ☐ |
| net.core.wmem\_max | 1048576 |  | ☐ |
| kernel.shmall | physical RAM size / pagesize |  | ☐ |
| kernel.shmmax | 0.8\*RAM |  | ☐ |
| kernel.shmmni | 4096 |  | ☐ |
| kernel.sem | 250 32000 100 128 |  | ☐ |
| ***Instance 2*** | | | |
| kernel.shmmni | 4096 |  | ☐ |
| kernel.sem | 250 32000 100 128 |  | ☐ |
| fs.file-max | 6815744 |  | ☐ |
| net.ipv4.ip\_local\_port\_range | 9000 65500 |  | ☐ |
| net.core.rmem\_default | 262144 |  | ☐ |
| net.core.rmem\_max | 4194304 |  | ☐ |
| net.core.wmem\_default | 262144 |  | ☐ |
| net.core.wmem\_max | 1048576 |  | ☐ |
| kernel.shmall | physical RAM size / pagesize |  | ☐ |
| kernel.shmmax | 0.8\*RAM |  | ☐ |
| kernel.shmmni | 4096 |  | ☐ |
| kernel.sem | 250 32000 100 128 |  | ☐ |

### Commands

|  |
| --- |
| Get PAGE\_SIZE command |
| $ getconf PAGE\_SIZE |
| **Set command** |
| # vi /etc/sysctl.conf  kernel.shmmni = 4096  kernel.sem = 250 32000 100 128  fs.file-max = 6815744  net.ipv4.ip\_local\_port\_range = 9000 65500  net.core.rmem\_default = 262144  net.core.rmem\_max = 4194304  net.core.wmem\_default = 262144  net.core.wmem\_max = 1048576  kernel.shmall = <physical RAM size / pagesize>  kernel.shmmax = <0.8 RAM>  kernel.shmmni = 4096  kernel.sem = 250 32000 100 128  # sysctl -p |

## NTP Settings

Oracle Clusterware requires the same time zone setting on all cluster nodes. There are two options:

* Network Time Protocol (NTP)
* Oracle Cluster Time Synchronization Service (CTSS)

If NTP is used, CTSS run in observer mode. Setting needed for /etc/inetd/ntp.conf (see check list)

If NTP is not used, CTSSrun in active mode. Check list should be ignored.

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ***Instance 1*** | | | |
| OPTIONS="-x -u ntp:ntp -p /var/run/ntpd.pid" | Modified in /etc/sysconfig/ntpd |  | ☐ |
| ***Instance 2*** | | | |
| OPTIONS="-x -u ntp:ntp -p /var/run/ntpd.pid" | Modified in /etc/sysconfig/ntpd |  | ☐ |

### Commands

|  |
| --- |
| Check command |
| $ crsctl check ctss |
| **Set command** |
| $ps –ef|grep ntp  # vi /etc/ntp.conf  # vi /etc/sysconfig/ntpd  # service ntpd restart |

## Cluster verify scripts

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| Cluster verify scripts | Passed all |  | ☐ |

### Commands

|  |  |
| --- | --- |
| Set command | |
| $ ./runcluvfy.sh stage -pre crsinst -n node1,node2 -fixup –verbose >> runcluvfy.txt | |
| ***Check log (please, embeded check log content in the file)*** |  |

## AMM setting

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| MEMORY\_TARGET | Not set |  | ☐ |
| MEMORY\_MAX\_TARGET | Not set |  | ☐ |

### Commands

|  |
| --- |
| Set command |
| sqlplus>ALTER SYSTEM RESETMEMORY\_TARGET  sqlplus>ALTER SYSTEM RESETMEMORY\_MAX\_TARGET |

## Hugepage setting

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| HugePages | Set |  | ☐ |

### Commands

|  |
| --- |
| Set command |
| $ vi hugepages\_settings.sh  #!/bin/bash  #  # hugepages\_settings.sh  #  # Linux bash script to compute values for the  # recommended HugePages/HugeTLB configuration  #  # Note: This script does calculation for all shared memory  # segments available when the script is run, no matter it  # is an Oracle RDBMS shared memory segment or not.  #  # This script is provided by Doc ID 401749.1 from My Oracle Support  # http://support.oracle.com  # Welcome text  echo "  This script is provided by Doc ID 401749.1 from My Oracle Support  (http://support.oracle.com) where it is intended to compute values for  the recommended HugePages/HugeTLB configuration for the current shared  memory segments. Before proceeding with the execution please make sure  that:  \* Oracle Database instance(s) are up and running  \* Oracle Database 11g Automatic Memory Management (AMM) is not setup  (See Doc ID 749851.1)  \* The shared memory segments can be listed by command:  # ipcs -m  Press Enter to proceed..."  read  # Check for the kernel version  KERN=`uname -r | awk -F. '{ printf("%d.%d\n",$1,$2); }'`  # Find out the HugePage size  HPG\_SZ=`grep Hugepagesize /proc/meminfo | awk '{print $2}'`  # Initialize the counter  NUM\_PG=0  # Cumulative number of pages required to handle the running shared memory segments  for SEG\_BYTES in `ipcs -m | awk '{print $5}' | grep "[0-9][0-9]\*"`  do  MIN\_PG=`echo "$SEG\_BYTES/($HPG\_SZ\*1024)" | bc -q`  if [ $MIN\_PG -gt 0 ]; then  NUM\_PG=`echo "$NUM\_PG+$MIN\_PG+1" | bc -q`  fi  done  RES\_BYTES=`echo "$NUM\_PG \* $HPG\_SZ \* 1024" | bc -q`  # An SGA less than 100MB does not make sense  # Bail out if that is the case  if [ $RES\_BYTES -lt 100000000 ]; then  echo "\*\*\*\*\*\*\*\*\*\*\*"  echo "\*\* ERROR \*\*"  echo "\*\*\*\*\*\*\*\*\*\*\*"  echo "Sorry! There are not enough total of shared memory segments allocated for  HugePages configuration. HugePages can only be used for shared memory segments  that you can list by command:  # ipcs -m  of a size that can match an Oracle Database SGA. Please make sure that:  \* Oracle Database instance is up and running  \* Oracle Database 11g Automatic Memory Management (AMM) is not configured"  exit 1  fi  # Finish with results  case $KERN in  '2.4') HUGETLB\_POOL=`echo "$NUM\_PG\*$HPG\_SZ/1024" | bc -q`;  echo "Recommended setting: vm.hugetlb\_pool = $HUGETLB\_POOL" ;;  '2.6') echo "Recommended setting: vm.nr\_hugepages = $NUM\_PG" ;;  \*) echo "Unrecognized kernel version $KERN. Exiting." ;;  esac  # End  $ chmod +x hugepages\_settings.sh  $ ./hugepages\_settings.sh  $ ipcs -m |

# Oracle configuration

## Oracle users and directories

### Check list

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| Grid owner | grid |  | ☐ |
| Grid based path | (local disk) |  | ☐ |
| GRID\_HOME | (local disk) |  | ☐ |
| GRID\_HOME mode | 755 |  | ☐ |
| Oracle owner | oracle |  | ☐ |
| Oracle based path | (local disk) |  | ☐ |
| ORACLE\_HOME | (local disk) |  | ☐ |
| ORACLE\_HOME mode | 755 |  | ☐ |
| Primary group | oinstall |  | ☐ |
| Secondary groups | dba |  | ☐ |

### Commands

|  |
| --- |
| Check command |
| # id –a oracle  # id –a grid |
| **Set command** |
| # groupadd -g 1000 oinstall  # groupadd -g 1020 asmadmin  # groupadd -g 1021 asmdba  # groupadd -g 1022 asmoper  # groupadd -g 1031 dba  # useradd -u 1100 -g oinstall -G asmadmin,asmdba,asmoper -d **/**home**/**grid grid  # useradd -u 1101 -g oinstall -G dba,asmdba -d **/**home**/**oracle  oracle  # mkdir -p /u01/app/11.2.0/grid  # mkdir -p /uo1/app/grid  # chown -R grid:oinstall /u01  # mkdir -p /u01/app/oracle  # chown oracle:oinstall /u01/app/oracle  # chmod -R 775 /u01 |

## Scan name and Ips

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| Scan name | N/A |  | ☐ |
| Scan VIP | 3 VIPs |  | ☐ |
| Scan name resolved | DNS resolution |  | ☐ |
| Node 1 public | N/A |  | ☐ |
| Node 2 public | N/A |  | ☐ |
| Node 1 VIP | N/A |  | ☐ |
| Node 2 VIP | N/A |  | ☐ |
| Node 1 Private | N/A |  | ☐ |
| Node 2 Private | N/A |  | ☐ |

## Database version

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| Grid version | >=11.2.0.3 |  | ☐ |
| Database version | >=11.2.0.3 |  | ☐ |
| Patches applied | >=11.2.0.3.2 |  | ☐ |

## Database parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| DB\_LOCK\_SIZE | >=4096 |  | ☐ |
| ACTIVE\_INSTANCE\_COUNT | Not set |  | ☐ |
| PARALLEL\_MAX\_SERVERS | =4xCPU |  | ☐ |
| FAST\_START\_PARALLEL\_ROLLBACK | =4xCPU |  | ☐ |
| PRE\_PAGE\_SGA | False |  | ☐ |
| LOCAL\_LISTENER | Default values |  | ☐ |

## ASM configuration

### ASM Allocation Unit

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| ASM AU | 4MB |  | ☐ |

### Number of diskgroups

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Recommend | Value | Passed |
| Number of diskgroups for data | <=2 |  | ☐ |
| Number of diskgroups for cluster | <=1 |  | ☐ |

When storing the OCR and Voting Disk within ASM in 11gR2 and higher it is recommended to maintain no more than 2 ASM diskgroups (see ASM Best Practices). This means that the OCR and Voting disk will be stored along with the database related files.