内蒙古移动

JFHISDB 数据库安装配置服务报告

11GR2 RAC on HP-UX

文件控制

文档分类

文档名称	
版本号码	
版本日期	
作者	

版本控制

版本	日期	备注
V1.0		第一版

修改记录

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2015-7-22	杜诚文	V1.0	第一次创建

拷贝

拷贝No.	姓名	单位

审阅

职务	姓名	职位

批准

职务	签名	日期

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1 安装环境规划

1.1 硬件环境

操作系统	HP-UX B.11.31
主机	Superdome2
存储	3PAR

1.2 主机配置

CPU 数量	16
内存容量	128G
网卡数量	1
RAC 节点数	0

1.3 数据库软件

集群软件版本	Oracle Grid Infrastructure 11.2.0.4.0
数据库版本	Oracle Database 11.2.0.4.0 Enterprise Edition
数据库补丁	
其他补丁	

1.4 安装目录规划

ORACLE_BASE	/oracle/app/oracle
ORACLE_HOME	/oracle/app/oracle/11.2/db_1
GRID_HOME	/oracle/app/grid/11.2
RAC 节点数	0

1.5 存储规划

磁盘设备	磁盘大小(Mb)	DISKGROUP
/dev/rdisk/disk335	1048576	JFHISDATA1
/dev/rdisk/disk336	1048576	
/dev/rdisk/disk337	1048576	
/dev/rdisk/disk338	1048576	
/dev/rdisk/disk339	1048576	
/dev/rdisk/disk340	1048576	
/dev/rdisk/disk341	1048576	
/dev/rdisk/disk342	1048576	

/dev/rdisk/disk343	1048576	
/dev/rdisk/disk344	1048576	
/dev/rdisk/disk345	1048576	
/dev/rdisk/disk346	1048576	
/dev/rdisk/disk347	1048576	
/dev/rdisk/disk348	1048576	
/dev/rdisk/disk349	1048576	
/dev/rdisk/disk350	1048576	
/dev/rdisk/disk351	1048576	
/dev/rdisk/disk352	1048576	
/dev/rdisk/disk353	1048576	
/dev/rdisk/disk354	1048576	
/dev/rdisk/disk355	1048576	
/dev/rdisk/disk356	1048576	
/dev/rdisk/disk357	1048576	
/dev/rdisk/disk358	1048576	
/dev/rdisk/disk359	1048576	
/dev/rdisk/disk360	1048576	
/dev/rdisk/disk361	1048576	
/dev/rdisk/disk362	1048576	
/dev/rdisk/disk363	1048576	
/dev/rdisk/disk364	1048576	
/dev/rdisk/disk365	1048576	JFHISDATA2
/dev/rdisk/disk366	1048576	
/dev/rdisk/disk367	1048576	
/dev/rdisk/disk368	1048576	
/dev/rdisk/disk369	1048576	
/dev/rdisk/disk370	1048576	
/dev/rdisk/disk371	1048576	
/dev/rdisk/disk372	1048576	
/dev/rdisk/disk373	1048576	
/dev/rdisk/disk374	1048576	
/dev/rdisk/disk375	1048576	
/dev/rdisk/disk376	1048576	
/dev/rdisk/disk377	1048576	
/dev/rdisk/disk378	1048576	
/dev/rdisk/disk379	1048576	
/dev/rdisk/disk380	1048576	
/dev/rdisk/disk381	1048576	JFHISDATA3
/dev/rdisk/disk382	1048576	
/dev/rdisk/disk383	1048576	
/dev/rdisk/disk384	1048576	
/dev/rdisk/disk385	1048576	
/dev/rdisk/disk386	1048576	
/dev/rdisk/disk387	1048576	

/dev/rdisk/disk388	1048576	
/dev/rdisk/disk389	1048576	
/dev/rdisk/disk390	1048576	
/dev/rdisk/disk391	1048576	
/dev/rdisk/disk392	1048576	
/dev/rdisk/disk393	1048576	
/dev/rdisk/disk394	1048576	
/dev/rdisk/disk395	1048576	JFHISDATA4
/dev/rdisk/disk396	1048576	
/dev/rdisk/disk397	1048576	
/dev/rdisk/disk398	1048576	
/dev/rdisk/disk399	1048576	
/dev/rdisk/disk400	1048576	
/dev/rdisk/disk401	1048576	
/dev/rdisk/disk402	1048576	
/dev/rdisk/disk403	1048576	
/dev/rdisk/disk404	1048576	
/dev/rdisk/disk405	1048576	
/dev/rdisk/disk406	1048576	
/dev/rdisk/disk407	1048576	
/dev/rdisk/disk408	1048576	
/dev/rdisk/disk409	1048576	
/dev/rdisk/disk410	1048576	
/dev/rdisk/disk411	1048576	
/dev/rdisk/disk412	1048576	
/dev/rdisk/disk413	1048576	
/dev/rdisk/disk414	1048576	
/dev/rdisk/disk419	1024	JFHISVT

1.6 网络规划

每台主机需要有两个网络接口，一个作为公有网卡，一个作为私有网卡，如下表：

主机名	IP 地址	网卡	说明
jfxddbls	10.220.83.101	lan900	公有网络地址

1.7 数据库信息汇总

服务器名 / 项目名称	jfxddbls	
公共 IP 地址(pub-ip)	10.220.83.101	
私有 IP 地址(priv-ip)		
虚拟 IP 地址(vip)		
集群实例名称	Jfdb1	
集群数据库名称	jfdb	
OCR/Vote Disk		
ASM 磁盘组		
数据库版本	11.2.0.4 并安装最新 psu 11.2.0.4.7	
数据库 BASE 目录	/grid/app/grid	
集群软件 HOME 目录	/grid/app/11.2.0.4/grid	
数据库软件 BASE 目录	/oracle/app/oracle	
数据库软件 HOME 目录	/oracle/app/oracle/11.2.0.4/db_1	
数据库监听端口	1521	
数据库字符集	ZHS16GBK	
数据库块大小	8192	

未来规划为 RAC。

2 主机硬件环境检查

2.1 查看主机配置

查看当前主机配置信息，包含 CPU、内存、网卡、磁盘等信息。

2.1.1 machinfo

```
# machinfo
CPU info:
   Intel(R)  Itanium(R)  Processor 9540 (2.13 GHz, 24 MB)
   8 cores, 16 logical processors per socket
   6.39 GT/s QPI, CPU version D0
         Active processor count:
         2 sockets
         16 cores (8 per socket)
         16 logical processors (8 per socket)
         LCPU attribute is disabled

Memory: 130917 MB (127.85 GB)

Firmware info:
   Firmware revision:  007.010.000
   FP SWA driver revision: 1.23
   IPMI is supported on this system.
   BMC firmware revision: 3.08

Platform info:
   Model:               "ia64 hp Superdome2 16s"
   Machine ID number:     be32d070-c36a-11e4-8523-5195a4a69d27
   Machine serial number:  SGH503YR5A

OS info:
   Nodename:  jfxddbls
   Release:   HP-UX B.11.31
   Version:   U (unlimited-user license)
   Machine:   ia64
   ID Number: 3191001200
   vmunix _release_version:
@(#) $Revision: vmunix:    B.11.31_LR FLAVOR=perf
```

2.1.2 print_manifest

```
# /opt/ignite/bin/print_manifest
jfxddbls#[/]/opt/ignite/bin/print_manifest

NOTE: Could not read the /etc/resolv.conf file.

System Information

    Your Hewlett-Packard computer has software installed and
    configured as follows.

    The system was created January 22, 2015, 15:13:15 SST.
    It was created with Ignite-UX revision C.7.18.63.

------------------------------------------------------------
NOTE: You should retain this information for future reference.
------------------------------------------------------------
    Serial number: C3B3OC2_n1          Hard Partition (npar): 1
    Order number:  F49961253~009~0200


System Hardware
```

```
Model:            ia64 hp Superdome2 16s
Main Memory:       130917 MB
Processors:        16
   Intel(R)  Itanium(R)  Processor 9540 (2.13 GHz, 24 MB)
   8 cores, 16 logical processors per socket
   6.39 GT/s QPI, CPU version D0
         Active processor count:
         2 sockets
         16 cores (8 per socket)
         16 logical processors (8 per socket)
         LCPU attribute is disabled
OS mode:          64 bit
LAN hardware ID:   0xA02BB829975E
LAN hardware ID:   0xA02BB8299762
LAN hardware ID:   0xA02BB829975A
LAN hardware ID:   0x000000000000
LAN hardware ID:   0x000000000000
LAN hardware ID:   0x000000000000
LAN hardware ID:   0x000000000000
Keyboard Language:  USB_PS2_DIN_US_English

Storage devices               HW Path         Interface
HP Ultrium 3-SCSI             64000/0xfa00/0x1
3PARdataVV 1024 Mb            64000/0xfa00/0x66
3PARdataVV 1048576 Mb          64000/0xfa00/0x62
3PARdataVV 1048576 Mb          64000/0xfa00/0x61
3PARdataVV 1048576 Mb          64000/0xfa00/0x60
3PARdataVV 1048576 Mb          64000/0xfa00/0x5f
3PARdataVV 1048576 Mb          64000/0xfa00/0x5e
3PARdataVV 1048576 Mb          64000/0xfa00/0x5d
3PARdataVV 1048576 Mb          64000/0xfa00/0x5c
3PARdataVV 1048576 Mb          64000/0xfa00/0x5b
3PARdataVV 1048576 Mb          64000/0xfa00/0x5a
3PARdataVV 1048576 Mb          64000/0xfa00/0x59
3PARdataVV 1048576 Mb          64000/0xfa00/0x58
3PARdataVV 1048576 Mb          64000/0xfa00/0x57
3PARdataVV 1048576 Mb          64000/0xfa00/0x56
3PARdataVV 1048576 Mb          64000/0xfa00/0x55
3PARdataVV 1048576 Mb          64000/0xfa00/0x54
3PARdataVV 1048576 Mb          64000/0xfa00/0x53
3PARdataVV 1048576 Mb          64000/0xfa00/0x52
3PARdataVV 1048576 Mb          64000/0xfa00/0x51
3PARdataVV 1048576 Mb          64000/0xfa00/0x50
3PARdataVV 1048576 Mb          64000/0xfa00/0x4f
3PARdataVV 1048576 Mb          64000/0xfa00/0x4e
3PARdataVV 1048576 Mb          64000/0xfa00/0x4d
3PARdataVV 1048576 Mb          64000/0xfa00/0x4c
3PARdataVV 1048576 Mb          64000/0xfa00/0x4b
3PARdataVV 1048576 Mb          64000/0xfa00/0x4a
3PARdataVV 1048576 Mb          64000/0xfa00/0x49
3PARdataVV 1048576 Mb          64000/0xfa00/0x48
3PARdataVV 1048576 Mb          64000/0xfa00/0x47
3PARdataVV 1048576 Mb          64000/0xfa00/0x46
3PARdataVV 1048576 Mb          64000/0xfa00/0x45
3PARdataVV 1048576 Mb          64000/0xfa00/0x44
3PARdataVV 1048576 Mb          64000/0xfa00/0x43
3PARdataVV 1048576 Mb          64000/0xfa00/0x42
3PARdataVV 1048576 Mb          64000/0xfa00/0x41
3PARdataVV 1048576 Mb          64000/0xfa00/0x40
3PARdataVV 1048576 Mb          64000/0xfa00/0x3f
3PARdataVV 1048576 Mb          64000/0xfa00/0x3e
3PARdataVV 1048576 Mb          64000/0xfa00/0x3d
3PARdataVV 1048576 Mb          64000/0xfa00/0x3c
3PARdataVV 1048576 Mb          64000/0xfa00/0x3b
3PARdataVV 1048576 Mb          64000/0xfa00/0x3a
3PARdataVV 1048576 Mb          64000/0xfa00/0x39
3PARdataVV 1048576 Mb          64000/0xfa00/0x38
3PARdataVV 1048576 Mb          64000/0xfa00/0x37
3PARdataVV 1048576 Mb          64000/0xfa00/0x36
3PARdataVV 1048576 Mb          64000/0xfa00/0x35
3PARdataVV 1048576 Mb          64000/0xfa00/0x34
3PARdataVV 1048576 Mb          64000/0xfa00/0x33
3PARdataVV 1048576 Mb          64000/0xfa00/0x32
3PARdataVV 1048576 Mb          64000/0xfa00/0x31
3PARdataVV 1048576 Mb          64000/0xfa00/0x30
3PARdataVV 1048576 Mb          64000/0xfa00/0x2f
```

```
   3PARdataVV 1048576 Mb          64000/0xfa00/0x2e
   3PARdataVV 1048576 Mb          64000/0xfa00/0x2d
   3PARdataVV 1048576 Mb          64000/0xfa00/0x2c
   3PARdataVV 1048576 Mb          64000/0xfa00/0x2b
   3PARdataVV 1048576 Mb          64000/0xfa00/0x2a
   3PARdataVV 1048576 Mb          64000/0xfa00/0x29
   3PARdataVV 1048576 Mb          64000/0xfa00/0x28
   3PARdataVV 1048576 Mb          64000/0xfa00/0x27
   3PARdataVV 1048576 Mb          64000/0xfa00/0x26
   3PARdataVV 1048576 Mb          64000/0xfa00/0x25
   3PARdataVV 1048576 Mb          64000/0xfa00/0x24
   3PARdataVV 1048576 Mb          64000/0xfa00/0x23
   3PARdataVV 1048576 Mb          64000/0xfa00/0x22
   3PARdataVV 1048576 Mb          64000/0xfa00/0x21
   3PARdataVV 1048576 Mb          64000/0xfa00/0x20
   3PARdataVV 1048576 Mb          64000/0xfa00/0x1f
   3PARdataVV 1048576 Mb          64000/0xfa00/0x1e
   3PARdataVV 1048576 Mb          64000/0xfa00/0x1d
   3PARdataVV 1048576 Mb          64000/0xfa00/0x1c
   3PARdataVV 1048576 Mb          64000/0xfa00/0x1b
   3PARdataVV 1048576 Mb          64000/0xfa00/0x1a
   3PARdataVV 1048576 Mb          64000/0xfa00/0x19
   3PARdataVV 1048576 Mb          64000/0xfa00/0x18
   3PARdataVV 1048576 Mb          64000/0xfa00/0x17
   3PARdataVV 1048576 Mb          64000/0xfa00/0x16
   3PARdataVV 1048576 Mb          64000/0xfa00/0x15
   3PARdataVV 1048576 Mb          64000/0xfa00/0x14
   3PARdataVV 1048576 Mb          64000/0xfa00/0x13
   HP MSA 2040 SAN 286100 Mb       64000/0xfa00/0x8
   HP MSA 2040 SAN 57220 Mb        64000/0xfa00/0x7
   HP MSA 2040 SAN 9536 Mb         64000/0xfa00/0x6
   HP MSA 2040 SAN 28608 Mb        64000/0xfa00/0x5
   HP MSA 2040 SAN 47680 Mb        64000/0xfa00/0x4

   I/O Interfaces
   Class         H/W Path      Driver        Description
   lan           3/0/0/0/0/0/0  iexgbe        HP  PCIe 2-p 10GbE Built-in
   lan           3/0/0/0/0/0/1  iexgbe        HP  PCIe 2-p 10GbE Built-in
   lan           3/0/0/2/0/0/0  iexgbe        HP  PCIe 2-p 10GbE Built-in
   lan           3/0/0/2/0/0/1  iexgbe        HP  PCIe 2-p 10GbE Built-in
   usb           3/0/2/2/0/0/0/1/0 hcd          NEC OHCI Controller
   usb           3/0/2/2/0/0/0/1/1 hcd          NEC OHCI Controller
   usb           3/0/2/2/0/0/0/1/2 ehci         NEC EHCI Controller
   graphics      3/0/2/2/0/0/0/4/0 gvid_core     PCI Display (1002515e)
   usb           3/0/2/3/0/0/4  uhci          HP UHCI Virtual Controller
   tty           3/250/0       asio0         Built-in RS232C
   ipmi          3/250/1       ipmi          IPMI Controller
   acpi_node      3/250/2       acpi_node     Acpi Hardware
   fc             44/0/0/2/0/0/0 fcd           HP AH401A 8Gb Dual Port PCIe Fibre
Channel Adapter (FC Port 1)
   fc             44/0/0/2/0/0/1 fcd           HP AH401A 8Gb Dual Port PCIe Fibre
Channel Adapter (FC Port 2)
   ext_bus          44/0/1/0/0/0/0 ciss             PCIe SAS SmartArray P411 RAID
Controller
   fc             44/0/2/2/0/0/0 fcd           HP AH401A 8Gb Dual Port PCIe Fibre
Channel Adapter (FC Port 1)
   fc             44/0/2/2/0/0/1 fcd           HP AH401A 8Gb Dual Port PCIe Fibre
Channel Adapter (FC Port 2)
   fc             45/0/2/0/0/0/0 fcd           HP AH401A 8Gb Dual Port PCIe Fibre
Channel Adapter (FC Port 1)
   fc             45/0/2/0/0/0/1 fcd           HP AH401A 8Gb Dual Port PCIe Fibre
Channel Adapter (FC Port 2)
   fc             45/0/2/2/0/0/0 fcd           HP AH401A 8Gb Dual Port PCIe Fibre
Channel Adapter (FC Port 1)
   fc             45/0/2/2/0/0/1 fcd           HP AH401A 8Gb Dual Port PCIe Fibre
Channel Adapter (FC Port 2)
   escsi_ctlr     64000/0x0/0x0  usb_ms_scsi    USB Mass Storage Virt Ctlr


Installed Software

   Your system was installed with HP-UX version B.11.31.

   Your system has the following software products installed and
   configured on the system disk drive(s).

   Product        Revision        Description
```

```
   10GigEthr-02    B.11.31.1403     PCIe 10 Gigabit Ethernet;Supptd HW=467799-B21,
HW=AM225A, HW=AM232A, HW=AM233A
   10GigEthr-03              B.11.31.1403                  PCIe   10   GbE;Supptd
HW=580151/610609/613431-B21,NC551/552/553,AT094/111/118A
   10GigEthr-04         B.11.31.1303           PCIe  10  Gigabit  Ethernet;Supptd
HW=593715/BS668
   2014Dec1131     2014.12         HPUX 11.31 Megpatch for Dec 2014
   B2491BA         B.11.31         MirrorDisk/UX (Server)
   B3835DA         C.03.06         HP Process Resource Manager
   B3929HB         B.05.10.01       OnlineJFS for Veritas File System 5.1SP1 Bundle
   B5140BA         A.11.31.08       Serviceguard NFS Toolkit
   B5736DA         A.04.20.31.08    HA Monitors
   Base-VXFS       B.11.31          Base VxFS File System 4.1 Bundle for HP-UX
   Base-VxFS-51    B.05.10.01       Veritas File System Bundle 5.1SP1 for HP-UX
   BaseLVM         B.11.31.1403     Logical Volume Manager
   CDE-ChineseS    B.11.31          Simplified Chinese CDE Environment
   CDE-ChineseT    B.11.31          Traditional Chinese CDE Environment
   CDE-English     B.11.31          English CDE Environment
   CIFS-CLIENT     A.02.02.03       HP CIFS Client
   CIFS-SERVER     A.03.01.05       HP CIFS Server
   CommonIO        B.11.31.1403     Common IO Drivers
   DSAUtilities      C.01.00.22          HP-UX Distributed Systems Administration
Utilities
   DynRootDisk     B.1131.A.3.13.1660Dynamic Root Disk
   DynamicNPars    B.11.31.0709     Dynamic nPartitions enablement
   FEATURE11i      B.11.31.1403.401a Feature Enablement Patches for HP-UX 11i v3,
March 2014
   FIREFOX         A.2.0.0.19ar.02   Firefox for HP-UX
   FibrChanl-00    B.11.31.1003     FibreChannel;HW=A6795A,A5158A
   FibrChanl-01                                                          B.11.31.1403
FibrChnl;HW=A6826A,A9782A,A9784A,AB378A/B,AB379A/B,AB465A,AD193A,AD194A,AD300A
   FibrChanl-02                                                          B.11.31.1403
FCLP;HW=AD299A,AD355A,AD221A,AD222A,AD393A,AH402A,AH403A,403621-B21,456972-B21
   FibrChanl-03    B.11.31.1403     FCOC;HW=580151-B21,613433-001,AT111A
   FibrChanl-04    B.11.31.1303     FCQ;HW=P3P
   GTK            2.6.8.00.01      GTK+ 2.6 The Gnome GUI Runtime  Toolkit
   GigEther-00                B.11.31.0903                  PCI   GigEther;Supptd
HW=A4926A/A4929A/A6096A;SW=J1642AA
   GigEther-01                B.11.31.1403                  PCI   GigEther;Supptd
HW=A6825A/A6794A/A6847A/A8685A/A9782A/A9784A/A7109A/AB465A
   HP-ACC-Link     C.11.31.03       HP aCC_link Bundle
   HP-Caliper-PERF  C.11.31.08       HP Caliper Bundle
   HP-WDB-DEBUGGER  C.11.31.08       HP DEBUGGER Bundle
   HPPortableImage  B.11.31.1103     HP-UX Portable Image
   HPUX-DHCPv4     B.11.31          HPUX DHCPv4 Server
   HPUX-DHCPv6     B.11.31          HPUX DHCPv6 Server
   HPUX-FTPServer   C.2.6.1.8.0      HPUX FTP Server
   HPUX-MailServer  C.8.13.3.5       HPUX Mail Server
   HPUX-NTP        B.11.31          HPUX NTP Server
   HPUX-NameServer  C.9.7.3.3.0      HPUX Name Server
   HPUX-RAMD       B.11.31          HPUX IPv6 routing Server
   HPUX-TCPWRAP    B.11.31          HPUX TCPWrapper daemon
   HPUX11i-HA-OE   B.11.31.1403     HP-UX High Availability Operating Environment
   HPUXBastille    B.3.3.01         Bastille Security Hardening Tool
   HPUXEssential   B.11.31.1203     Essential HP-UX Utilities
   HPUXExtns-Jpn     B.11.31            Japanese font, input methods and printer
extensions
   HPUXExtns-Kor     B.11.31              Korean font, input methods and printer
extensions
   HPUXExtns-SCh    B.11.31           Simplified Chinese font, input methods and
printer extensions
   HPUXExtns-TCh    B.11.31           Traditional Chinese font, input methods and
printer extensions
   HPUXGatedMrouted B.11.31          HPUX Gated and Mrouted Server
   HPUXLocales     B.11.31          Internationalization Support
   HPUXMan-Eng     B.11.31.1203     Minimum and Essential English man pages
   HPUXMan-Jpn     B.11.31.1203     Minimum and Essential Japanese man pages
   HPUXMinRuntime   B.11.31          Minimum Runtime Environment
   HPUXMsgs-Fre     B.11.31           Minimum and Essential HP-UX French Language
Message Catalogs
   HPUXMsgs-Ger     B.11.31           Minimum and Essential HP-UX German Language
Message Catalogs
   HPUXMsgs-Ita     B.11.31           Minimum and Essential HP-UX Italian Language
Message Catalogs
   HPUXMsgs-Jpn     B.11.31          Minimum and Essential HP-UX Japanese Language
Message Catalogs
   HPUXMsgs-Kor     B.11.31           Minimum and Essential HP-UX Korean Language
```

```
Message Catalogs
   HPUXMsgs-SCh     B.11.31          Minimum and Essential HP-UX Simplified Chinese
Language Message Catalogs
   HPUXMsgs-Spa     B.11.31           Minimum and Essential HP-UX Spanish Language
Message Catalogs
   HPUXMsgs-Swe     B.11.31           Minimum and Essential HP-UX Swedish Language
Message Catalogs
   HPUXMsgs-TCh     B.11.31          Minimum and Essential HP-UX Traditional Chinese
Language Message Catalogs
   HWEnable11i      B.11.31.1403.401a Hardware Enablement Patches for HP-UX 11i v3,
March 2014
   IEther-00       B.11.31.1403      PCI/PCI-X/PCIe IEther
   IGNITE          C.7.18.63        HP-UX Installation Utilities (Ignite-UX)
   IPFilter        A.11.31.18.10     HP IPFilter 3.5alpha5
   J4240AA         B.11.31.1403      Auto-Port Aggregation Software
   Java60JDK       1.6.0.20.00       Java 6.0 JDK for HP-UX
   Java60JRE       1.6.0.20.00       Java 6.0 JRE for HP-UX
   Java70          1.7.0.07.00      Java 7.0 for HP-UX
   LDAPUX          B.05.01          LDAP-UX Integration
   NParCmds        B.11.31.1303      NPartition Commands
   ONCplus         B.11.31.17       ONC+ 2.3
   OVsnmpAgent      B.11.31          OpenView SNMP Agent
   OnlineDiag      B.11.31.22.02     HPUX 11.31 Support Tools Bundle, March 2013
   PAMKerberos      D.01.26          PAM-Kerberos Version 1.26
   PCIInfo-00      B.11.31.1209      PCI ID Information Driver
   PRMKernelSW      C.03.06          HP PRM Kernel Software
   PRMLibraries     C.03.06          HP PRM Software Libraries
   ParMgr          B.31.02.04.06     Partition Manager - HP-UX
   ProviderDefault  B.11.31.1403      Select WBEM Providers
   ProviderSvcsBase C.14.00.06.01     Provider Services Base
   QPKAPPS         B.11.31.1403.400a Applications Patches for HP-UX 11i v3, March 2014
   QPKBASE         B.11.31.1403.400a Base Quality Pack Bundle for HP-UX 11i v3, March
2014
   RAID-01         B.11.31.1403      RAID SA; Supptd HW=A7143A/A9890A/A9891A
   SATADVD-00       B.11.31.1403      PCIe SATA DVD Driver
   SCSI-PR-Utilites  B.01.31.01            SCSI  command  utilities  to  manipulate
Registrations and Reservations
   SG-IVS-Toolkit    B.02.00             Serviceguard Toolkit for Integrity Virtual
Servers
   Sec00Tools       B.01.04.10        Install-Time security infrastructure.
   SecureShell      A.06.20.006       HP-UX Secure Shell
   SerialSCSI-00     B.11.31.1303      PCI-X/PCI-E SerialSCSI
   SwAssistant      C.02.95          HP-UX Software Assistant
   SysFaultMgmt     C.07.12.06.01      HPUX System Fault Management
   SysMgmtMin       B.11.31.1403      Minimum Software Deployment Tools
   SysMgmtPlus      A.10.00.03.01     HP-UX SMH Supplemental Functionality
   SysMgmtWeb       A.3.2.7          HP-UX Web Based System Management User Interfaces
   T1905CA          A.11.20.00.01     Serviceguard
   T1909BA          B.07.00.01       Enterprise Cluster Master Toolkit
   TBIRD           A.2.0.0.24ar.00    Thunderbird for HP-UX
   TC097DA          11.13.000        HP Operations Agent
   Tune-N-Tools     B.11.31.0909      Optimized Kernel Tunables and Tools for Database
and Application Servers
   USB-00          D.11.31.0909      Transition USB-00 Product
   VirtualBase      B.06.30          Base Virtualization Software
   WhiteListInf     A.01.02.02        HP-UX Whitelisting
   hpuxws22Apache    B.2.2.15.18       HP-UX Apache-based Web Server
   hpuxws22Tomcat    C.6.0.35.01       HP-UX Tomcat-based Servlet Engine
   hpuxws22Webmin    A.1.070.13        HP-UX Webmin-based Admin
   hpuxwsXml        A.2.03           HPUX XML
   perl            E.5.8.8.M        Perl Programming Language
   scsiU320-00      B.11.31.1109      PCI-X SCSI U320;Supptd HW=A7173A/AB290A
   SX-IA           V3.1.0.2         SX (System Exerciser -- IA version)


LVM File System Configuration

   This system is configured with Logical Volume Manager (LVM) file systems.
   Refer to the File System layout section for information on the LVM layout.


JFS File System Configuration

   This system is configured with a Journaled File System (referred to
   as either JFS or VXFS).  Refer to the File System layout section for
   information on JFS/VXFS file systems.
```

```
Disk layout

   LVM disk               Device file       HW Addr     size   vol. grp
   HP MSA 2040 SAN         /dev/disk/disk13   64000/0xfa00/0x7 57220  /dev/vgora
   HP MSA 2040 SAN         /dev/disk/disk10   64000/0xfa00/0x4 47680  /dev/vgapp
   HP MSA 2040 SAN         /dev/disk/disk11   64000/0xfa00/0x5 28608  /dev/vggrid
   HP MSA 2040 SAN         /dev/disk/disk12   64000/0xfa00/0x6 9536   /dev/vgnsr


File System layout

   LVM Device file          mount point    size  fs type
   /dev/vg00:
   /dev/vg00/lvol1          /stand        2048  vxfs
   /dev/vg00/lvol2          swap         65536
   /dev/vg00/lvol3          /            10240 vxfs
   /dev/vg00/lvol4          /tmp          10240 vxfs
   /dev/vg00/lvol5          /home         10240 vxfs
   /dev/vg00/lvol6          /opt          20480 vxfs
   /dev/vg00/lvol7          /usr          20480 vxfs
   /dev/vg00/lvol8          /var          20480 vxfs
   /dev/vg00               unallocated    125440
   /dev/vgora:
   /dev/vgora/lv_oracle      /oracle       57152 vxfs
   /dev/vgora              unallocated    0
   /dev/vgapp:
   /dev/vgapp/lv_app         /app          47616 vxfs
   /dev/vgapp              unallocated    0
   /dev/vggrid:
   /dev/vggrid/lv_grid       /grid         28544 vxfs
   /dev/vggrid             unallocated    0
   /dev/vgnsr:
   /dev/vgnsr/lv_nsr         /nsr          9472  vxfs
   /dev/vgnsr              unallocated    0


Swap configuration

   type      size  priority  device/location
   dev       65536   1     /dev/vg00/lvol2


Kernel Configuration

   The following drivers or parameters are configured into your system's
   kernel.  After installing HP-UX, use the sam(1m) command to configure
   the following items into the kernel:
      shmmni                4096
      semmni               nproc
      nproc                15000
      ncsize             8*nproc+3072
      msgmni               nproc
      max_async_ports     nproc+100
      filecache_min            3%
      lcpu_attr                0
      vps_ceiling             64
      shmmax             0X40000000
      nswapdev                32
      nkthread           nproc*7/4+16
      nfile                16384
      maxtsiz_64bit       0X40000000
      maxssiz_64bit       1073741824
      maxdsiz_64bit       4294967296
      max_mem_window           10
      hfs_max_ra_blocks         32
      aio_physmem_pct           10
      STRMSGSZ                  0
      max_thread_proc         1200
      aio_max_ops             8192
      dnlc_hash_locks          512
      hfs_ra_per_disk          128
      maxdsiz            1073741824
      maxssiz            134217728
      maxtsiz            100663296
      msgtql               nproc
      ninode             8*nproc+2048
```

```
       nstrpty                 60
       nswapfs                 32
       swchunk               2048
       filecache_max            8%
       ksi_alloc_max       nproc*8
       maxuprc           nproc*9/10+1
       nflocks              nproc
       semmns              nproc*2
       semmnu              nproc-4
       shmseg                  512


System Information

   The following parameters were set on the configured target:
      hostname:          jfxddbls
      IP address:        10.220.83.101
      subnet mask:       255.255.255.0
      gateway IP address: 10.2.194.1
      gateway IP address: 10.220.83.1
      time zone:         EAT-8
```

2.2 检查主机物理内存

GI 安装需要所需内存最小为 2.5 GB。
DB 安装需要所需内存最小为 1.5 GB。

```
# /usr/contrib/bin/machinfo  | grep -i Memory
Memory: 130917 MB (127.85 GB)
```

2.3 检查主机交互空间

交换空间要求设置一般为内存的 2 倍，但不超过 32GB，磁盘须有足够的空间。

```
# /usr/sbin/swapinfo -a
                 Kb          Kb          Kb   PCT       START/          Kb
TYPE          AVAIL        USED        FREE  USED        LIMIT     RESERVE  PRI  NAME
dev        67108864           0    67108864    0%            0           -    1  /dev/vg00/lvol2
reserve           -      811316     -811316
memory    127512480     8818460   118694020    7%
```

2.4 查看/tmp 的空间

查看/tmp 空间大小，/tmp 可用空间不能小于 7GB。

```
# bdf /tmp
Filesystem          kbytes    used   avail %used Mounted on
/dev/vg00/lvol4    10485760 3110904 7317328   30% /tmp
```

如果 tmp 空间不足，可以通过以下方式，指定新的 temp 目录：

```
export TEMP=/new_tmp
export TMPDIR=/new_tmp
```

2.5 查看磁盘空间

GI 软件安装需要的最小空间为 5.5GB

DB 软件安装需要的最小空间为 8.2GB

```
# bdf
Filesystem          kbytes    used   avail %used Mounted on
/dev/vg00/lvol3    10485760  240424 10165360    2% /
/dev/vg00/lvol1    2097152  381728 1702088   18% /stand
/dev/vg00/lvol8    20971520 2176464 18648312   10% /var
/dev/vg00/lvol7    20971520 3371840 17462192   16% /usr
/dev/vg00/lvol4    10485760 3110904 7317328   30% /tmp
/dev/vgora/lv_oracle
                   58523648 10135112 45364294   18% /oracle
/dev/vg00/lvol6    20971520 5666624 15185384   27% /opt
/dev/vgnsr/lv_nsr  9699328   19870 9074499    0% /nsr
/dev/vg00/lvol5    10485760   21368 10382768    0% /home
/dev/vggrid/lv_grid
                   29229056   73808 27333052    0% /grid
/dev/vgapp/lv_app  48758784   78595 45637685    0% /app
```

2.6 查看网络信息

2.6.1 查看主机名配置

```
# more /etc/hosts
10.220.83.101   jfxddbls
127.0.0.1       localhost       loopback
```

2.6.2 查看网卡信息

```
# /usr/sbin/ifconfig -a
Name      Mtu  Network       Address         Ipkts          Ierrs Opkts          Oerrs
Coll
lo0       32808 127.0.0.0      127.0.0.1       211803             0     211803             0     0
lan900     1500 10.220.83.0    10.220.83.101   219567             0     220302             0     0
```

2.6.3 查看路由信息

```
# netstat -rn

Routing tables
Destination          Gateway          Flags Refs Interface  Pmtu
127.0.0.1            127.0.0.1        UH    0    lo0        32808
10.220.83.101        10.220.83.101    UH    0    lan900     32808
10.220.83.0          10.220.83.101    U     2    lan900      1500
127.0.0.0            127.0.0.1        U     0    lo0        32808
default              10.220.83.1      UG    0    lan900      1500
```

说明

- 每台主机的网卡用途与主机名类型必须匹配(如 eth0 统一对应公有网卡)。
- 公有网络必须支持 TCP/IP 协议。
- 公有 IP，虚拟 IP，SCAN IP 地址在同一网段。
- 安装前，默认网关地址必须能够正常访问(通过 route 命令查看)。
- 私有网络必须支持 UDP 协议。
- 私有网络必须与公有网络网段隔离。
- 私有网络必须通过交换机连接，不能使用心跳线方式。
- 私有 IP 地址范围为：10.*.*.* 或者 192.168.*.*。
- 如果使用 DNS，可以配置 3 个静态的 IP 作为 SCAN 地址。
- SCAN 地址名称中不能有”_”，可以使用”-”。
- SCAN 地址对应的主机名长度不能超过 16 个字符。
- 通过主机名解析的方式，只能配置一个 SCAN IP。
- 不启用 GNS 的情况下，公有 IP 和虚拟 IP 必须为静态地址。
- 从 11.2.0.2 开始，oracle 提供网络冗余特性，不需要再进行操作系统配置。

3 操作系统配置

3.1 操作系统版本要求

HP-UX 11iV3 patch Bundle Sep/ 2008 (B.11.31.0809.326a)

以 root 用户检查操作系统 bundle patch 是否满足安装要求，要求的补丁是否已安装。

```
# uname -a
HP-UX jfxddbls B.11.31 U ia64 3191001200 unlimited-user license

# /usr/sbin/swlist -l bundle |grep QPK
  QPKAPPS             B.11.31.1403.400a Applications Patches for HP-UX 11i v3, March 2014
  QPKBASE             B.11.31.1403.400a Base Quality Pack Bundle for HP-UX 11i v3, March 2014
```

3.2 检查操作系统运行级别

为正常安装和运行 oracle 11g 软件，操作系统必须运行在级别 3，通过如下命令检查：

```
# who -r
   .       run-level 3  Jul 22 18:05    3    0    S
```

3.3 操作系统软件包

```
PHCO_41479 (or later) 11.31 diskowner(1M) cumulative patch
PHKL_38038 vm cumulative patch
PHKL_38938 11.31 SCSI cumulative I/O patch
PHKL_40941  Scheduler patch : post wait hang
PHSS_36354 11.31 assembler patch
PHSS_37042  11.31 hppac (packed decimal)
PHSS_37959  Libcl patch for alternate stack issue fix (QXCR1000818011)
PHSS_38141 11.31 aC++ Runtime
PHSS_39094 11.31 linker + fdp cumulative patch
PHSS_39100 11.31 Math Library Cumulative Patch
PHSS_39102 11.31 Integrity Unwind Library
```

检测 HP-UX 软件包：

```
# swlist -l patch | grep PHCO_41479
# swlist -l patch | grep PHKL_38038
# swlist -l patch | grep PHKL_38938
# swlist -l patch | grep PHKL_40941
# swlist -l patch | grep PHSS_36354
# swlist -l patch | grep PHSS_37042
# swlist -l patch | grep PHSS_37959
# swlist -l patch | grep PHSS_38141
# swlist -l patch | grep PHSS_39094
# swlist -l patch | grep PHSS_39100
# swlist -l patch | grep PHSS_39102
```

所有软件包已经安装。检查通过。

3.4 调整网络参数

3.4.1 检查网络参数

```
# /usr/bin/ndd /dev/tcp tcp_smallest_anon_port tcp_largest_anon_port
# /usr/bin/ndd /dev/udp udp_smallest_anon_port udp_largest_anon_port
```

3.4.2 调整网络参数

设置建议值，请编辑网络参数配置文件 /etc/rc.config.d/nddconf，增加以下内容：

```
TRANSPORT_NAME[0]=tcp
NDD_NAME[0]=tcp_smallest_anon_port
NDD_VALUE[0]=9000

TRANSPORT_NAME[1]=tcp
NDD_NAME[1]=tcp_largest_anon_port
NDD_VALUE[1]=65500

TRANSPORT_NAME[2]=udp
NDD_NAME[2]=udp_smallest_anon_port
NDD_VALUE[2]=9000

TRANSPORT_NAME[3]=udp
NDD_NAME[3]=udp_largest_anon_port
NDD_VALUE[3]=65500

TRANSPORT_NAME[4]=sockets
NDD_NAME[4]=socket_buf_max
NDD_VALUE[4]=4194304

TRANSPORT_NAME[5]=sockets
NDD_NAME[5]=socket_udp_rcvbuf_default
NDD_VALUE[5]=2097152

TRANSPORT_NAME[6]=sockets
NDD_NAME[6]=socket_udp_sndbuf_default
NDD_VALUE[6]=65535
```

3.5 调整操作系统参数

Parameter	Minimum Required Value
ksi_alloc_max	32768
executable_stack	0
ksi_alloc_max	32768
max_thread_proc	1024
maxdsiz	1073741824 (1GB)
maxdsiz_64bit	2147483648 (2GB)
maxfiles	1024
maxfiles_lim	63488
maxssiz	134217728 (128MB)
maxssiz_64bit	1073741824 (1GB)
maxuprc	3686
msgmni	4096
msgtql	4096

ncsize	35840
nflocks	4096
ninode	34816
nkthread	7184
nproc	4096
semmni	4096
semmns	8192
semmnu	4096
semvmx	32767
shmmax	1073741824
shmmni	4096
shmseg	512
tcp_smallest_anon_port	9000
tcp_largest_anon_port	65500
udp_smallest_anon_port	9000
udp_largest_anon_port	65500

3.5.1 检查内核参数

```
# kctune ksi_alloc_max executable_stack ksi_alloc_max max_thread_proc maxdsiz maxdsiz_64bit maxfiles maxfiles_lim maxssiz maxssiz_64bit maxuprc msgmni msgtql ncsize nflocks ninode nkthread nproc semmni semmns semmnu semvmx shmmax shmmni shmseg tcp_smallest_anon_port tcp_largest_anon_port udp_smallest_anon_port udp_largest_anon_port

Tunable                 Value  Expression    Changes
executable_stack            0  Default       Immed
ksi_alloc_max          120000  nproc*8       Immed
max_thread_proc          1200  1200          Immed
maxdsiz            1073741824  1073741824    Immed
maxdsiz_64bit      4294967296  4294967296    Immed
maxfiles                 2048  Default
maxfiles_lim             4096  Default       Immed
maxssiz             134217728  134217728     Immed
maxssiz_64bit      1073741824  1073741824    Immed
maxuprc                 13501  nproc*9/10+1  Immed
msgmni                  15000  nproc         Immed
msgtql                  15000  nproc         Immed
ncsize                 123072  8*nproc+3072
nflocks                 15000  nproc         Imm (auto disabled)
ninode                 122048  8*nproc+2048
nkthread                26266  nproc*7/4+16  Immed
nproc                   15000  15000         Immed
semmni                  15000  nproc
semmns                  30000  nproc*2
semmnu                  14996  nproc-4
semvmx                  32767  Default
shmmax             1073741824  0X40000000    Immed
shmmni                   4096  4096          Immed
shmseg                    512  512           Immed
```

3.5.2 修改内核参数

```
# /usr/sbin/kctune aio_listio_max=512
```

3.6 创建操作系统符号链接

为防止链接错误，需要确保安装 motif 2.1 开发环境包(X11MotifDevKit.MOTIF21-PRG)，如果没有安装则请以 root 用户执行如下命令：

```
# cd /usr/lib
# ls -la libX*
# ln -s libX11.3 libX11.sl
# ln -s libXIE.2 libXIE.sl
# ln -s libXext.3 libXext.sl
# ln -s libXhp11.3 libXhp11.sl
# ln -s libXi.3 libXi.sl
# ln -s libXm.4 libXm.sl
# ln -s libXp.2 libXp.sl
# ln -s libXt.3 libXt.sl
# ln -s libXtst.2 libXtst.sl
```

3.7 设置设备文件的次要号

注意此步骤可以忽略，在预检查阶段生成自动修复脚本时可以自动解决此问题。

如果/dev/async 设备存在，次要号不是 0x4 或 0x104

```
# ls -l /dev/async
```

通过下面命令进行修改

```
# /sbin/mknod /dev/async c 101 0x4
or
# /sbin/mknod /dev/async c 101 0x104
```

如果次要号不存在，通过上面命令进程创建。

```
# chown oracle:oinstall /dev/async
```

3.8 配置时钟同步

修改 /etc/rc.config.d/netdaemons，
增加下面的选项到文件中并重启 NTP 服务。

```
export XNTPD_ARGS="-x"
```

```
# /sbin/init.d/xntpd stop
# /sbin/init.d/xntpd start
```

如果不使用 NTP 服务，则执行如下操作来禁用 NTP 服务。

```
# /sbin/init.d/xntpd stop
# rm /etc/ntp.conf
or, mv /etc/ntp.conf to /etc/ntp.conf.org
```

检查

```
$ crsctl check ctss
```

3.9 创建 GRID,ORACLE 安装用户和组

在创建 grid,oracle 安装用户和组时，需要保证所有节点的用户和组的 ID 一致。

3.9.1 检查是否已经存在 Oracle Inventory

```
# more /var/opt/oracle/oraInst.loc
```

如果文件没有返回信息，表明没有安装数据库软件或安装不规范。

如果文件已经存在，并且返回的结果类似：

```
inventory_loc=/u01/app/oracle/oraInventory
inst_group=oinstall
```

表明已经存在 oracle 软件安装信息。

3.9.2 创建 grid,oracle 安装组

```
/usr/sbin/groupadd -g 1000 oinstall
/usr/sbin/groupadd -g 1001 dba
/usr/sbin/groupadd -g 1002 oper
/usr/sbin/groupadd -g 1005 asmadmin
/usr/sbin/groupadd -g 1006 asmdba
/usr/sbin/groupadd -g 1007 asmoper
```

```
jfxddbls#[/usr/lib]more /etc/group
```

3.9.3 创建 grid,oracle 安装用户

- 检查 oracle 用户是否存在

```
# id oracle
# id grid
```

- 如果命令没有返回信息，表明用户不存在

```
# /usr/sbin/useradd -u 1000 -g oinstall -G asmadmin,asmdba,asmoper,dba
grid
# /usr/sbin/useradd -u 1001 -g oinstall -G asmdba,dba oracle
```

- 检查 oracle 用户

```
# id oracle
# id grid
```

3.9.4 创建 External Job 用户

```
# useradd extjob
```

3.9.5 修改 grid,oracle 用户口令

修改口令后，需要使用用户进行登录，重置用户口令。

```
# passwd grid
# passwd oracle
```

3.9.6 为 ORACLE 安装组提供 HP-UX RTPRIO，MLOCK，RTSCHED 权限

检查 /etc/privgroup 文件是否存在，如果文件不存在，手工创建文件，添加下面内容：

```
oinstall RTPRIO MLOCK RTSCHED
```

如果文件存在，执行下面命令：

```
# /usr/sbin/setprivgrp oinstall RTPRIO MLOCK RTSCHED
```

确认执行结果

```
# /usr/bin/getprivgrp oinstall
oinstall: RTPRIO MLOCK RTSCHED
```

3.9.7 创建 grid,oracle 软件安装目录

■ GRID 软件目录

```
# export ORACLE_BASE=/grid/app/oracle
# export ORACLE_HOME=/grid/app/11.2.0.4/grid

# mkdir -p $ORACLE_BASE
# mkdir -p $ORACLE_HOME
# chmod -R 775 /grid/
# chown -R grid:oinstall /grid
```

■ DB 软件目录

```
# export ORACLE_BASE=/oracle/app/oracle
# export ORACLE_HOME=/oracle/app/oracle/product/11.2.0.4/db_1

# mkdir -p $ORACLE_BASE
# mkdir -p $ORACLE_HOME
# chmod -R 775 /oracle
# chown -R oracle:oinstall /oracle
```

3.9.8 配置 grid 用户环境变量

```
$ vi /home/grid/.profile
```

```
export umask=022
export LANG=C

export ORACLE_BASE=/grid/app/grid
export ORACLE_HOME=/grid/app/11.2.0.4/grid
export ORACLE_SID=+ASM
export NLS_DATE_FORMAT='YYYY-MM-DD HH24:MI:SS'

export PATH=$ORACLE_HOME/bin:$ORACLE_HOME/OPatch:/sbin:$PATH

if [ -t 0 ]; then
  stty intr ^C
fi
```

注意，该配置，可能会造成 shell 脚本无法在后台运行。安装结束后，建议屏蔽。

3.9.9 配置 oracle 用户环境变量

```
$ vi /home/oracle/.profile
```

```
export umask=022
export LANG=C

export ORACLE_BASE=/oracle/app/oracle
export GRID_HOME=/grid/app/11.2.0.4/grid
export ORACLE_HOME=/oracle/app/oracle/product/11.2.0.4/db_1
export ORACLE_SID=jfhisdb
export ORACLE_UNQNAME=jfhisdb
export NLS_LANG=american_america.zhs16gbk
export NLS_DATE_FORMAT='YYYY-MM-DD HH24:MI:SS'
```

```
export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
export
PATH=$ORACLE_HOME/bin:$ORACLE_HOME/OPatch:$GRID_HOME/bin:/sbin:$PATH

if [ -t 0 ]; then
   stty intr ^C
fi
```

3.9.10 屏蔽 stty 造成的安装错误

GRID 安装过程中，系统的隐含文件(如：.bashrc 或 .cshrc)如果包含 stty 命令，会引起安装错误。

要避免该问题，必须在每个 grid,oracle 安装所有者的用户主目录中修改这些文件以取消所有 STDERR 输出安装错误。

- Bourne, Bash, or Korn shell:

```
if [ -t 0 ]; then
   stty intr ^C
fi
```

- C shell:

```
test -t 0
if ($status == 0) then
   stty intr ^C
endif
```

3.10 配置 ssh 认证

3.10.1 配置 ssh 等效性验证

```
# /grid/sshUserSetup.sh -user grid -hosts "jfdb1 jfdb2" -advanced
noPromptPassphrase
# /grid/sshUserSetup.sh -user oracle -hosts "jfdb1 jfdb2" -advanced
noPromptPassphrase
```

sshUserSetup.sh 脚本从安装包 sshsetup 目录中获取。

3.10.2 配置 ssh 连接超时

编辑主机 ssh 配置文件

```
# vi /opt/ssh/etc/sshd_config
LoginGraceTime 0
```

3.10.3 设置 X11 转发为 NO

启用 X11 转发，会造成安装失败，因此 grid/oracle 用户需要屏蔽该特性

```
# vi ~/.ssh/config
Host *
     ForwardX11 no
```

3.11 设置图形环境

```
$ export DISPLAY=REMOTEIP:0.0
```

REMOTEIP 为远程客户端主机的 IP 地址。

4 配置共享存储

4.1 存储方式与文件类型对应关系

Storage Option	File Types Supported			
	OCR & Voting Disk	Oracle Software	Database	Recovery
ASM	Yes	No	Yes	Yes
Local storage	No	Yes	No	No
Raw LVM by HACMP	No	No	No	No

		Oracle Cluster Registry		
Redundancy Level	Minimum Number of Disks	(OCR) Files	Voting Disk Files	Both File Types
External	1	300 MB	300 MB	600 MB
Normal	3	600 MB	900 MB	2 GB
High	5	840 MB	1.4 GB	4 GB

说明

- OCR & voting disks 要求至少 256 MB。
- 11G OCR & voting disks 只支持 ASM 和共享文件系统方式。
- 标准版 RAC 安装，只支持 ASM 存放数据文件和闪回文件。

Oracle Clusterware 使用 OCR，voting disk files 的额外空间计算方式：
total = (2 * ausize * disks) + (redundancy * (ausize * (nodes * (clients + 1) + 30) + (64 * nodes) + 533)) M

4.2 配置 ASM 使用的共享裸磁盘设备

4.2.1 查看可用磁盘

```
# /usr/sbin/ioscan -funN -C disk
Class     I  H/W Path  Driver S/W State   H/W Type     Description
===================================================================
disk      10  64000/0xfa00/0x4   esdisk   CLAIMED     DEVICE       HP      MSA 2040 SAN
                      /dev/disk/disk10   /dev/rdisk/disk10
disk      11  64000/0xfa00/0x5   esdisk   CLAIMED     DEVICE       HP      MSA 2040 SAN
                      /dev/disk/disk11   /dev/rdisk/disk11
disk      12  64000/0xfa00/0x6   esdisk   CLAIMED     DEVICE       HP      MSA 2040 SAN
                      /dev/disk/disk12   /dev/rdisk/disk12
disk      13  64000/0xfa00/0x7   esdisk   CLAIMED     DEVICE       HP      MSA 2040 SAN
                      /dev/disk/disk13   /dev/rdisk/disk13
disk      14  64000/0xfa00/0x8   esdisk   CLAIMED     DEVICE       HP      MSA 2040 SAN
                      /dev/disk/disk14               /dev/disk/disk14_p2        /dev/rdisk/disk14
/dev/rdisk/disk14_p2
                      /dev/disk/disk14_p1         /dev/disk/disk14_p3         /dev/rdisk/disk14_p1
/dev/rdisk/disk14_p3
disk     335  64000/0xfa00/0x13  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk335   /dev/rdisk/disk335
```

```
disk    336  64000/0xfa00/0x14  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk336   /dev/rdisk/disk336
disk    337  64000/0xfa00/0x15  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk337   /dev/rdisk/disk337
disk    338  64000/0xfa00/0x16  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk338   /dev/rdisk/disk338
disk    339  64000/0xfa00/0x17  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk339   /dev/rdisk/disk339
disk    340  64000/0xfa00/0x18  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk340   /dev/rdisk/disk340
disk    341  64000/0xfa00/0x19  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk341   /dev/rdisk/disk341
disk    342  64000/0xfa00/0x1a  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk342   /dev/rdisk/disk342
disk    343  64000/0xfa00/0x1b  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk343   /dev/rdisk/disk343
disk    344  64000/0xfa00/0x1c  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk344   /dev/rdisk/disk344
disk    345  64000/0xfa00/0x1d  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk345   /dev/rdisk/disk345
disk    346  64000/0xfa00/0x1e  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk346   /dev/rdisk/disk346
disk    347  64000/0xfa00/0x1f  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk347   /dev/rdisk/disk347
disk    348  64000/0xfa00/0x20  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk348   /dev/rdisk/disk348
disk    349  64000/0xfa00/0x21  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk349   /dev/rdisk/disk349
disk    350  64000/0xfa00/0x22  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk350   /dev/rdisk/disk350
disk    351  64000/0xfa00/0x23  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk351   /dev/rdisk/disk351
disk    352  64000/0xfa00/0x24  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk352   /dev/rdisk/disk352
disk    353  64000/0xfa00/0x25  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk353   /dev/rdisk/disk353
disk    354  64000/0xfa00/0x26  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk354   /dev/rdisk/disk354
disk    355  64000/0xfa00/0x27  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk355   /dev/rdisk/disk355
disk    356  64000/0xfa00/0x28  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk356   /dev/rdisk/disk356
disk    357  64000/0xfa00/0x29  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk357   /dev/rdisk/disk357
disk    358  64000/0xfa00/0x2a  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk358   /dev/rdisk/disk358
disk    359  64000/0xfa00/0x2b  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk359   /dev/rdisk/disk359
disk    360  64000/0xfa00/0x2c  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk360   /dev/rdisk/disk360
disk    361  64000/0xfa00/0x2d  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk361   /dev/rdisk/disk361
disk    362  64000/0xfa00/0x2e  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk362   /dev/rdisk/disk362
disk    363  64000/0xfa00/0x2f  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk363   /dev/rdisk/disk363
disk    364  64000/0xfa00/0x30  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk364   /dev/rdisk/disk364
disk    365  64000/0xfa00/0x31  esdisk   CLAIMED     DEVICE       3PARdataVV
```

```
                      /dev/disk/disk365   /dev/rdisk/disk365
disk    366  64000/0xfa00/0x32  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk366   /dev/rdisk/disk366
disk    367  64000/0xfa00/0x33  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk367   /dev/rdisk/disk367
disk    368  64000/0xfa00/0x34  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk368   /dev/rdisk/disk368
disk    369  64000/0xfa00/0x35  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk369   /dev/rdisk/disk369
disk    370  64000/0xfa00/0x36  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk370   /dev/rdisk/disk370
disk    371  64000/0xfa00/0x37  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk371   /dev/rdisk/disk371
disk    372  64000/0xfa00/0x38  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk372   /dev/rdisk/disk372
disk    373  64000/0xfa00/0x39  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk373   /dev/rdisk/disk373
disk    374  64000/0xfa00/0x3a  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk374   /dev/rdisk/disk374
disk    375  64000/0xfa00/0x3b  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk375   /dev/rdisk/disk375
disk    376  64000/0xfa00/0x3c  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk376   /dev/rdisk/disk376
disk    377  64000/0xfa00/0x3d  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk377   /dev/rdisk/disk377
disk    378  64000/0xfa00/0x3e  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk378   /dev/rdisk/disk378
disk    379  64000/0xfa00/0x3f  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk379   /dev/rdisk/disk379
disk    380  64000/0xfa00/0x40  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk380   /dev/rdisk/disk380
disk    381  64000/0xfa00/0x41  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk381   /dev/rdisk/disk381
disk    382  64000/0xfa00/0x42  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk382   /dev/rdisk/disk382
disk    383  64000/0xfa00/0x43  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk383   /dev/rdisk/disk383
disk    384  64000/0xfa00/0x44  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk384   /dev/rdisk/disk384
disk    385  64000/0xfa00/0x45  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk385   /dev/rdisk/disk385
disk    386  64000/0xfa00/0x46  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk386   /dev/rdisk/disk386
disk    387  64000/0xfa00/0x47  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk387   /dev/rdisk/disk387
disk    388  64000/0xfa00/0x48  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk388   /dev/rdisk/disk388
disk    389  64000/0xfa00/0x49  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk389   /dev/rdisk/disk389
disk    390  64000/0xfa00/0x4a  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk390   /dev/rdisk/disk390
disk    391  64000/0xfa00/0x4b  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk391   /dev/rdisk/disk391
disk    392  64000/0xfa00/0x4c  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk392   /dev/rdisk/disk392
disk    393  64000/0xfa00/0x4d  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk393   /dev/rdisk/disk393
disk    394  64000/0xfa00/0x4e  esdisk   CLAIMED     DEVICE       3PARdataVV
                      /dev/disk/disk394   /dev/rdisk/disk394
```

```
disk    395  64000/0xfa00/0x4f   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk395   /dev/rdisk/disk395
disk    396  64000/0xfa00/0x50   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk396   /dev/rdisk/disk396
disk    397  64000/0xfa00/0x51   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk397   /dev/rdisk/disk397
disk    398  64000/0xfa00/0x52   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk398   /dev/rdisk/disk398
disk    399  64000/0xfa00/0x53   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk399   /dev/rdisk/disk399
disk    400  64000/0xfa00/0x54   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk400   /dev/rdisk/disk400
disk    401  64000/0xfa00/0x55   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk401   /dev/rdisk/disk401
disk    402  64000/0xfa00/0x56   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk402   /dev/rdisk/disk402
disk    403  64000/0xfa00/0x57   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk403   /dev/rdisk/disk403
disk    404  64000/0xfa00/0x58   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk404   /dev/rdisk/disk404
disk    405  64000/0xfa00/0x59   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk405   /dev/rdisk/disk405
disk    406  64000/0xfa00/0x5a   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk406   /dev/rdisk/disk406
disk    407  64000/0xfa00/0x5b   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk407   /dev/rdisk/disk407
disk    408  64000/0xfa00/0x5c   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk408   /dev/rdisk/disk408
disk    409  64000/0xfa00/0x5d   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk409   /dev/rdisk/disk409
disk    410  64000/0xfa00/0x5e   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk410   /dev/rdisk/disk410
disk    411  64000/0xfa00/0x5f   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk411   /dev/rdisk/disk411
disk    412  64000/0xfa00/0x60   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk412   /dev/rdisk/disk412
disk    413  64000/0xfa00/0x61   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk413   /dev/rdisk/disk413
disk    414  64000/0xfa00/0x62   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk414   /dev/rdisk/disk414
disk    419  64000/0xfa00/0x66   esdisk   CLAIMED     DEVICE       3PARdataVV
                     /dev/disk/disk419   /dev/rdisk/disk419
```

如果有未被列出的磁盘，通过下面命令进行查找

```
# /usr/sbin/insf -e
```

从上面的返回结果可知，**disk335-disk419 是来至 3PAR 存储的磁盘设备**。

4.2.2 修改设备的权限

去除本地磁盘和作为挂载点的磁盘。需要过滤的磁盘包含：hdisk0、hdisk1、hdisk7、hdisk15。

```
jfxddbls#[/dev/rdisk]ls -la disk[3-4]*
```

4.2.2.1　修改磁盘权限

```
# ls -la /dev/rdisk/[3-4]* | awk '{print "chown grid:asmadmin "$10}'
# chown grid:asmadmin /dev/rdisk/[3-4]*
```

4.2.2.2　修改磁盘属组

```
# ls -la /dev/rdisk/[3-4]* | awk '{print "chmod 660 "$10}'
# chmod 660 /dev/rdisk/[3-4]*
```

4.2.2.3　查询结果

```
jfxddbls#[/dev/rdisk]ls -la /dev/rdisk/disk[3-4]*
```

4.2.3 参考文档

Placement of Voting disk and OCR Files in Oracle RAC 10g and 11gR1 (文档 ID 293819.1)

5 执行安装前检查

```
$ ./runcluvfy.sh stage -pre crsinst -n node1,node2 -fixup -verbose
```

本地安装只有一个节点，不需要进行 crs 检查。

6 安装 GRID 软件

本次安装过程采用将 X-window 输出到桌面的方式。本文档中的配图部分来自 oracle 的标准文档，并非来自本次安装屏幕截图。

6.1 解压缩软件

HP-UX 下默认没有 zip 软件，可以将安装包中 unzip 解压出来，上传到服务器：

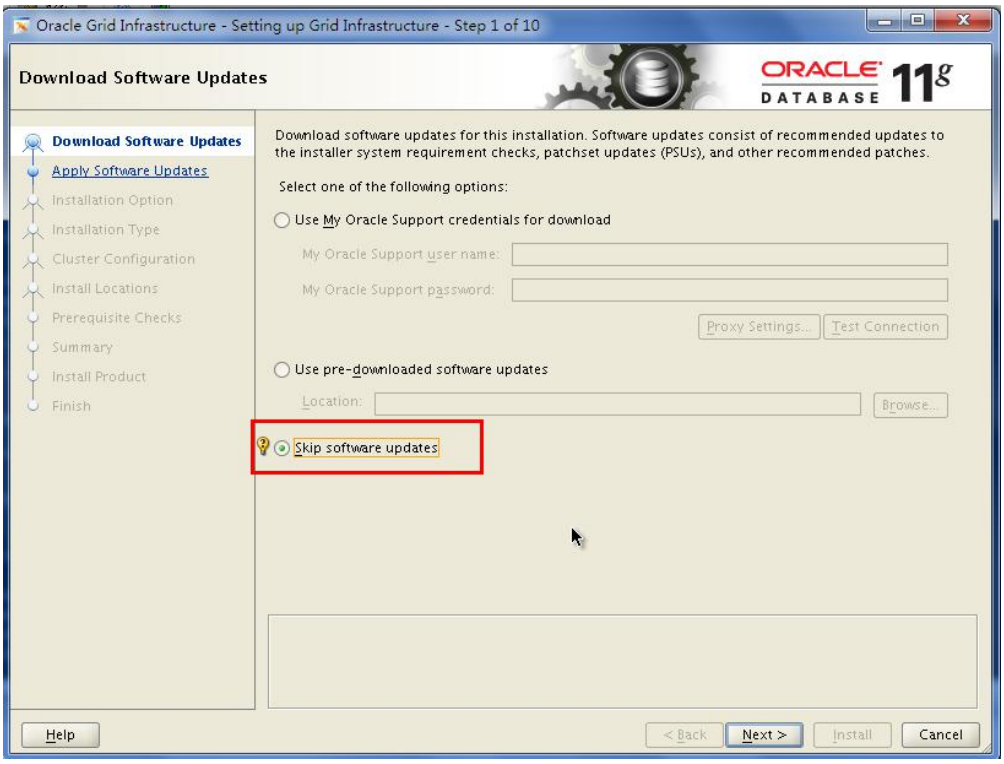
```
$ cd /oracle/software
$ /usr/java6/bin/jar -xvf p10404530_112030_AIX64-5L_3of7.zip
$ /usr/java6/bin/jar -xvf p10404530_112030_AIX64-5L_1of7.zip
$ /usr/java6/bin/jar -xvf p10404530_112030_AIX64-5L_2of7.zip
```

6.2 运行 runInstaller 脚本

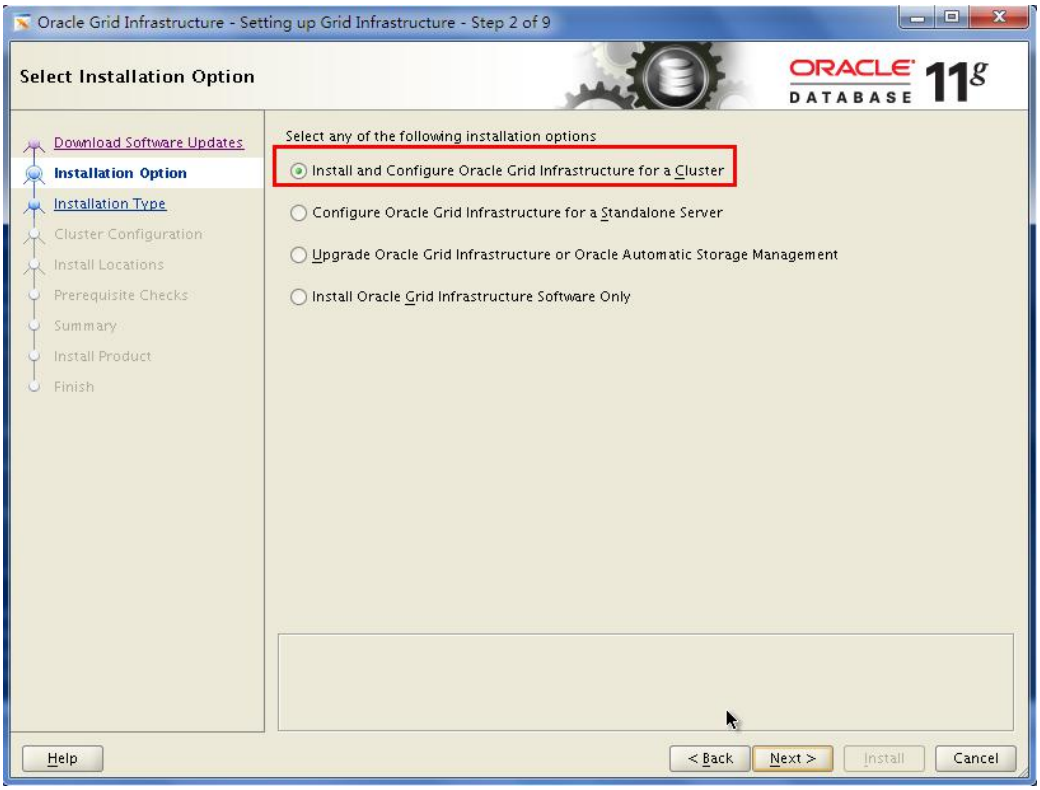
在图形界面命令行中用 oracle 用户执行命令启动安装向导：

```
$ export DISPLAY={客户端 IP 地址}:0.0
$ cd /oracle/software/grid
$ ./runInstaller
```

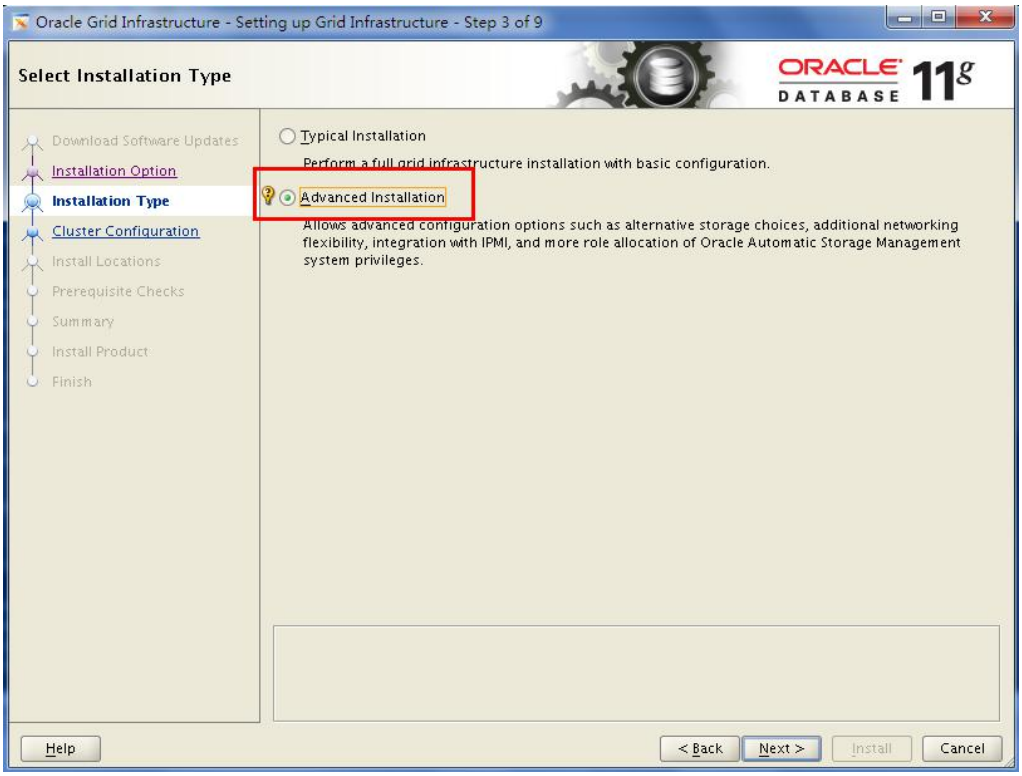
```
grid@jfxddbls:[/oracle/software/grid]./runInstaller
Starting Oracle Universal Installer...

Checking Temp space: must be greater than 415 MB.   Actual 7145 MB    Passed
Checking swap space: must be greater than 150 MB.   Actual 65536 MB
Passed
Checking monitor: must be configured to display at least 256 colors.
Actual 16777216    Passed
Preparing    to    launch    Oracle    Universal    Installer    from
/tmp/OraInstall2015-07-23_09-45-57AM. Please wait ...
```



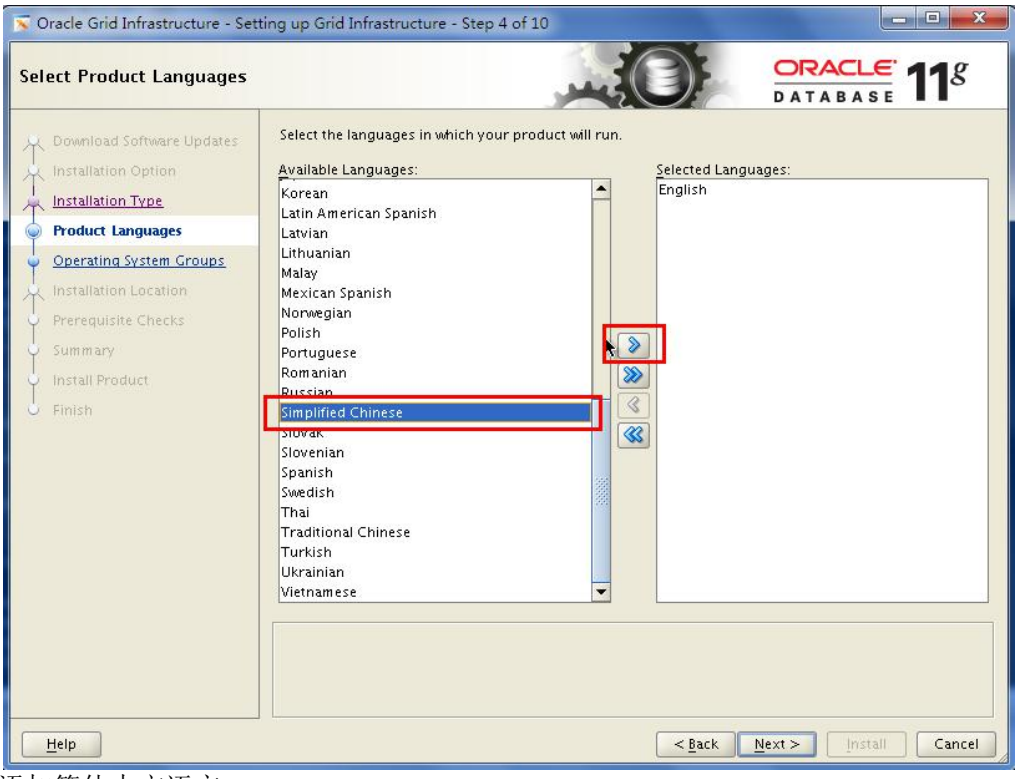
选择跳过软件更新。点击 Next，进入下一步



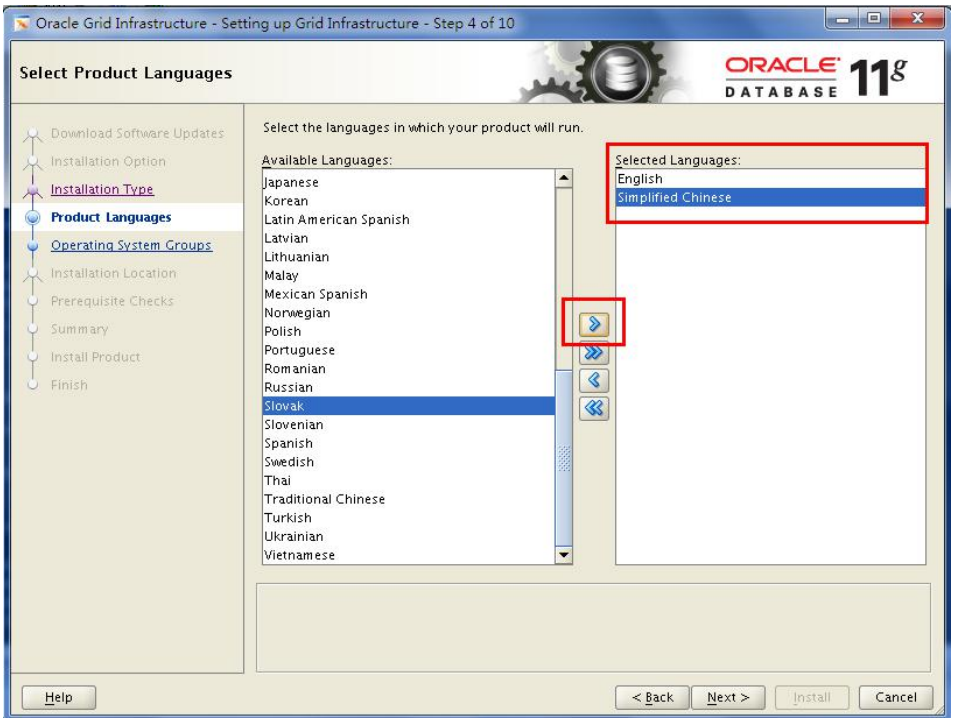
选择集群安装方式，点击 Next，进入下一步



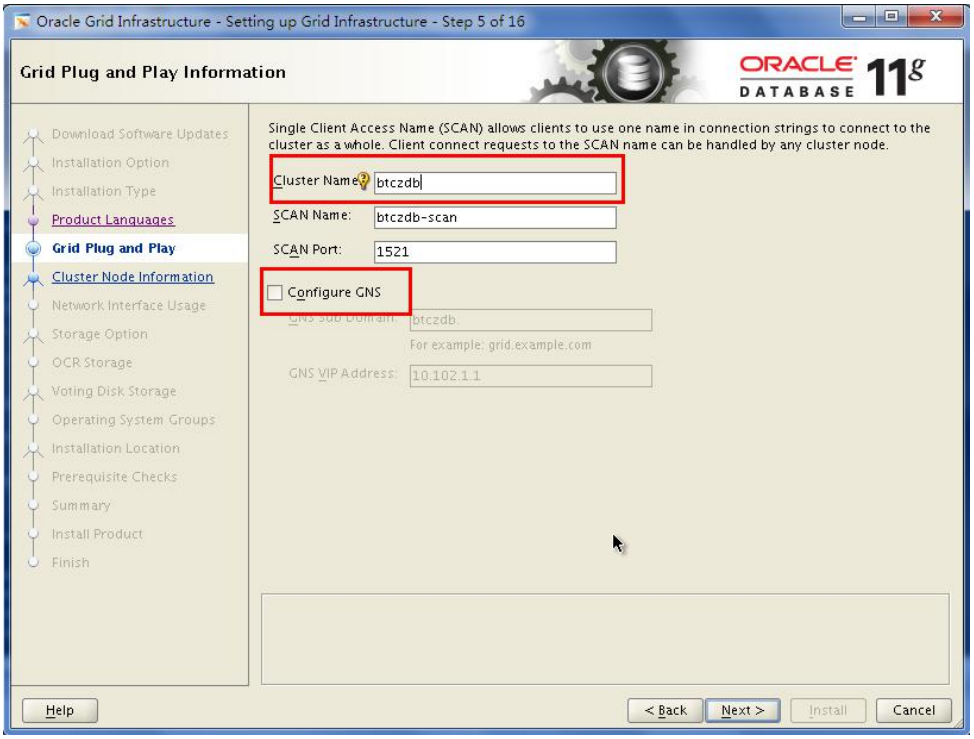
选择高级安装方式，点击 Next，进入下一步



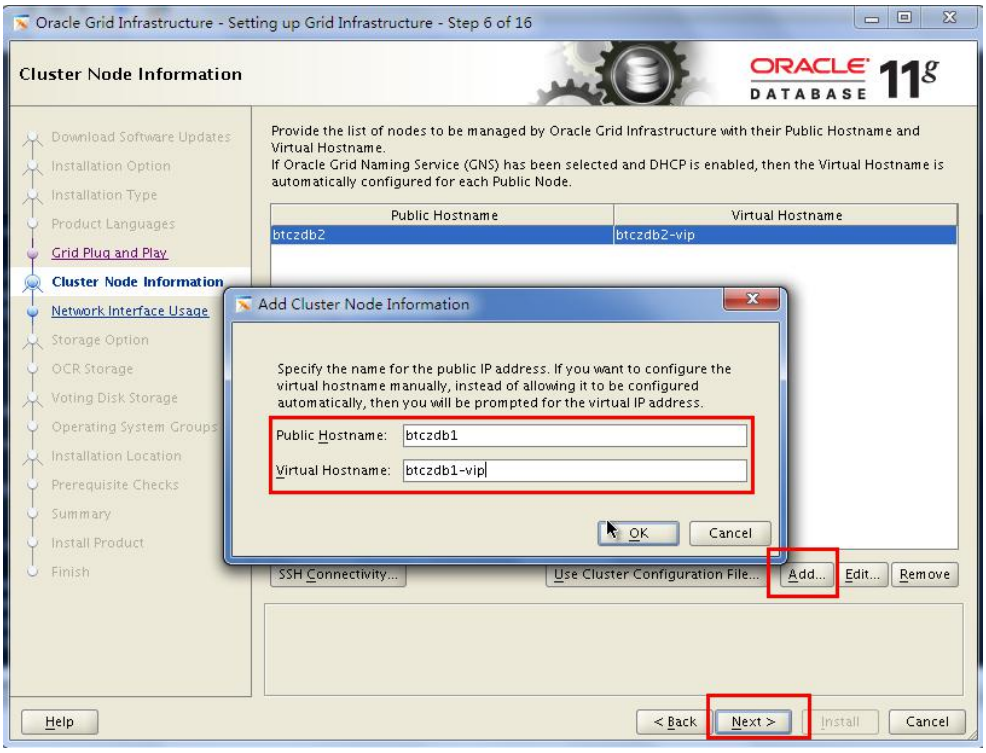
添加简体中文语言



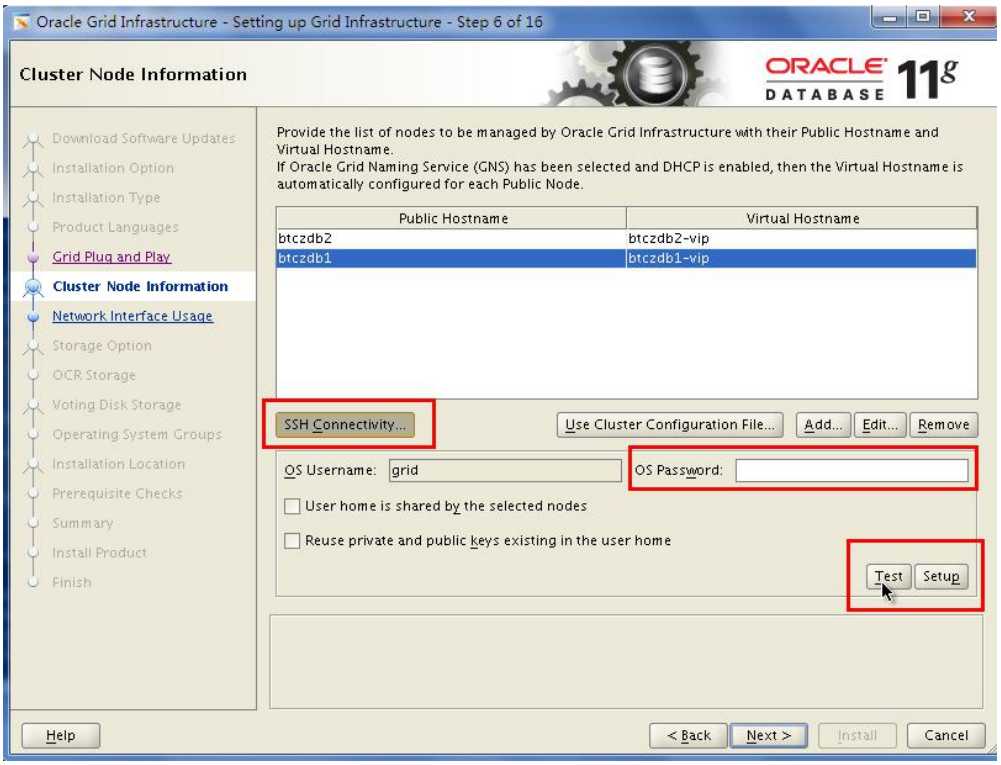
点击 Next，进入下一步



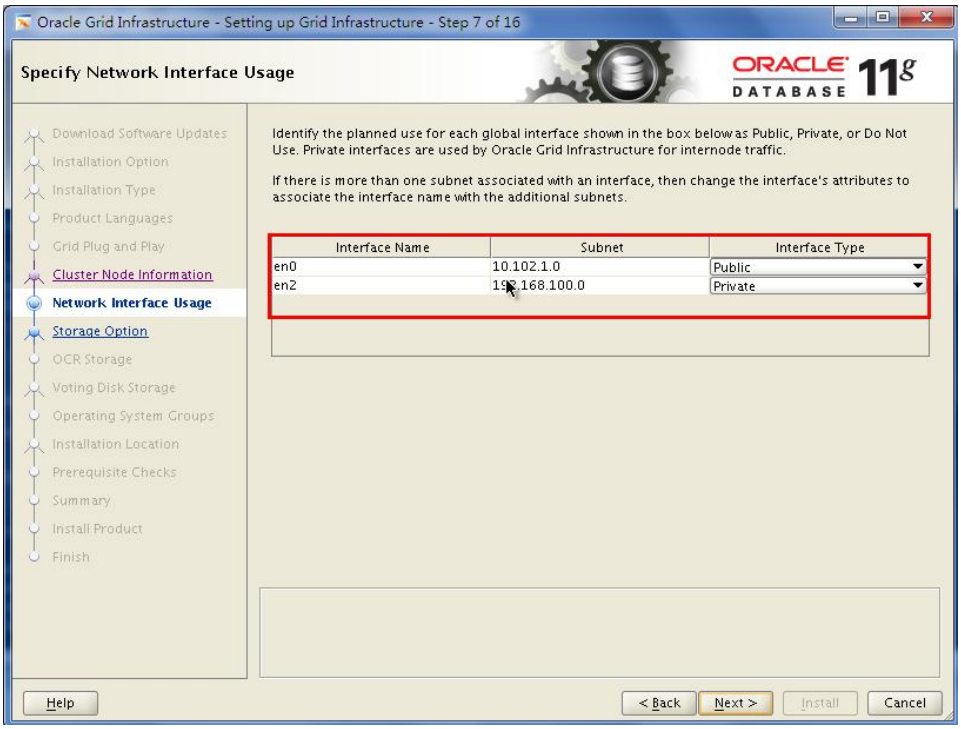
集群名称不能超过 15 位，可以包含“-”。取消 GNS，点击 Next，进入下一步



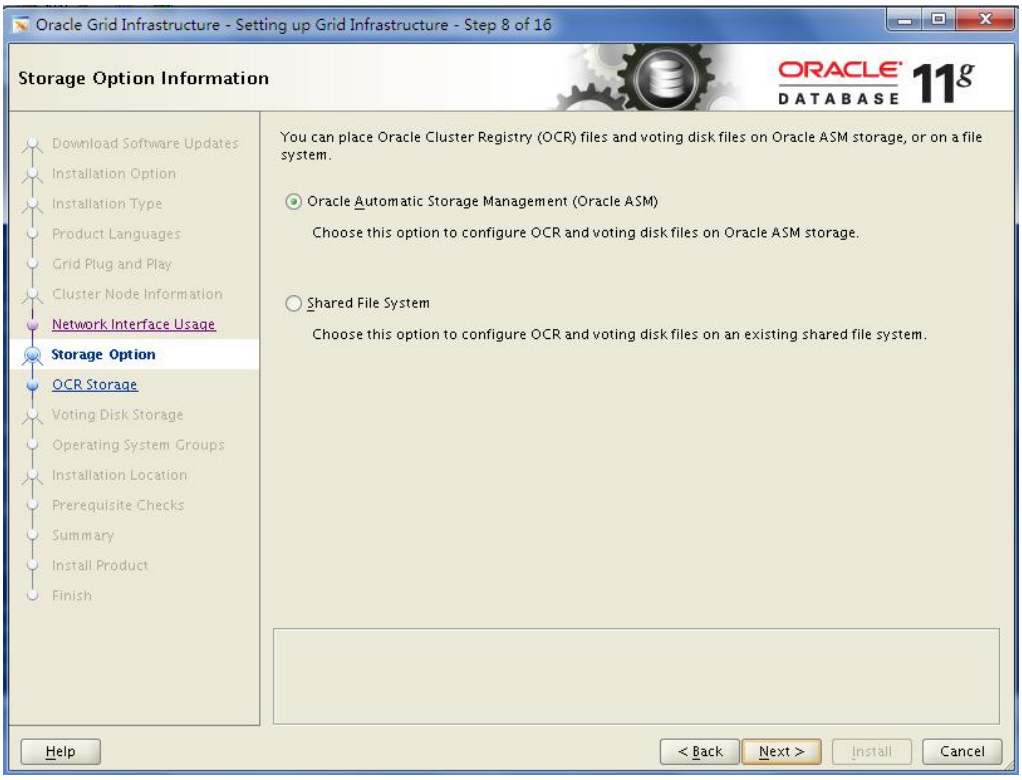
点击 Add 按钮，添加新节点的主机名和虚拟主机名，点击 OK，完成主机名的添加



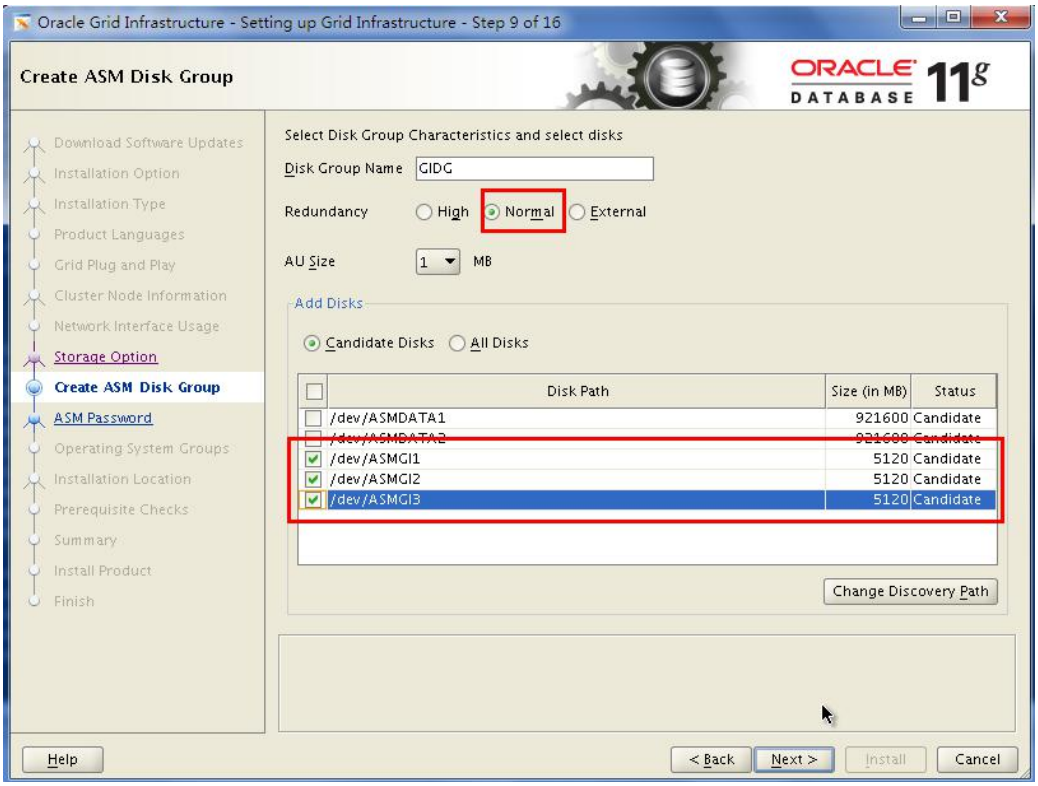
输入 grid 用户的口令，点击 Setup 按钮，自动完成 SSH 互信设置，点击 Next，自动完成 SSH 校验，校验通过后，进入下一步



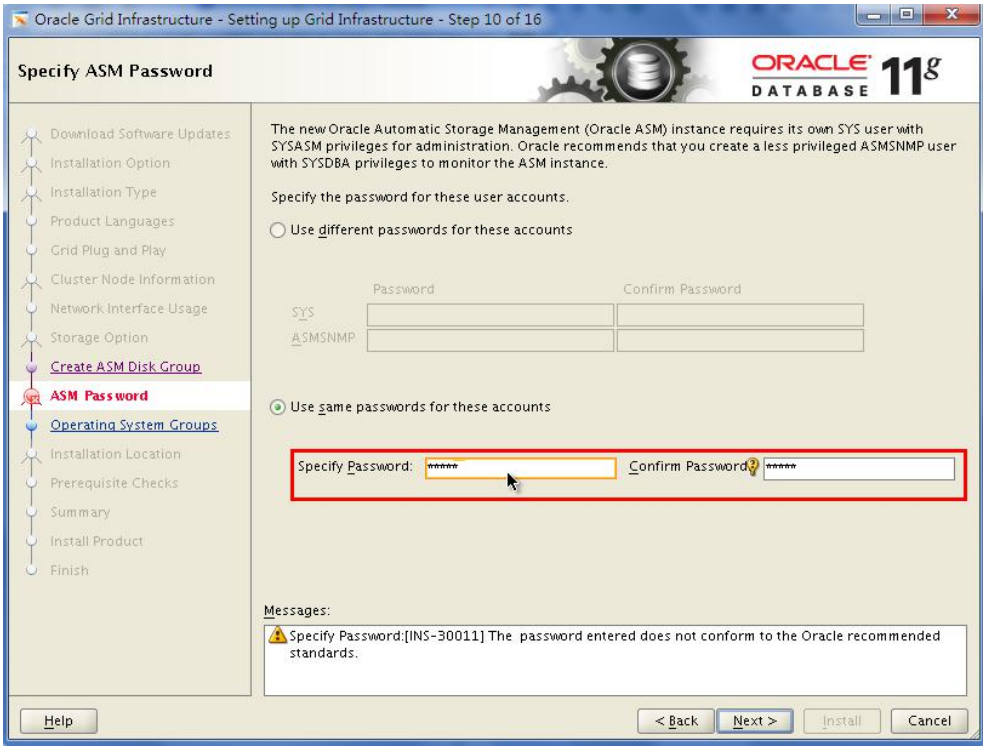
选择对应的网卡做为不同的接口类型，点击 Next，进入下一步



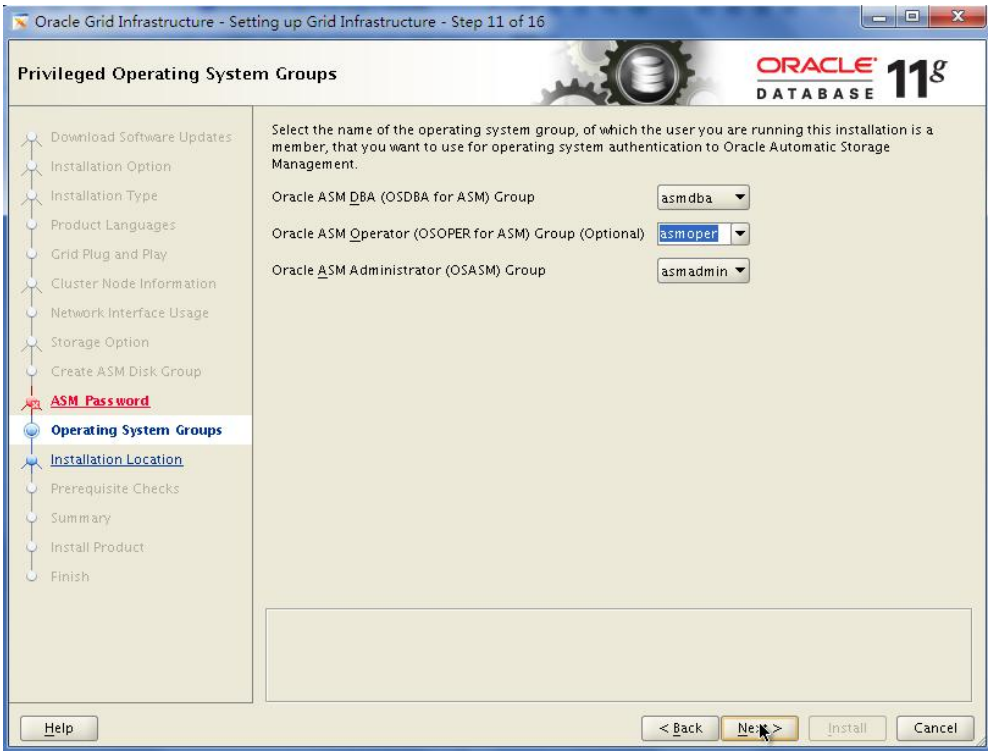
选择存储类型为 Oracle ASM，点击 Next，进入下一步



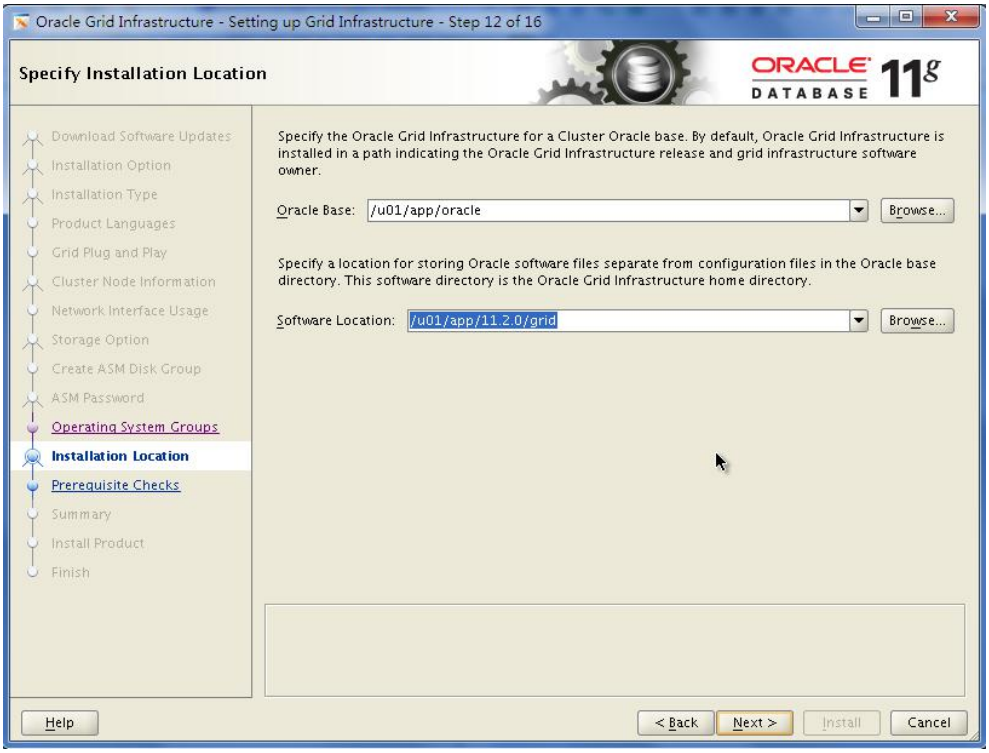
新建磁盘组，名为 GIDG，用于存储表决磁盘和 OCR 文件，使用普通冗余，需要 3 个裸设备文件，大小为 5G。点击 Next，进入下一步



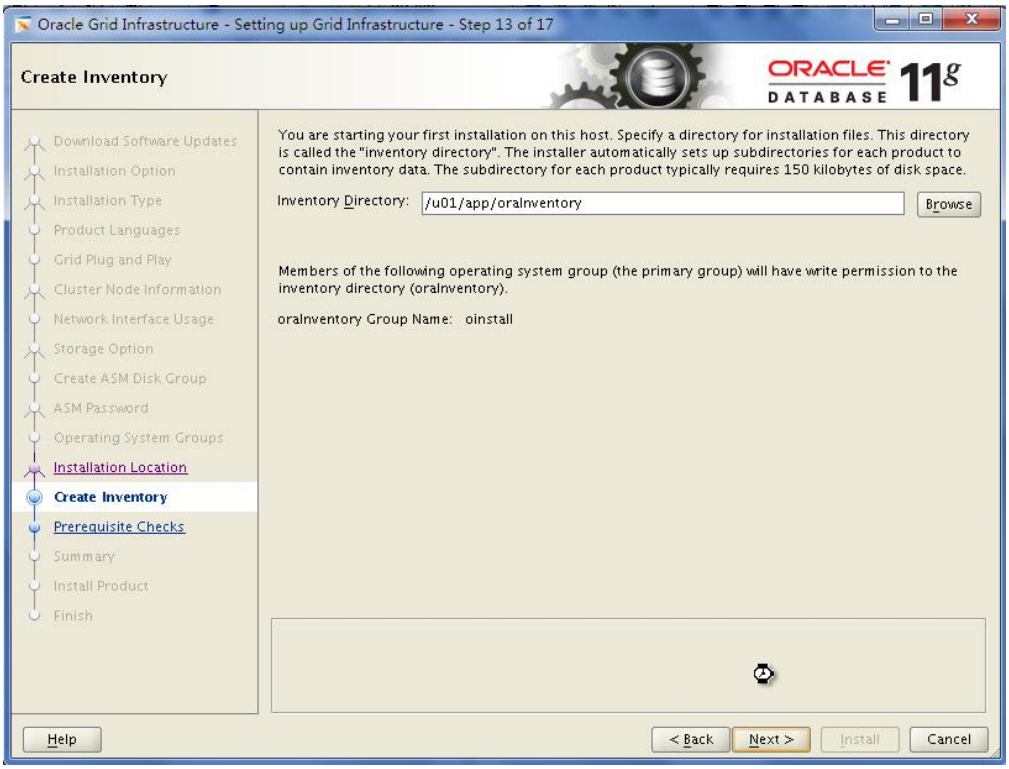
指定 SYS 用户的临时口令为 Admin1234，忽略警告信息，点击 Next，进入下一步



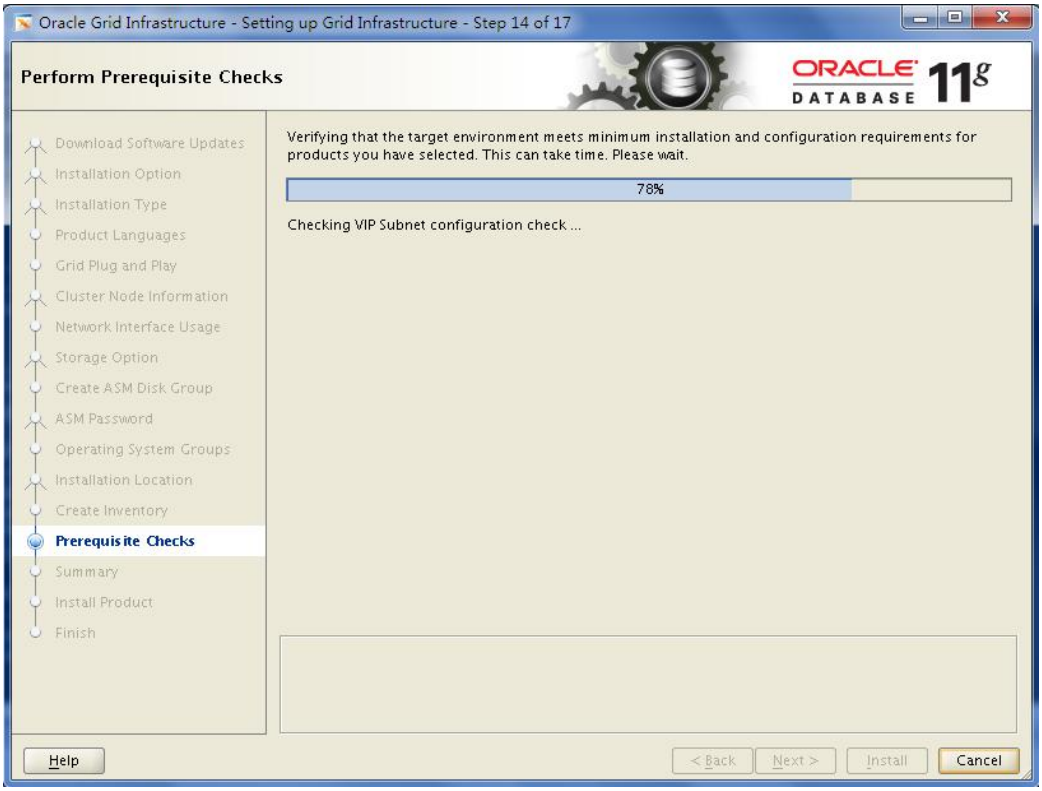
确认安装信息的用户属组，点击 Next，进入下一步



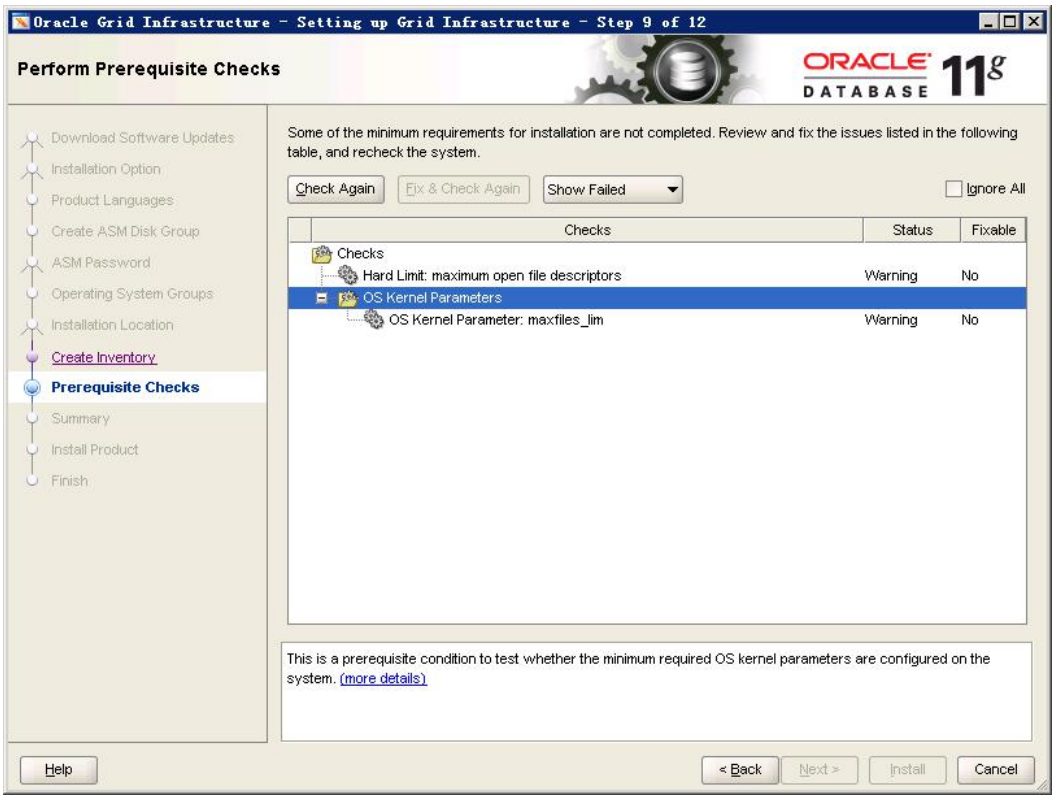
确认安装目录结构信息，点击 Next，进入下一步

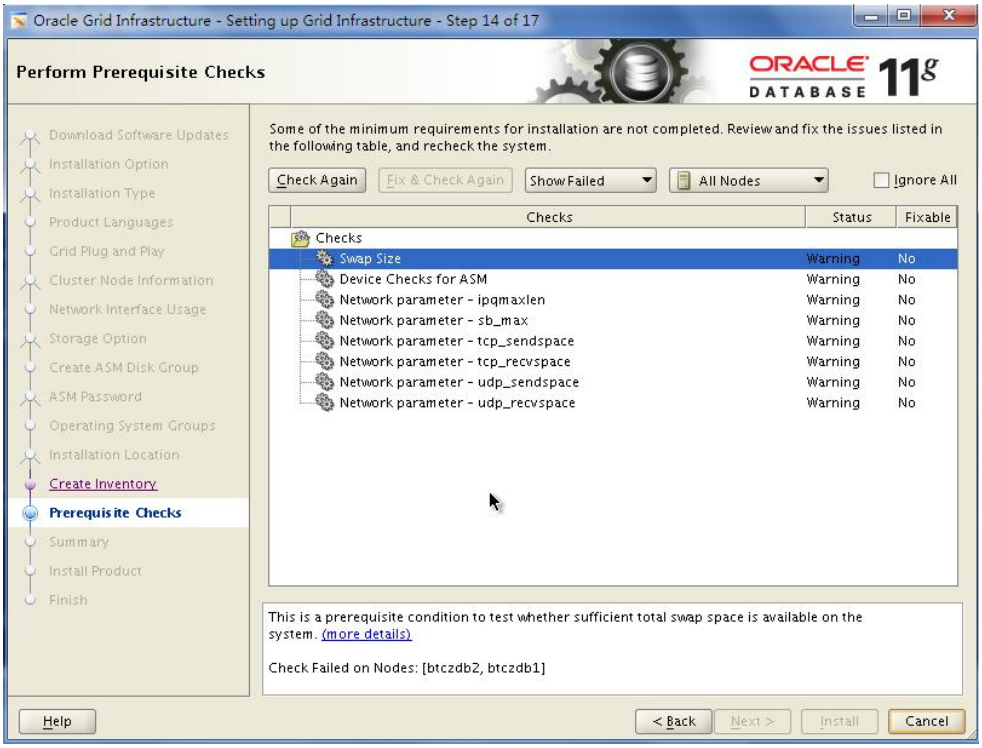


确认 Oracle Inventory 目录信息，点击 Next，进入下一步

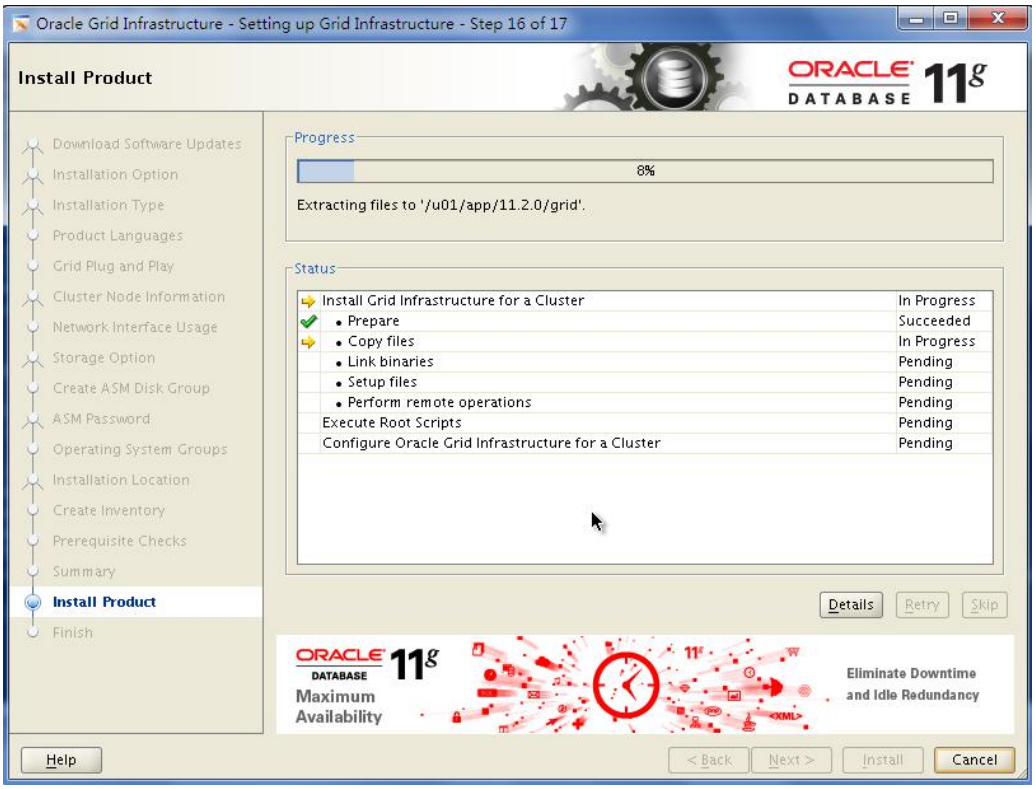


进行安装环境信息检测，

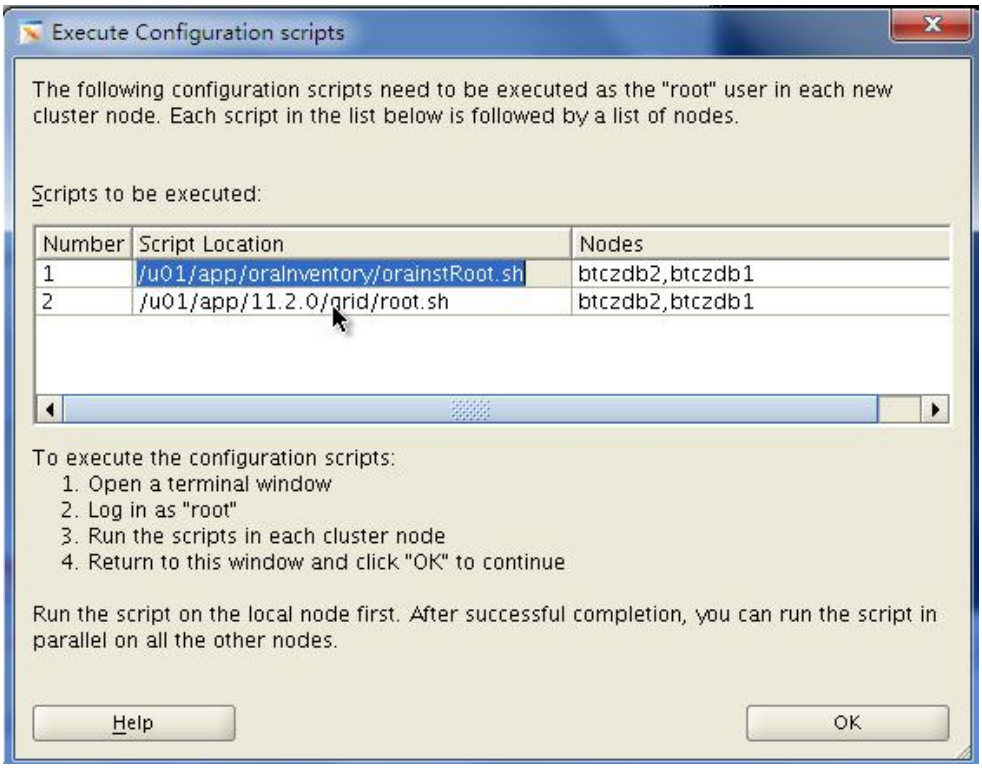




针对提示的告警信息，进行修复，修复完成后，点击 Next，进入下一步



进入 GI 安装过程



根据提示，运行 orainstRoot.sh 和 root.sh 脚本，进行 GI 安装配置

```
jfxddbls#[/]/grid/app/oraInventory/orainstRoot.sh
Changing permissions of /grid/app/oraInventory.
```

```
Adding read,write permissions for group.
Removing read,write,execute permissions for world.

Changing groupname of /grid/app/oraInventory to oinstall.
The execution of the script is complete.
```

```
jfxddbls#[/]/grid/app/11.2.0.4/grid/root.sh
Performing root user operation for Oracle 11g

The following environment variables are set as:
    ORACLE_OWNER= grid
    ORACLE_HOME=  /grid/app/11.2.0.4/grid

Enter the full pathname of the local bin directory: [/usr/local/bin]:
   Copying dbhome to /usr/local/bin ...
   Copying oraenv to /usr/local/bin ...
   Copying coraenv to /usr/local/bin ...


Creating /etc/oratab file...
Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
Using            configuration            parameter            file:
/grid/app/11.2.0.4/grid/crs/install/crsconfig_params
Creating trace directory
LOCAL ADD MODE
Creating OCR keys for user 'grid', privgrp 'oinstall'..
Operation successful.
LOCAL ONLY MODE
Successfully accumulated necessary OCR keys.
Creating OCR keys for user 'root', privgrp 'sys'..
Operation successful.
CRS-4664: Node jfxddbls successfully pinned.
Adding Clusterware entries to inittab

jfxddbls                                          2015/07/23       10:12:42
/grid/app/11.2.0.4/grid/cdata/jfxddbls/backup_20150723_101242.olr
Successfully configured Oracle Grid Infrastructure for a Standalone Server
```

orainstRoot.sh 脚本

```
# /oracle/app/oraInventory/orainstRoot.sh

Changing permissions of /oracle/app/oraInventory.

Adding read,write permissions for group.

Removing read,write,execute permissions for world.


Changing groupname of /oracle/app/oraInventory to oinstall.

The execution of the script is complete.
```

root.sh 脚本

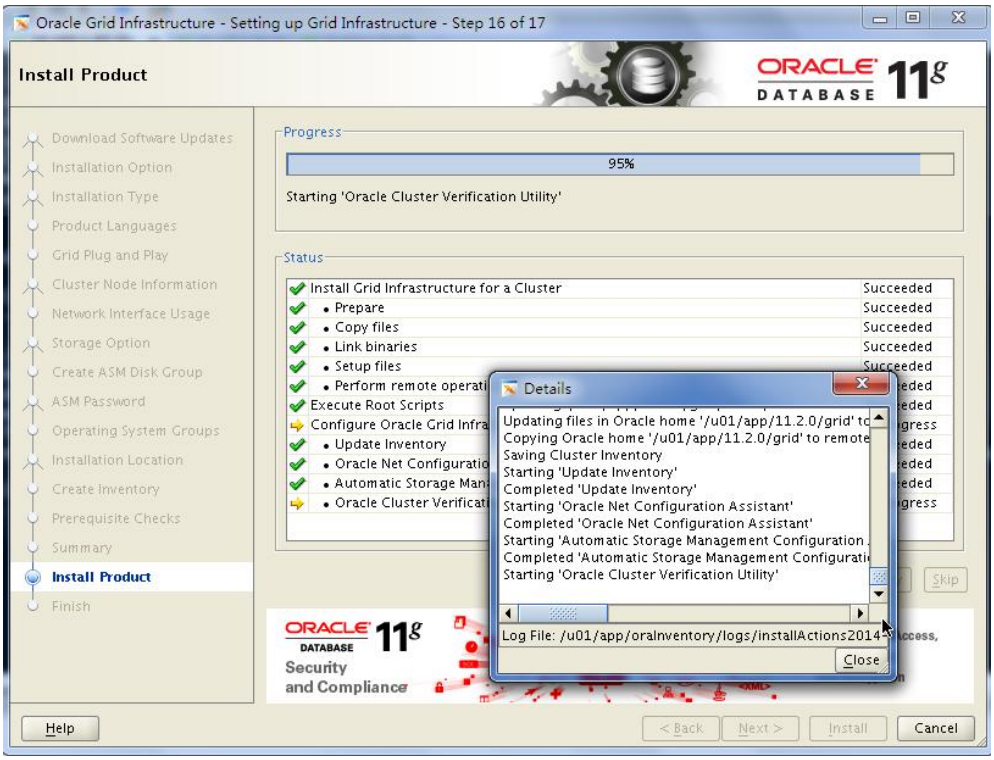
```
# /oracle/app/11.2.0/grid/root.sh
```

在 2 个节点，根据提示，分别运行脚本

```
CRS-4266: Voting file(s) successfully replaced
##  STATE    File Universal Id                File Name Disk group
--  -----    -----------------                --------- ---------
 1. ONLINE   94d2406553c84fe2bf00b844d32407b6 (/dev/ASMGI1) [GIDG]
 2. ONLINE   5eff446a4ce34f88bf87a9bdca1cea1c (/dev/ASMGI2) [GIDG]
 3. ONLINE   513181e9e2934fbebf43757d678d9c30 (/dev/ASMGI3) [GIDG]
Located 3 voting disk(s).
CRS-2672: Attempting to start 'ora.asm' on 'btczdb2'
CRS-2676: Start of 'ora.asm' on 'btczdb2' succeeded
CRS-2672: Attempting to start 'ora.GIDG.dg' on 'btczdb2'
CRS-2676: Start of 'ora.GIDG.dg' on 'btczdb2' succeeded
CRS-2672: Attempting to start 'ora.registry.acfs' on 'btczdb2'
CRS-2676: Start of 'ora.registry.acfs' on 'btczdb2' succeeded
Configure Oracle Grid Infrastructure for a Cluster ... succeeded
```

在最后一个节点运行完 root.sh 后，点击 OK 按钮。

6.3 完成 GI 安装



如果没有点击 OK 按钮关闭安装界面，可以通过下面脚本，完成安装工作：

```
$ $Grid_home/cfgtoollogs/configToolAllCommands
```

6.4 执行 GI 安装后校验

6.4.1 crs_stat

```
$ crs_stat -t
```

6.4.2 olsnodes

```
$ olsnodes
```

6.4.3 crsctl

```
$ crsctl check crs
```

6.4.4 GI 版本

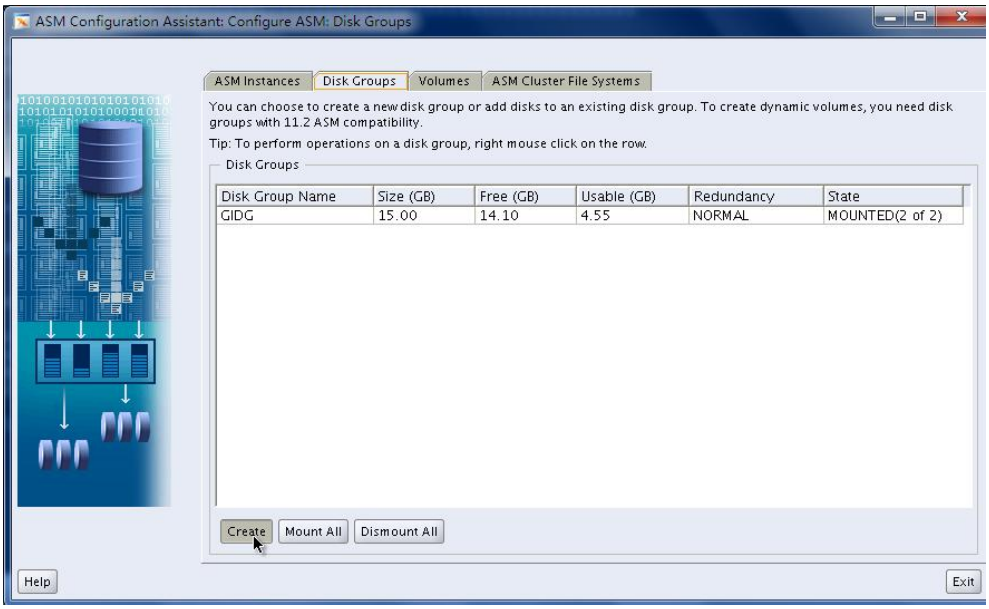
```
$ crsctl query crs activeversion
```

6.5 收集集群信息

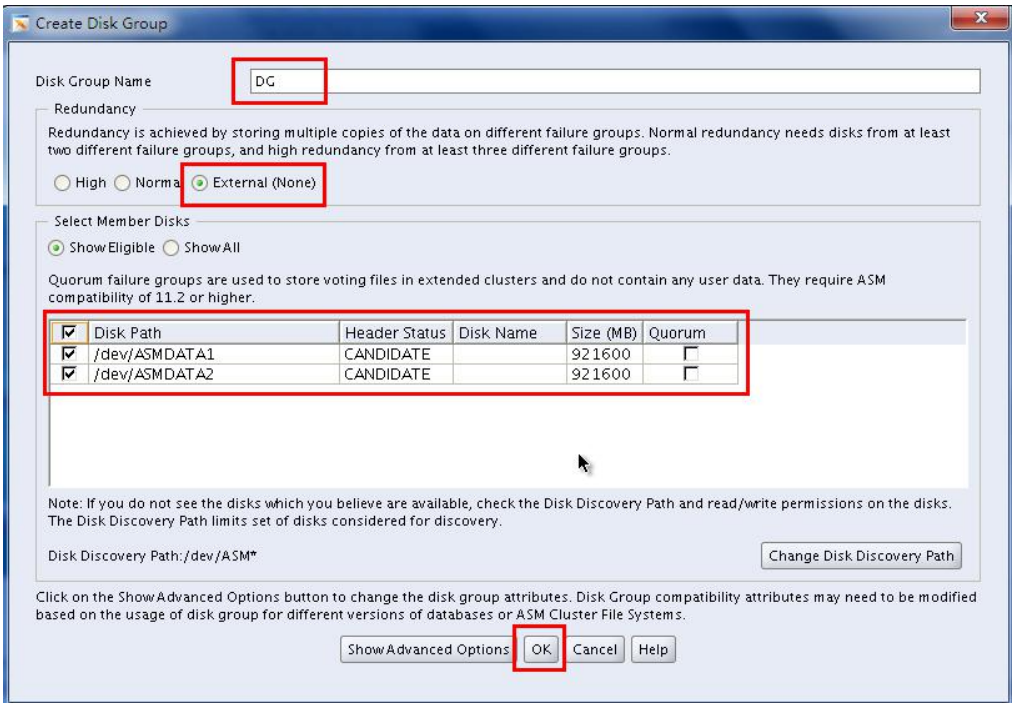
```
$ cd /home/grid/cvu_home/bin
$ ./cluvfy comp healthcheck -collect cluster -bestpractice -deviations
-html
```

7 配置 ASM 磁盘

在 grid 用户下，执行 asmca 命令，启动 ASM 配置界面
$ asmca



点击 Create 按钮，添加新的磁盘组



输入磁盘组名称，选择磁盘组中的磁盘，点击 OK 按钮，完成磁盘组的新建

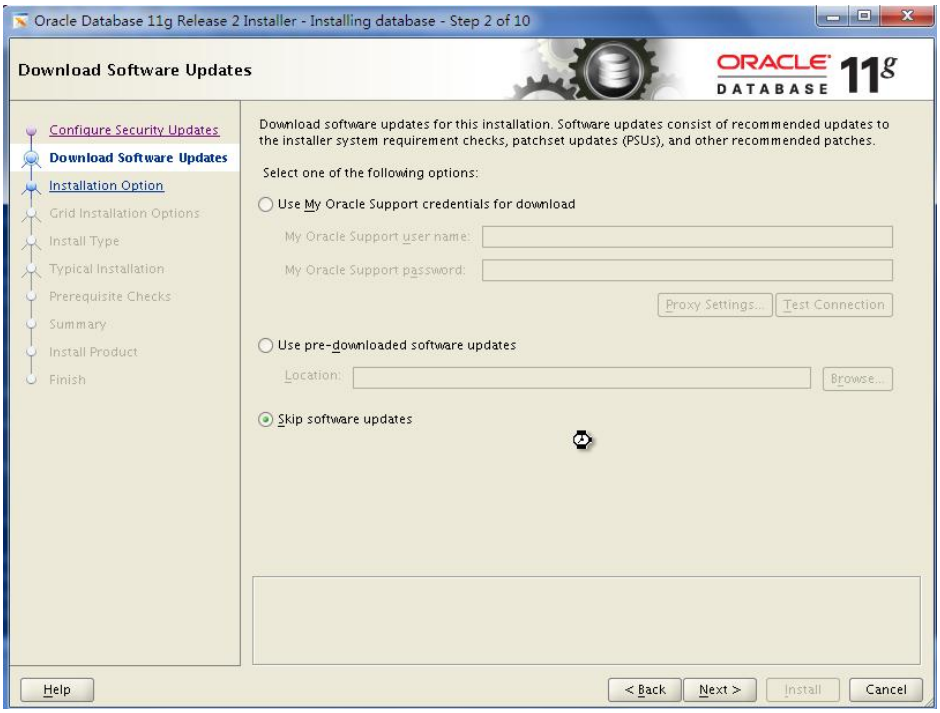

Disk Group: Creation
Disk Group DG created successfully.
OK

8 安装配置 RAC 数据库

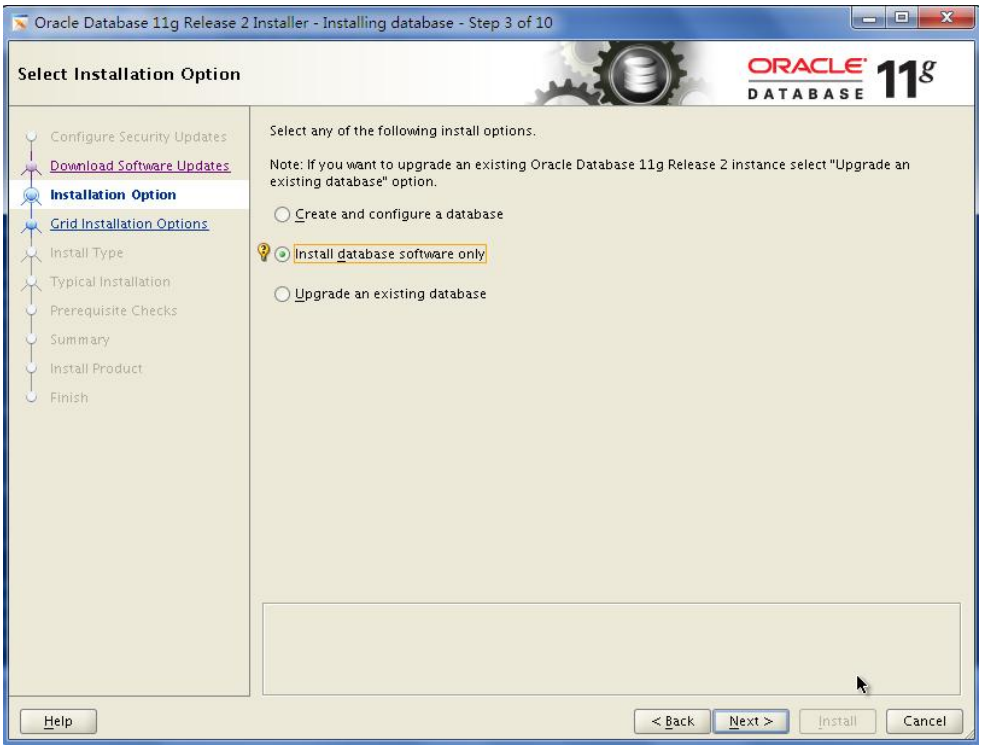
8.1 安装数据库软件

进入到数据库所在目录，执行安装程序

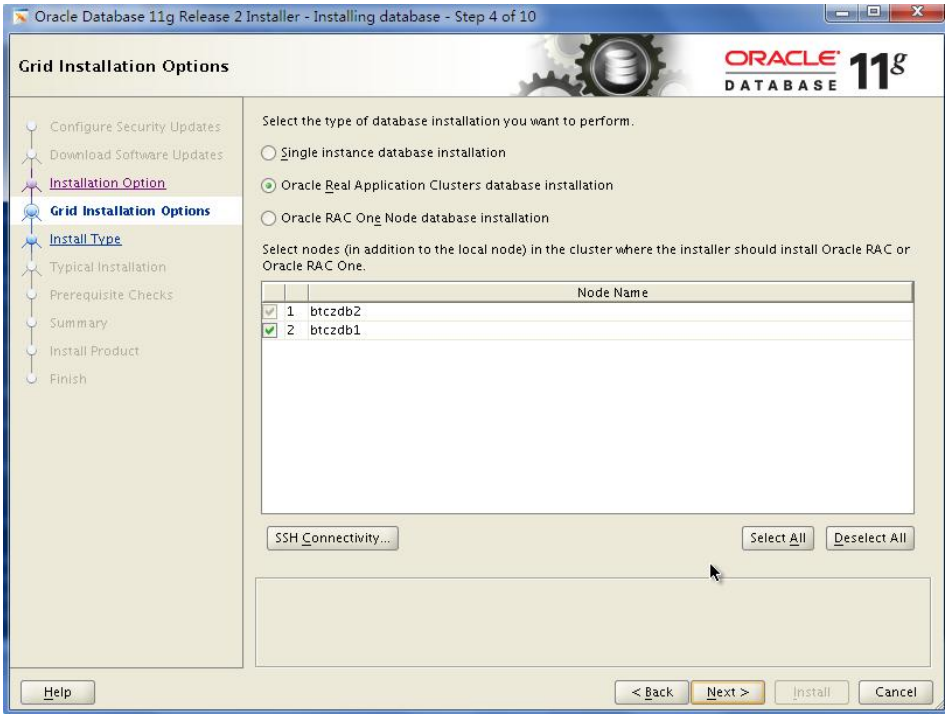
```
$ cd /oracle/software/database
$ ./runInstaller
```



选择跳过软件更新，点击 Next，进入下一步



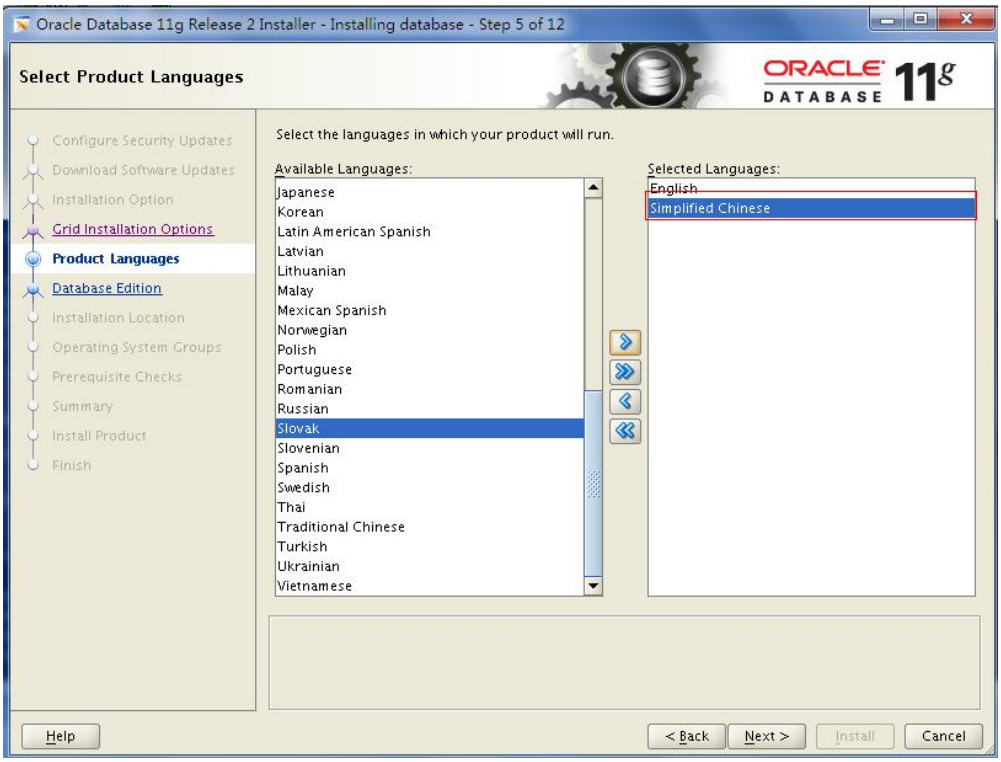
选择只安装数据库软件，点击 Next，进入下一步



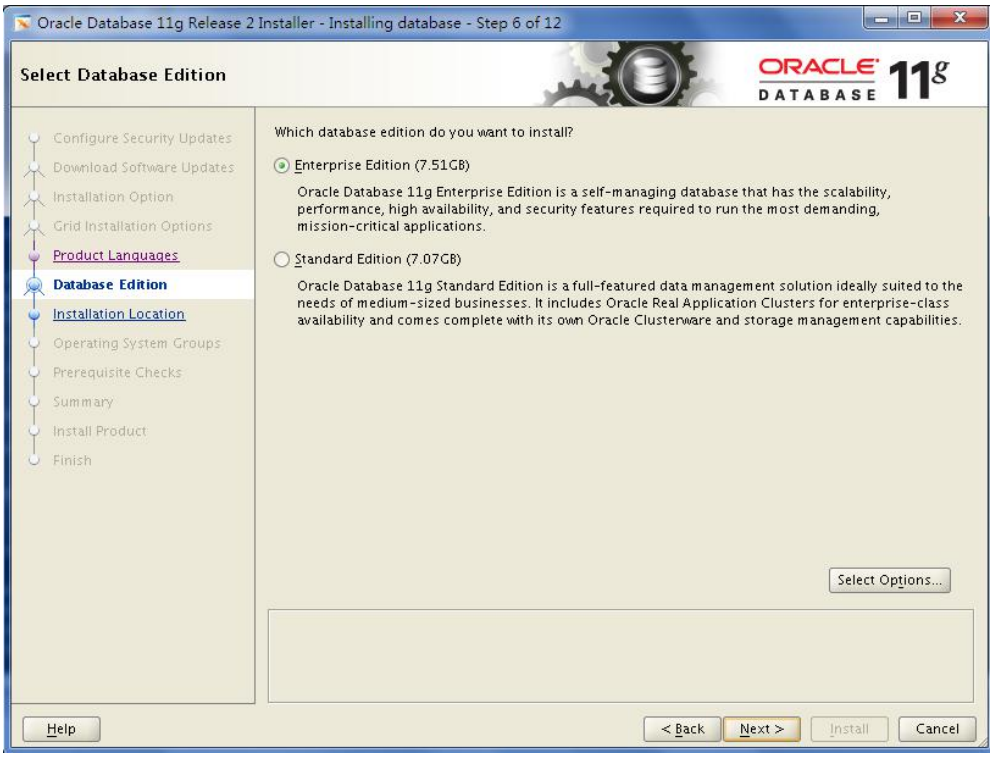
选择数据库安装节点，配置 ssh 认证，点击 Next，进入下一步

如果无法在安装界面进行节点选择，可以通过下面命令进行检查：

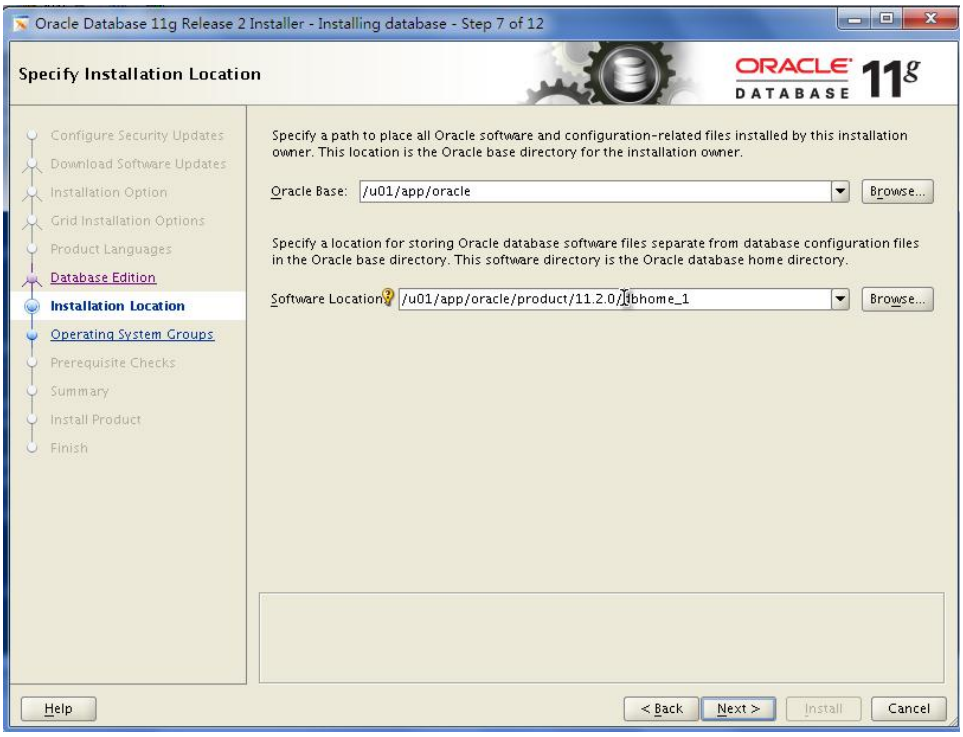
```
cluvfy comp clumgr -n node_list -verbose
```



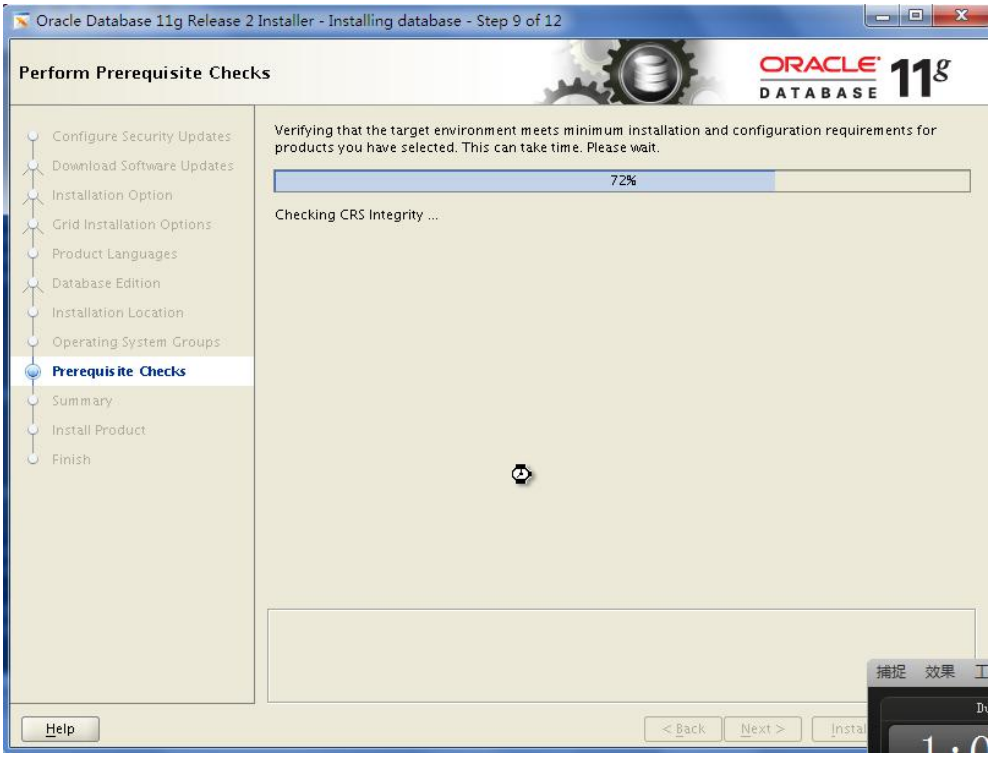
添加中文语言，点击 Next，进入下一步



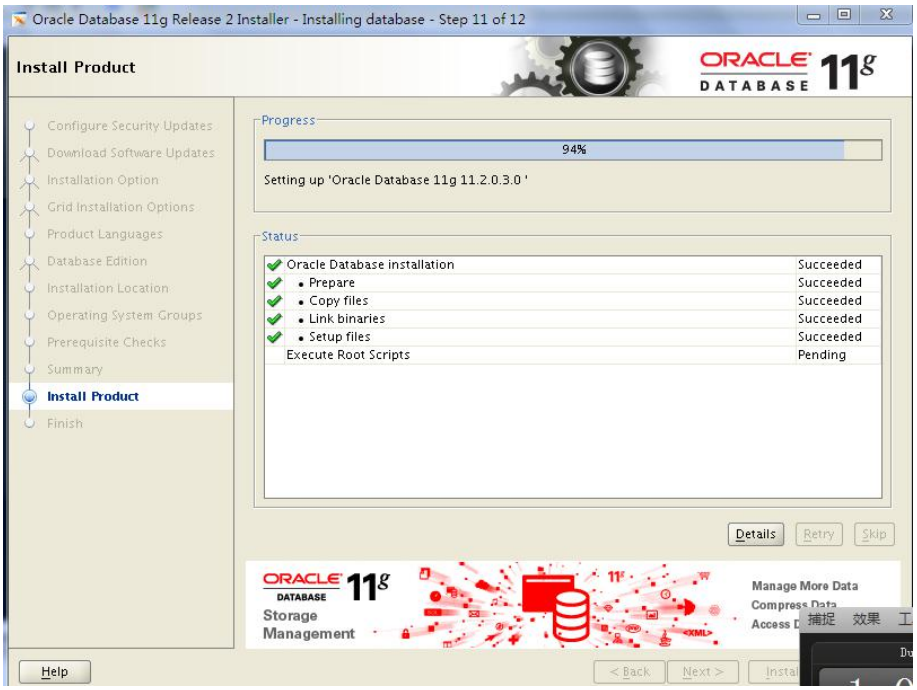
选择安装企业版，点击 Next，进入下一步



选择数据库软件安装目录，点击 Next，进入下一步



执行安装信息检查

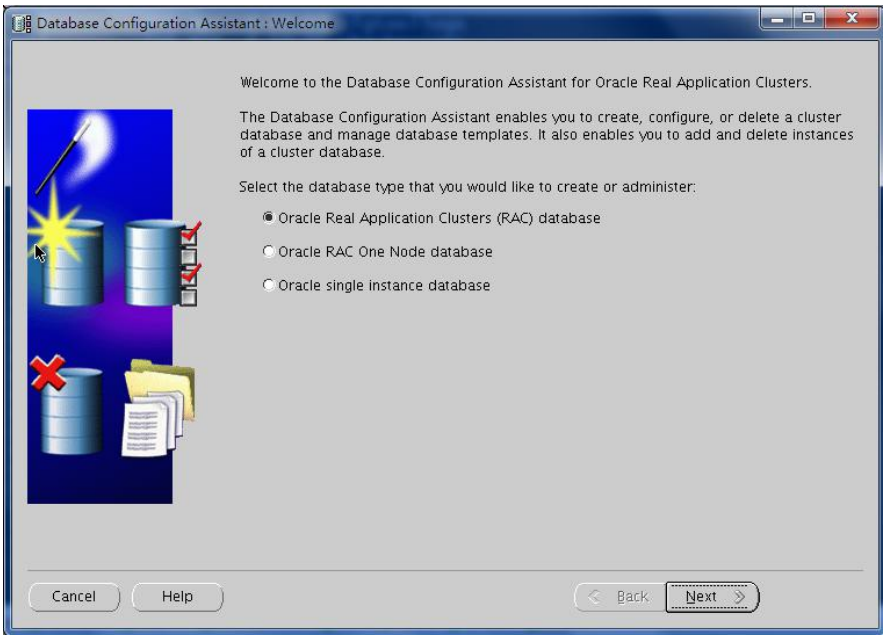


完成数据库软件安装。

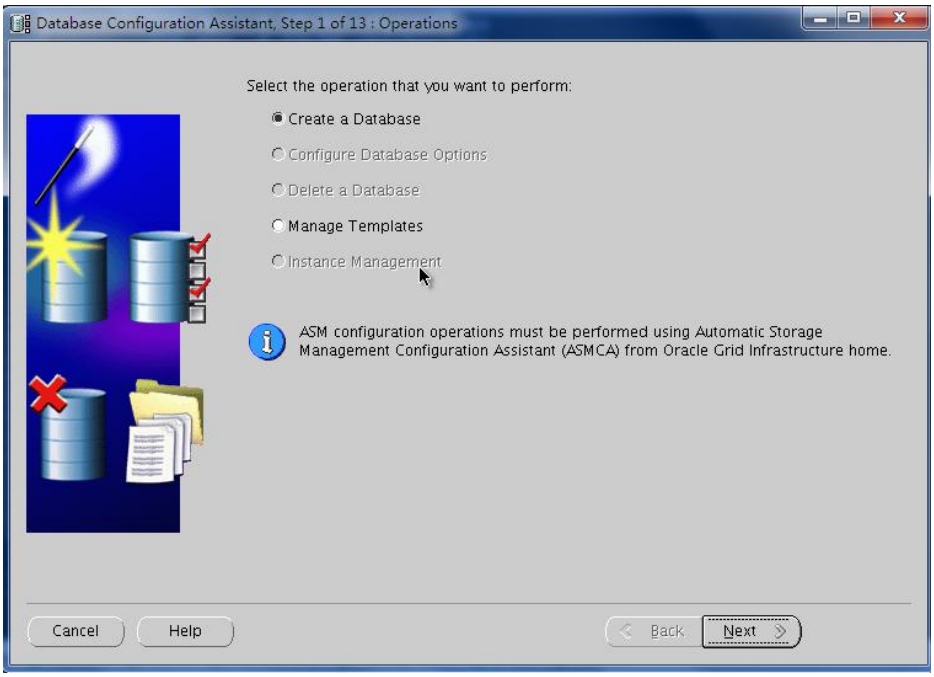
8.2 创建数据库

使用 oracle 用户，运行 dbca 命令，启动数据库创建程序

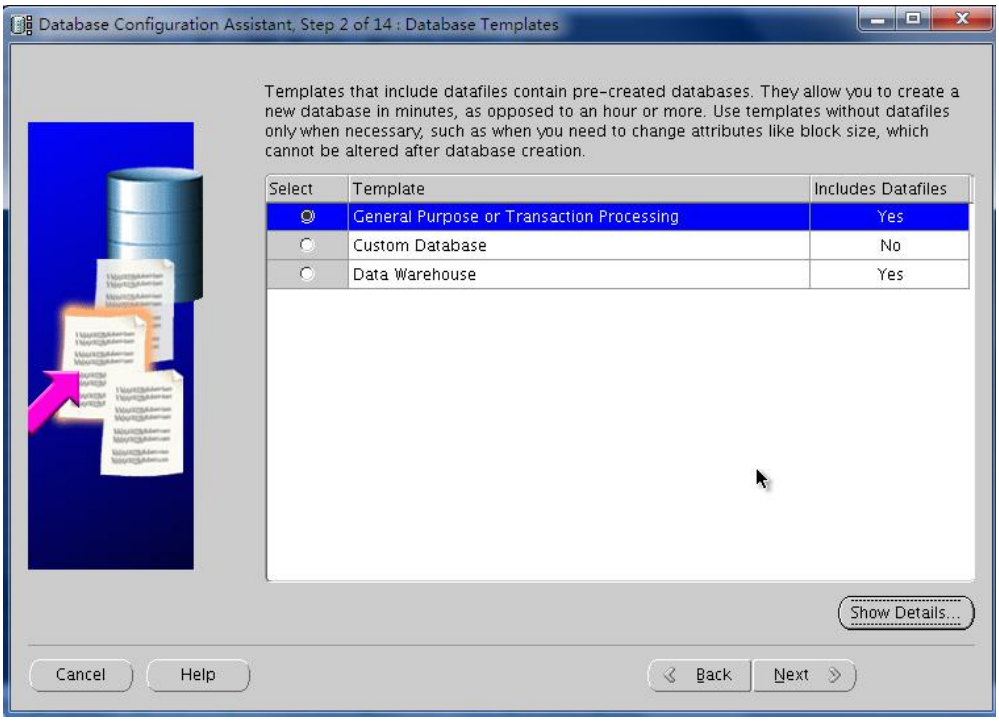
```
$ dbca
```



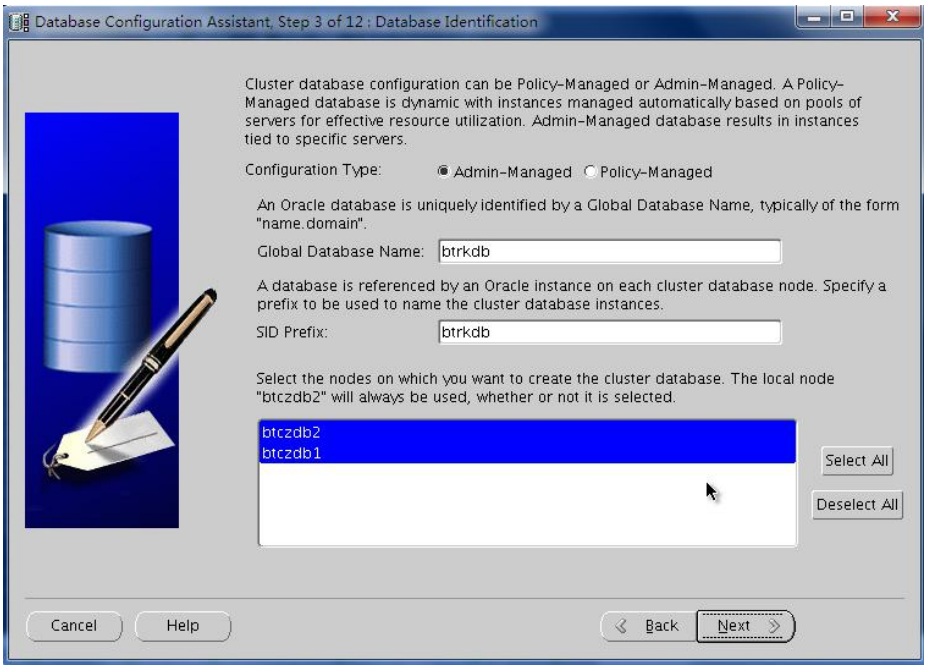
选择集群数据库，点击 Next，进入下一步



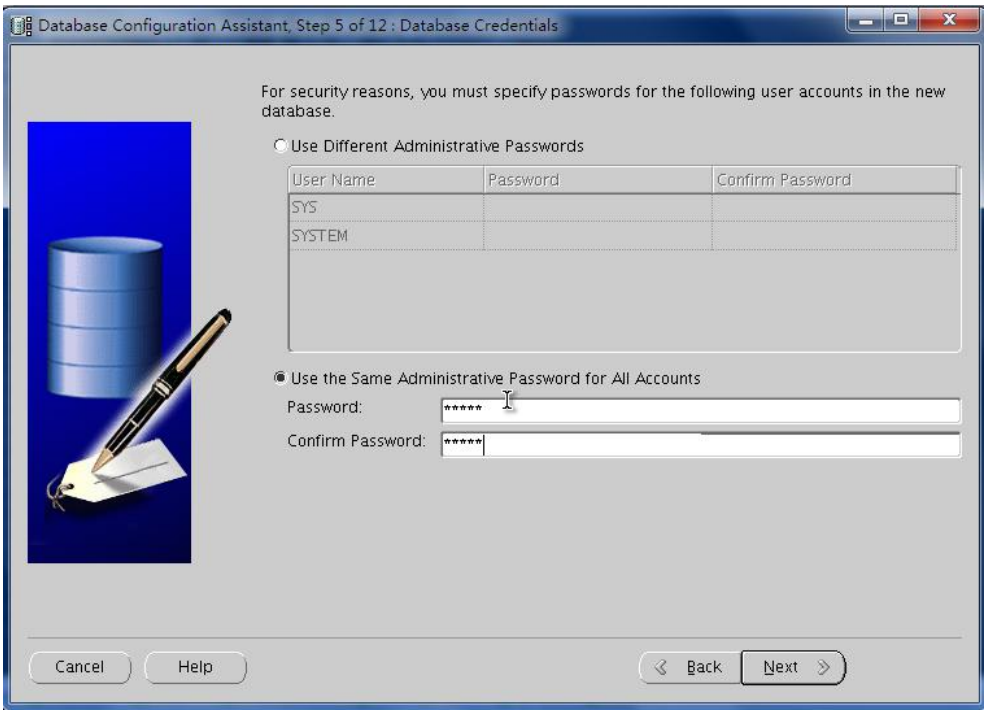
选择创建数据库，点击 Next，进入下一步



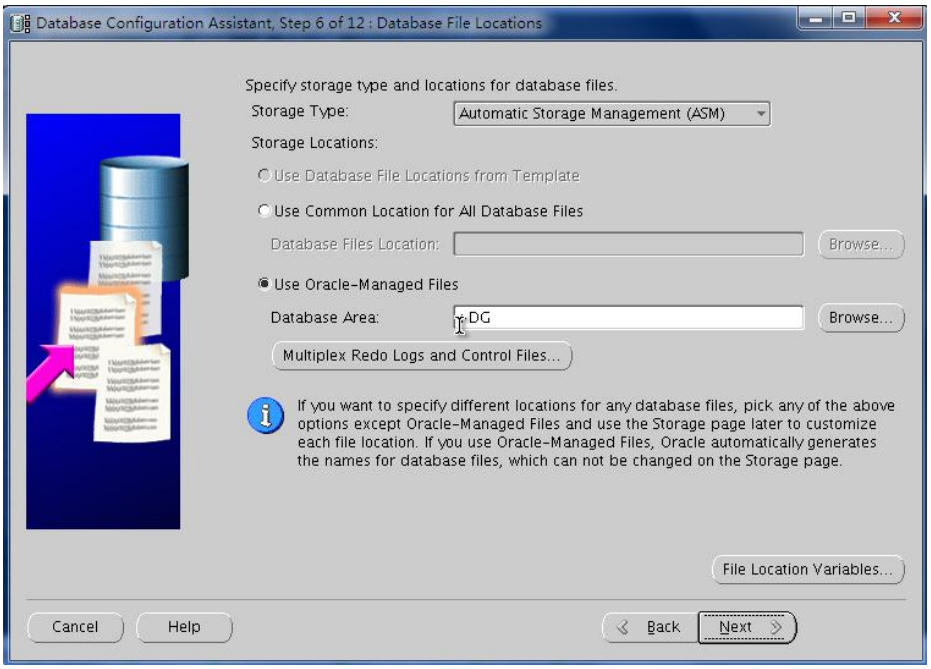
选择创建通用型数据库，点击 Next，进入下一步



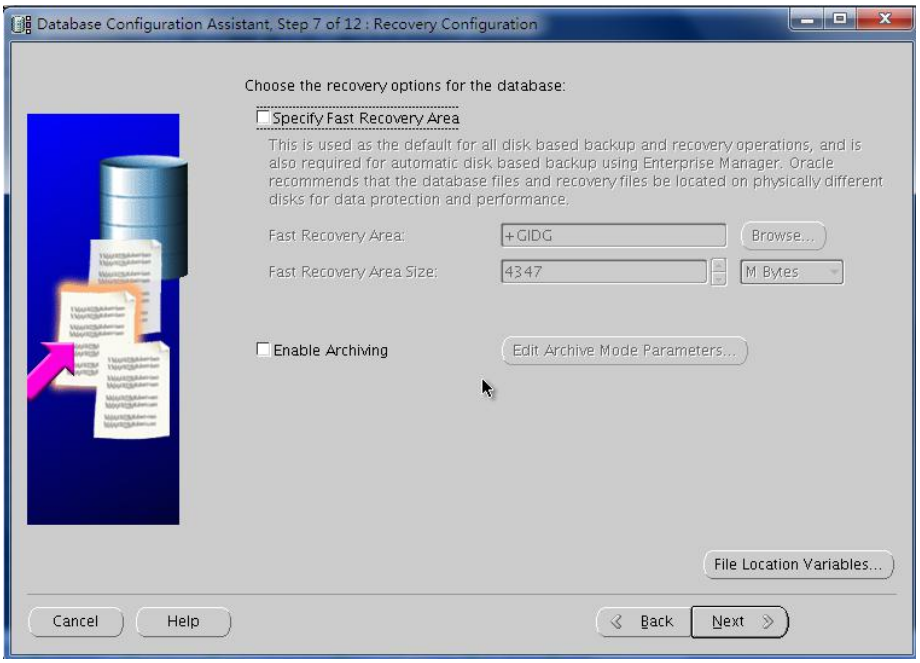
输入数据库名称：btrkdb，选择所有节点，点击 Next，进入下一步



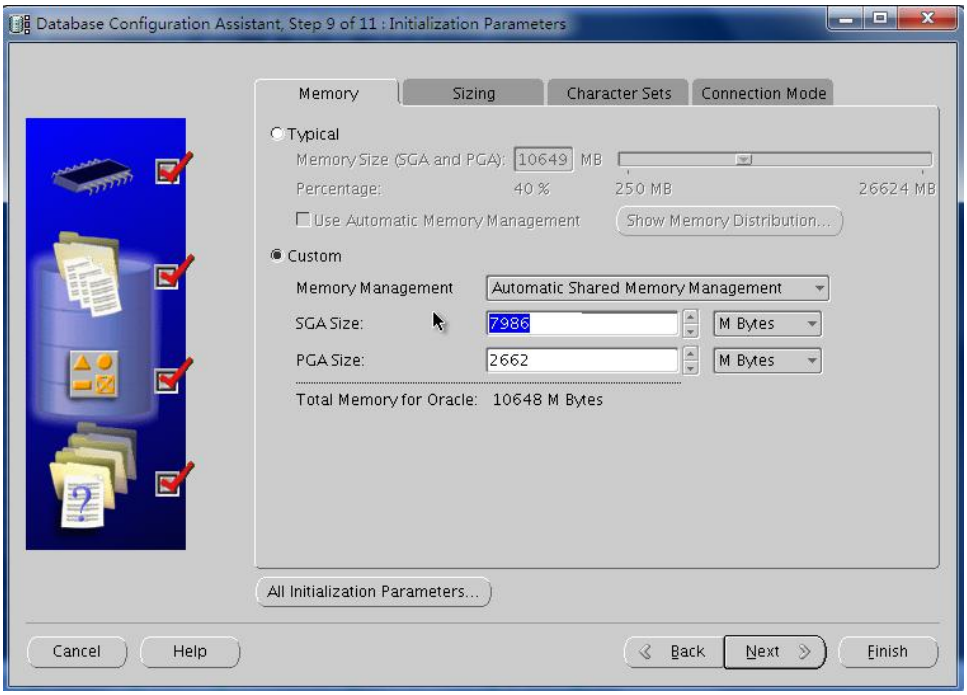
设置数据库用户默认口令为 admin，点击 Next，进入下一步

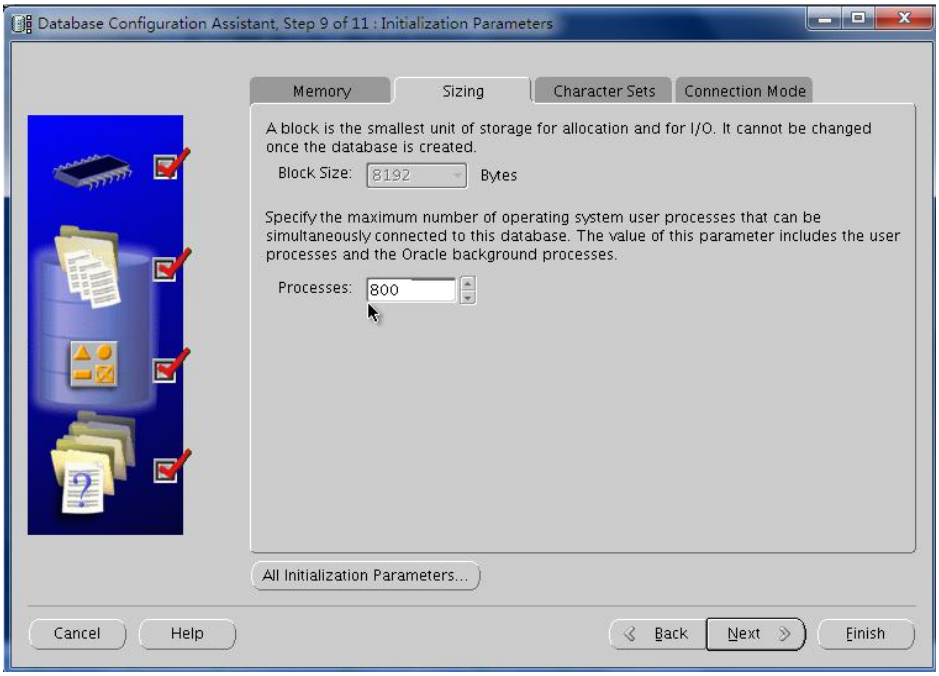


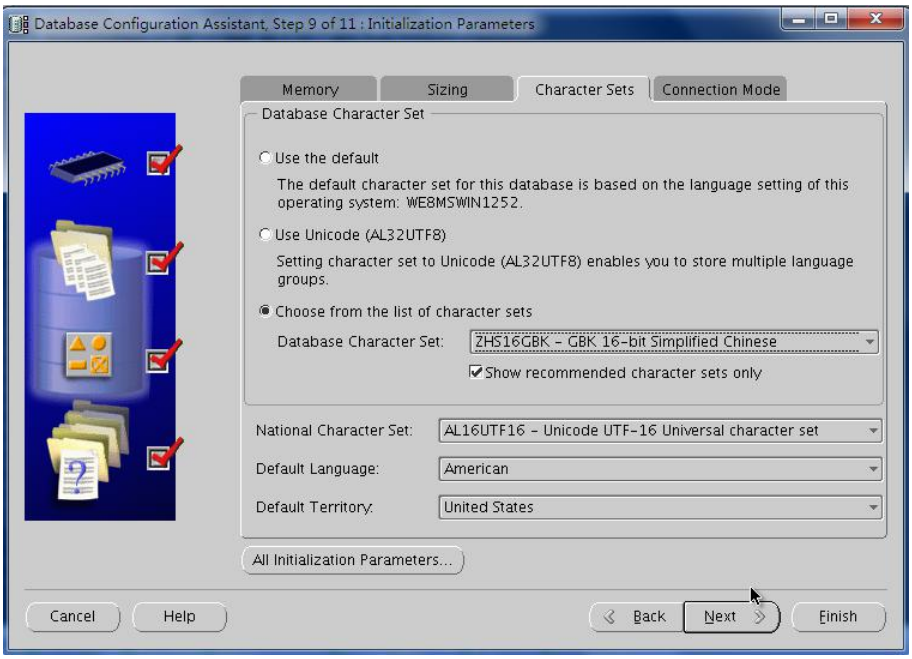
选择数据文件存放磁盘组，点击 Next，进入下一步



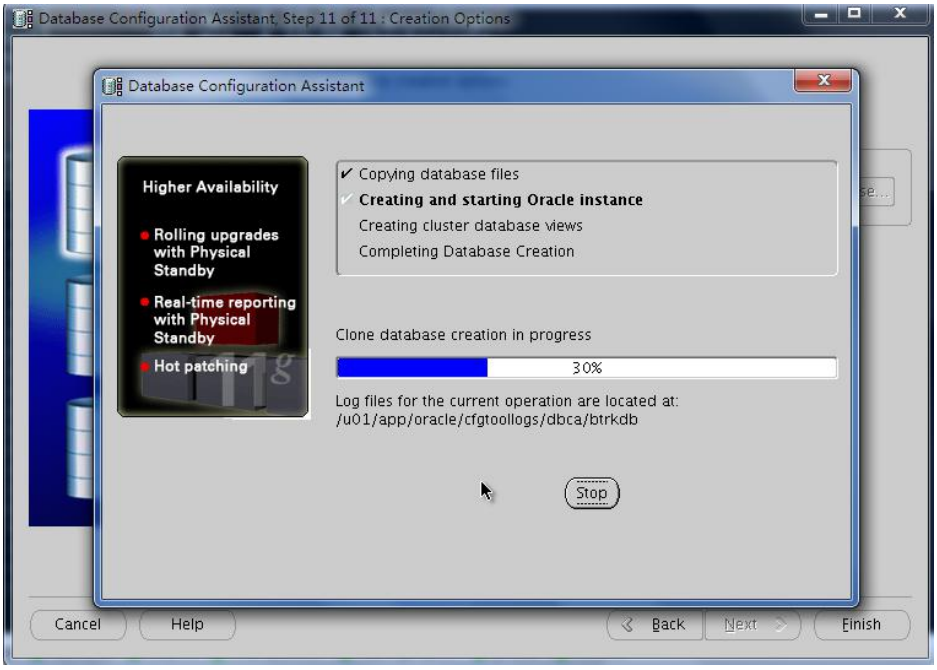
为提高系统性能，取消闪回配置，在完成数据迁移之前，不打开归档，点击 Next，进入下一步


Database Configuration Assistant, Step 9 of 11 : Initialization Parameters
Memory
Sizing
Character Sets
Connection Mode
Typical
Memory Size (SGA and PGA): 10649 MB
Percentage: 40 %
250 MB
26624 MB
Use Automatic Memory Management
Show Memory Distribution...
Custom
Memory Management
Automatic Shared Memory Management
SGA Size:
7986
M Bytes
PGA Size:
2662
M Bytes
Total Memory for Oracle: 10648 M Bytes
All Initialization Parameters...
Cancel
Help
Back
Next
Finish

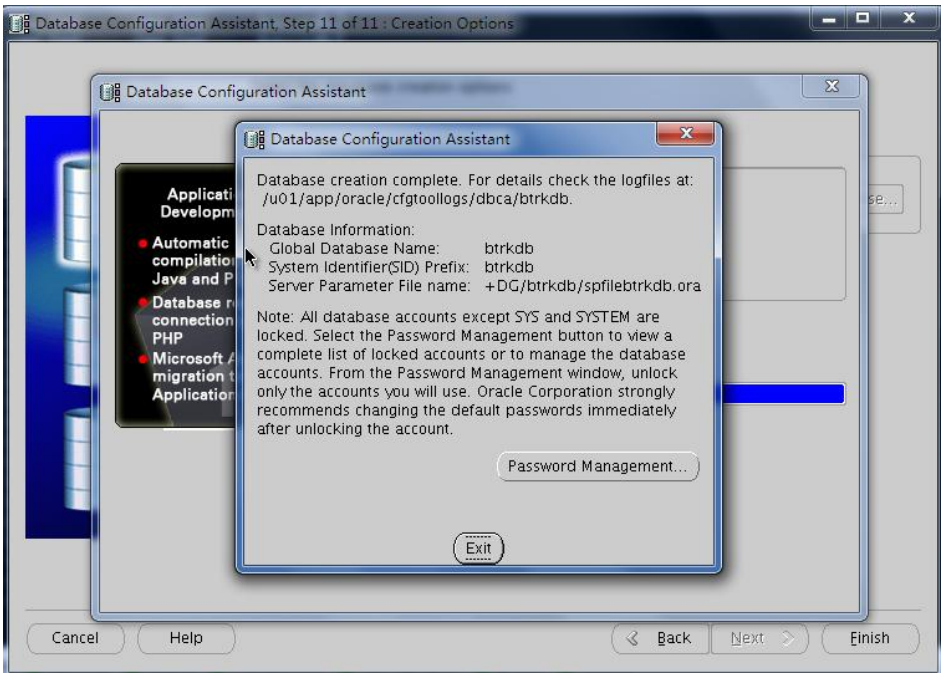

Database Configuration Assistant, Step 9 of 11 : Initialization Parameters
Memory
Sizing
Character Sets
Connection Mode
A block is the smallest unit of storage for allocation and for I/O. It cannot be changed once the database is created.
Block Size: 8192 Bytes
Specify the maximum number of operating system user processes that can be simultaneously connected to this database. The value of this parameter includes the user processes and the Oracle background processes.
Processes: 800
All Initialization Parameters...
Cancel
Help
Back
Next
Finish



修改内存参数配置，调整进程数，修改数据库字符集，修改完成后，点击 Next，进入下一步



进行数据库创建操作。


Database Configuration Assistant, Step 11 of 11 : Creation Options
Database Configuration Assistant
Database Configuration Assistant
Database creation complete. For details check the logfiles at:
/u01/app/oracle/cfgtoollogs/dbca/btrkdb.
Database Information:
Global Database Name: btrkdb
System Identifier(SID) Prefix: btrkdb
Server Parameter File name: +DG/btrkdb/spfilebtrkdb.ora
Note: All database accounts except SYS and SYSTEM are locked. Select the Password Management button to view a complete list of locked accounts or to manage the database accounts. From the Password Management window, unlock only the accounts you will use. Oracle Corporation strongly recommends changing the default passwords immediately after unlocking the account.
Password Management...
Exit
Cancel
Help
Back
Next
Finish

完成数据库创建。

9 PSU 安装

在 oracle 11.2.0.4 版本上，最新的 psu 为 11.2.0.4.7.安装过程如下：

1. 将最新的 opatch 分别解压到 GRID 和 oracle 用户的$oracle_home 目录下。并在用户环境中将 opatch 目录加到 PATH 中。

```
jfxddbls#[/oracle/software/OPatch]
jfxddbls#[/oracle/software/OPatch]. /home/grid/.profile
root@jfxddbls:[/oracle/software/OPatch]mv          $ORACLE_HOME/OPatch
$ORACLE_HOME/OPatch.bak
root@jfxddbls:[/oracle/software/OPatch]cp -R ./OPatch $ORACLE_HOME/
root@jfxddbls:[/oracle/software/OPatch]chown      -R      grid:oinstall
$ORACLE_HOME/OPatch

root@jfxddbls:[/oracle/software/OPatch]. /home/oracle/.profile
root@jfxddbls:[/oracle/software/OPatch]mv          $ORACLE_HOME/OPatch
$ORACLE_HOME/OPatch.bak
root@jfxddbls:[/oracle/software/OPatch]cp -R ./OPatch $ORACLE_HOME/
root@jfxddbls:[/oracle/software/OPatch]chown    -R    oracle:oinstall
$ORACLE_HOME/OPatch
```

2. 将补丁解压到/oracle/disks/patchs 目录下面。
3. 使用 root 用户执行 opatch auto 命令安装补丁。

```
jfxddbls#[/] opatch auto /oracle/software/psu/21150864/20996923 -ocmrf
/grid/app/11.2.0.4/grid/OPatch/ocm/bin/ocm.rsp

cd $ORACLE_HOME/rdbms/admin
sqlplus /nolog
SQL> CONNECT / AS SYSDBA
SQL> STARTUP
SQL> @catbundle.sql psu apply
SQL> QUIT
```

10 RAC 数据库日常管理命令

10.1 ORACLE RAC 自动启动

正常情况下每次节点重新启动的时候，RAC 的所有服务都会自动启动。

```
$ crsctl check  crs
CRS-4638: Oracle High Availability Services is online
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
```

系统状态为 healthy，表明集群运行正常。

10.2 查看当前 RAC 服务状态

在服务器中用 root 用户执行命令：

```
# . /home/oracle/.profile
# crs_stat -t
$ crs_stat -t
Name           Type           Target    State     Host
------------------------------------------------------------
ora.DG.dg      ora....up.type ONLINE    ONLINE    db01
ora.GIDG.dg    ora....up.type ONLINE    ONLINE    db01
ora....ER.lsnr ora....er.type ONLINE    ONLINE    db01
ora....N1.lsnr ora....er.type ONLINE    ONLINE    db01
ora.asm        ora.asm.type   ONLINE    ONLINE    db01
ora....SM2.asm application    ONLINE    ONLINE    db01
ora....B1.lsnr application    ONLINE    ONLINE    db01
ora....db1.gsd application    OFFLINE   OFFLINE
ora....db1.ons application    ONLINE    ONLINE    db01
ora....db1.vip ora....t1.type ONLINE    ONLINE    db01
ora....SM1.asm application    ONLINE    ONLINE    db02
ora....B2.lsnr application    ONLINE    ONLINE    db02
ora....db2.gsd application    OFFLINE   OFFLINE
ora....db2.ons application    ONLINE    ONLINE    db02
ora....db2.vip ora....t1.type ONLINE    ONLINE    db02
ora.btrkdb.db  ora....se.type ONLINE    ONLINE    db01
ora.cvu        ora.cvu.type   ONLINE    ONLINE    db01
ora.gsd        ora.gsd.type   OFFLINE   OFFLINE
ora....network ora....rk.type ONLINE    ONLINE    db01
ora.oc4j       ora.oc4j.type  ONLINE    ONLINE    db01
ora.ons        ora.ons.type   ONLINE    ONLINE    db01
ora....ry.acfs ora....fs.type ONLINE    ONLINE    db01
ora.scan1.vip  ora....ip.type ONLINE    ONLINE    db01
```

如果所有服务都是 online 的，说明 RAC 数据库状态正常。

10.3 启动和停止 RAC 数据库

10.3.1 停止数据库

在服务器中用 oracle 用户执行命令：

停止数据库

```
[oracle@db01 ~]$ srvctl stop database -d db0
```

停止 ASM

```
[oracle@db01 ~]$ srvctl stop asm -n db01
[oracle@db01 ~]$ srvctl stop asm -n db02
```

停止 nodeapps

```
[oracle@db01 ~]$ srvctl stop nodeapps -n db01
[oracle@db01 ~]$ srvctl stop nodeapps -n db02
```

10.3.2 启动数据库

在服务器中用 oracle 用户执行命令：

启动 nodeapps

```
[oracle@db01 ~]$ srvctl start nodeapps -n db01
[oracle@db01 ~]$ srvctl start nodeapps -n db02
```

启动 ASM

```
[oracle@db01 ~]$ srvctl start asm -n db01
[oracle@db01 ~]$ srvctl start asm -n db02
```

启动数据库

```
[oracle@db01 ~]$ srvctl start database -d db0
```

10.4 启动和停止 GI

10.4.1 停止 GI:

```
[root@db01 ~]# . /home/oracle/.profile
[root@db01 ~]# crsctl stop crs
```

10.4.2 启动 GI:

```
[root@db01 ~]# . /home/oracle/.profile

[root@db01 ~]# crsctl start crs
```

11 参考文档

11.1 ORACLE 官方文档

Oracle Grid Infrastructure Installation Guide 11g Release 2 (11.2) for HP-UX
Oracle Database Installation Guide 11g Release 2 (11.2) for HP-UX

11.2 MOS 参考文档

11.2.1 文档 ID 169706.1

Oracle Database (RDBMS) on Unix AIX,HP-UX,Linux,Mac OS X,Solaris,Tru64 Unix Operating Systems Installation and Configuration Requirements Quick Reference (8.0.5 to 11.2) (文档 ID 169706.1)